Current account balances and price competitiveness in the euro area

Current account positions in the euro area have widened distinctly since the beginning of the third stage of European monetary union. Whereas the euro area as a whole has a nearly balanced current account, individual euro-area countries are running – in some cases, considerable – deficits or surpluses. At the same time, major shifts between member states with regard to price competitiveness can be observed. The German economy, for instance, has visibly improved its price competitiveness. This report analyses the extent to which these developments may be regarded as a manifestation of a convergence process. Although the measurement methods used do not provide any hard empirical evidence, there are, on the whole, signs that the identified changes in prices and wages reflect international convergence mechanisms yet, in some cases, go beyond what can be expected in the context of real economic catching-up processes.

Diverging current account positions within the euro area

National current account positions ...

In a monetary union, national current account positions have a different status than in countries with their own individual currencies. Even if they each surpass a sustainable long-term level, they can trigger adjustments of the nominal exchange rate for the entire currency area only in the aggregate. There

are also other ways in which national current accounts are relevant in a monetary union: for instance, they can provide crucial information about a country's saving and investment decisions, patterns of competitiveness or economic convergence processes. This also applies to the euro-area countries, which have seen their current accounts diverge quite widely since the beginning of the third stage of European monetary union. For instance, Greece, Portugal and Spain, at last report (2006), had deficits of over 8% of their national gross domestic product (GDP). These contrast with four countries with high surpluses (relative to GDP): Finland (just under 6%), Germany (5%), Luxembourg (just under 10½%) and the Netherlands (8½%). The remaining countries' current account positions are at more moderate levels.

These national balances need to be considered bearing in mind the fact that the overall euro-area current account – which covers transactions with non-euro-area countries ("third countries")[1] – has been largely balanced in the past few years. In 2006, there was a deficit of 0.1% of GDP; the highest levels since the beginning of monetary union were reached in 2000 with a deficit of just under 1½% of GDP and in 2002 and 2004 with a surplus of around 1% of GDP in each of the two years.

... have grown since the beginning of monetary union

At the beginning of monetary union, the three aforementioned deficit countries already had – in some cases, considerable – current account deficits. For instance, Greece (which, however, did not join the euro area until 2001) had a deficit of nearly 4½% of GDP in 1999, with the corresponding figure for Portugal standing at just over 8½%. In Spain, by comparison, the deficit at the time, at just under 3% of GDP, was perceptibly lower than it is today. A noticeable deterioration in the current account balance relative to GDP could also be observed in Italy (just over 3 percentage points), Ireland and France (just under 4½ percentage points each) between 1999 and 2006. All three countries reported deficits in 2006 despite having had current account surpluses in 1999 (France 3%, Italy just over ½% and Ireland just under ½% of GDP). Moreover, Belgium's current account surplus diminished from 5% to 2% in the reporting period.

The group of countries with the largest surpluses at the current end did not experience completely homogeneous growth over the past few years, either. For instance, in 1999, Finland and Luxembourg already reported surpluses of over 6% and over 10½% of GDP respectively. The Dutch current account surplus was, at that time, still just under 4% of GDP. By contrast, for Germany – as a consequence of German reunification and the sharp loss in price competitiveness in the early 1990s – the current account in 1999

1 The euro-area balance of payments statistics cover transactions between euro-area countries and non-euro-area countries. Each country's national balance of payments, by contrast, comprises the entirety of that individual country's transactions with non-residents, ie with both third countries (extra-euro-area transactions) and other euro-area countries (intra-euro-area transactions). As – at times – different conventions are used to draw a material distinction between the trade in goods in the euro-area balance of payments statistics and in individual countries' balance of payments statistics as well as in the national accounts, deviations can occur in the data for what are essentially equivalent geographical reporting populations.

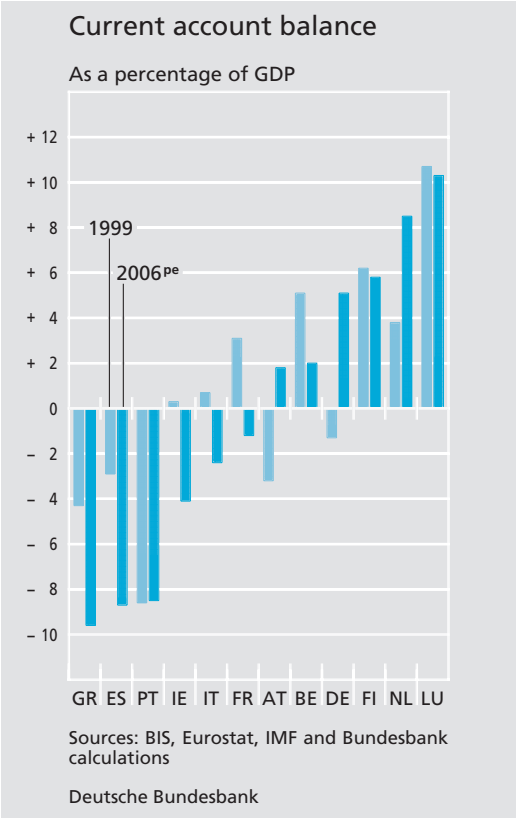
showed a deficit of just under 1½% of GDP. It was not until 2002 that the German current account turned around.

Dominance of trade in goods and services

The current accounts of the countries observed are strongly determined by the results of trade in goods and services. On average over the past 15 years, across the euro area (excluding Belgium, Luxembourg and Slovenia), these transactions have accounted for more than 80% of current transactions (ranging from only around 74% in Ireland to just under 86% in Austria).[2] Net exports of goods and services therefore provide a rather good approximation of the individual countries' current account balances. Changes in competitiveness – which will be central to the following analysis – are likely to be of more major and direct importance for trade in goods and services, too, whereas they are less closely related to the two other sub-items of the current account, income and current transfers. Moreover, cross-border flows of goods and services also allow a closer look at the external relations of the euro-area countries with third countries (extra-trade) as well as with their euro-area partners (intra-trade).[3]

Extra-trade and intra-trade ...

It has been evidenced that the three countries with large current account deficits in 2006 also have noticeable deficits in their trade in goods with both other euro-area countries and third countries yet are running slight surpluses in services transactions with each set of countries.[4] For the other euro-area member states, by contrast, there are at times perceptible differences between extra-trade and intra-trade. The most striking example is the Netherlands, whose large surplus in goods



trade with the euro area contrasts starkly with its large deficit in extra-trade. These figures reflect the important role of the Port of Rotterdam for international trade and the significance of the Netherlands as a transit coun-

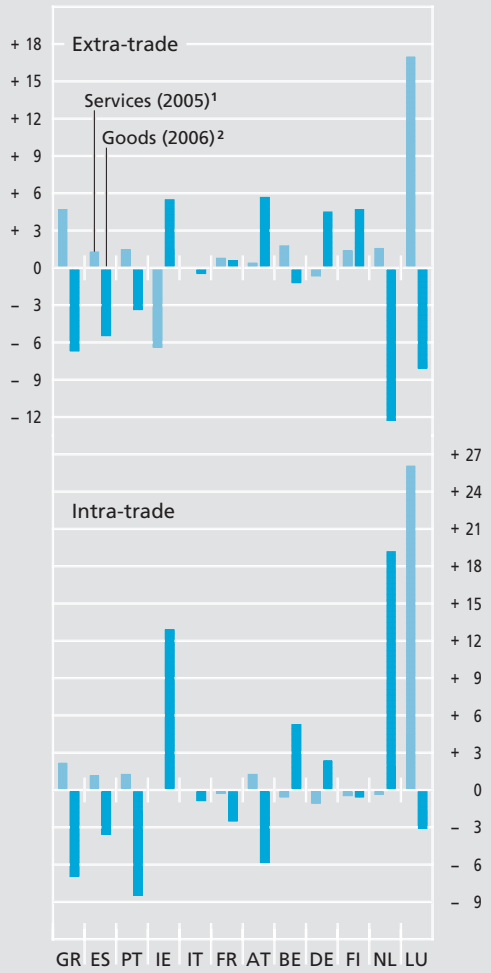
2 For Belgium, the share latterly stood at around 82%; for Luxembourg, whose current account is strongly determined by cross-border income, the figure is around 35%. Owing to the economic union that has historically linked the two countries, separate unbroken current account data for these countries are not available for the entire duration of the past 15 years.

3 Whereas the data for trade in goods broken down into extra-transactions and intra-transactions are also available for longer past periods, the information on services broken down in this fashion by region are available only for a few years (for most countries, only from 2002 onwards).

4 Travel and tourism played a major role here, as all three deficit countries are popular holiday destinations. Moreover, it should also be noted that a service breakdown by extra and intra-transactions is currently available from Eurostat only up to 2005. The information on trade in goods is taken from Eurostat's foreign trade statistics, as Eurostat does not publish the relevant balance of payments data.

Extra-euro-area and intra-euro-area trade

As a percentage of GDP



Source: Eurostat. — **1** Defined in terms of balance of payments statistics. — **2** Defined in terms of foreign trade statistics.

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try. They thus primarily reflect the way in which imports and exports are accounted for in the euro area and not so much economic determinants.[5] A remarkable fact about Germany is that its surplus in extra-trade in goods is about double its intra-trade surplus.[6] In the Finnish case, the surplus in extra-trade in goods even contrasts with a slight intra-trade deficit. Luxembourg's surplus in trade in goods and services is marked, both for intra-trade and extra-trade, by cross-border services transactions (especially financial services), whereas deficits have been reported in trade in goods.

... since the introduction of the euro

Since the beginning of monetary union, the surpluses in extra-trade in goods recorded by several countries have diminished: Spain (by three percentage points relative to GDP) and Greece, but also Italy and the Netherlands (by 2 percentage points in each case). By contrast, Germany and Austria have seen their balances of extra-trade in goods go up by 2 and 3 percentage points relative to GDP respectively. The goods trade of Finland, Ireland and the Netherlands has seen the greatest change in intra-trade: Finland's surplus of 2% of GDP in 1999 had reversed itself into a deficit of just over ½% of GDP by 2006 and Ireland's healthy surplus shrank from just under 20% in 1999 to around 13% in 2006. By contrast, the Netherlands has enlarged its surplus since the beginning of monetary union by nearly 6 percentage points to just over 19% of GDP at last report.

Competition between euro-area countries on third markets, too

Examining extra-trade and intra-trade balances of goods and services as accounting identities allows current account positions to be assigned to their regional origins. It does

5 In the underlying foreign trade statistics used here, imports into the euro area are recorded according to the "Community concept" – irrespective of their ultimate country of destination – in the country in which they cross the euro area's external borders. See European Central Bank, European Union Balance of Payments/International Investment Position Statistical Methods, May 2007.

6 If, by contrast, the country of origin principle is applied, Germany – as defined in the balance of payments statistics – had an €87 billion surplus in trade with other euro-area countries and a €72 billion surplus in trade with third countries in 2006.

not necessarily allow the underlying forces to be pinpointed, however. For instance, the change in price competitiveness relative to the other euro-area countries will not only have an impact on bilateral trade with these countries but will also lead to shifts in the relative price competitiveness of euro-area countries on third markets. This indicates that the overall external position of the countries should be looked at in the following analysis of the connection between competitiveness and the current account; a relatively broadly-based analytical approach should therefore be chosen.

Determinants of current account developments

Current account positions as a side effect of real convergence, ...

There are fundamentally different reasons why current account positions can grow. One is as a result of greater integration and increasing efficiency in the cross-border allocation of capital. The economic catching-up process of individual euro-area countries plays a major role in this connection. Productivity gains often go hand in hand with higher than average capital inflows, which are the flip side of current account deficits. A current study finds evidence that the capital flows in Europe can be explained to some extent against the background of a convergence process. The relatively advanced state of integration in the European financial markets apparently allows a greater decoupling from domestic saving and investment than is visible in other regions of the world, so that capital from more advanced countries flows to lower-income countries.[7]

... asymmetric shocks or countervailing business cycles

Furthermore, the build-up of current account positions can also serve as an instrument for the market to offset asymmetric shocks or countervailing business cycles. In the euro area, with its structure of fiscal federalism, private capital flows may therefore be very important.[8] Conversely, a stubborn current account deficit could also indicate structural deficiencies that increasingly come to the fore because the exchange rate is no longer available as an adjustment mechanism.

Public fiscal balances in the deficit countries ...

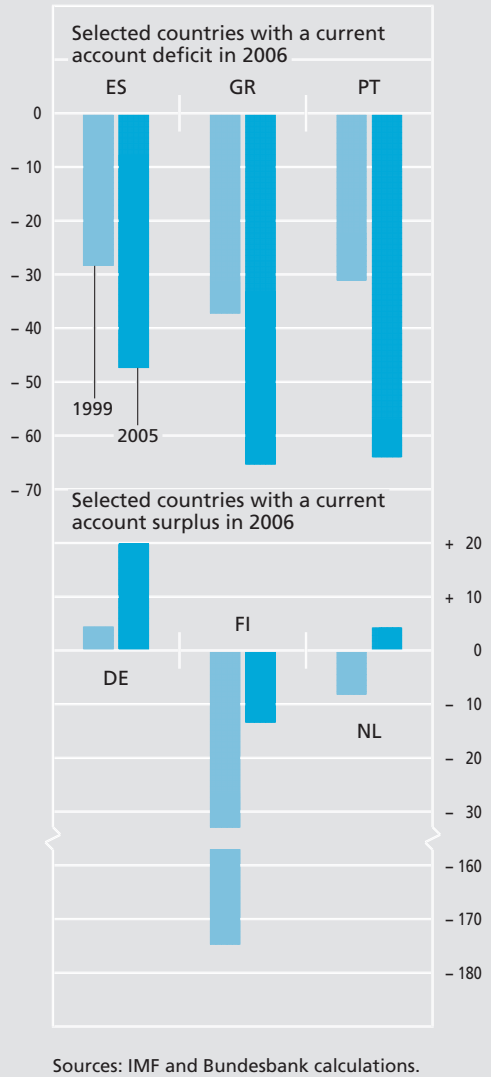
The large deficits recorded by Greece, Portugal and Spain have caused a perceptible rise in these countries' net foreign debt in the past few years. The sectoral origins of the changed external positions are therefore of some interest. Although the development patterns vary in details and size among the deficit countries, what they have in common is that the private sector has made a notable contribution to the deterioration in the current account. In Spain, as of late, the deterioration in the current account balance was actually due entirely to the private sector. By contrast, although Greece has occasionally recorded large public deficits, these have

7 See A Abiad, D Leigh and A Mody (2007), International finance and income convergence: Europe is different, IMF Working Paper WP/07/64. At the same time, the authors note the existence of a self-limiting mechanism whereby, as incomes rise in the recovering countries, this growth stimulus diminishes in importance. O Blanchard and F Giavazzi (2002), Current account deficits in the euro area: The end of the Feldstein-Horioka puzzle?, Brookings Papers on Economic Activity, No 2, pp 147-209, refer to the reduced correlation between domestic saving and domestic investment in the euro-area countries. A Ahearne, B Schmitz and J von Hagen (2007), Current account imbalances in the euro area, draft, March, also explain the divergence in euro-area current account positions through capital flows from higher-income countries to lower-income countries.

8 See J Mélitz (2004), Risk-sharing and EMU, Journal of Common Market Studies, Vol 42, pp 815-840.

Net external position

As a percentage of GDP, year-end levels



Sources: IMF and Bundesbank calculations.

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been less pronounced in the past two years.[9] In Portugal, too, both the government sector and the private sector have foreign deficits. Reduced risk premiums and the easing of credit constraints following the introduction of the euro have probably encouraged the growth of these current account deficits.[10]

In the countries with high current account surpluses, the past few years have seen clearly positive and, in some cases, rising net saving in the private sector. At the same time, developments in government budget balances have also occasionally been favourable: in Finland, the government has been running surpluses for years, while the Netherlands has been able to run down its deficits significantly, even achieving a slight surplus in 2006. Germany, too, has been able to successfully reduce its public deficit over the past three years.

... and the surplus countries

Influence of price competitiveness

The price competitiveness of a country's economy is generally regarded as one of the key factors determining its current account balance. Indicators of price competitiveness are typically expressed as a ratio of domestic price or cost movements to foreign price or cost movements, with trading partners being weighted according to their significance. All prices or costs are expressed in a common currency. These indicators, which are also termed real effective exchange rates, are thus determined both by nominal exchange rate movements as well as by inflation differentials with other countries: if the domestic inflation rate is higher than the foreign inflation rate, this will generally hamper price competitiveness, as will a nominal appreciation of the domestic currency. (Indeed, euro-area countries have not had any (nominal) exchange rate changes *inter se* since the introduction of the euro.) Such real appreciations are generally likely to worsen the current account. It there-

9 Expenditure in connection with the 2004 Summer Olympics is also likely to have fostered this development.
10 See European Commission, Country adjustment experience, Chapter 7, in Adjustment dynamics in the euro area, Experiences and challenges, The EU Economy 2006 Review, pp 177-239.

fore comes as no surprise that the trends in price competitiveness among the individual euro-area countries have empirically been found to largely resemble those of current accounts within the euro area.

Changes in competitive positions within the euro area

Germany's price competitiveness relative to 19 (20) trading partners ...

Indicators of price competitiveness on the basis of price and cost indices calculated relative to 19 (and, since the accession of Slovenia to the euro area at the beginning of this year, 20) industrial countries consistently show, for instance, that Germany's competitive position improved considerably in the second half of the 1990s and has deteriorated only very slightly since.[11] Splitting this type of indicator into two components – a sub-indicator relative to the current euro-area members and one relative to the other countries – reveals that the increase in competitiveness in the second half of the 1990s is attributable particularly to the nominal depreciation first of the D-mark and then of the euro against key currencies, as expressed in the lattermost sub-indicator.

... and relative to euro-area trading partners

The sub-indicator relative to euro-area countries, by contrast, has seen nearly continuous improvement since 1995, especially since the introduction of the euro in 1999, owing to the relatively low rate of inflation in Germany. For this reason, the perceptible recovery of the euro from its all-time lows in 2000 against the US dollar, pound sterling and Japanese yen are reflected only to a lesser extent in the overall indicator. Since 1999, German competitiveness, based on consumer prices for instance, has strengthened by 2% relative to the 20-country group and by more than 5% relative to the euro-area countries. If other price or cost indices are used as a basis, the rates of change are even greater. The reverse can be seen for several other euro-area countries.

Inflation differentials not excessively large in the euro area, ...

Over the same period, the absolute mean deviation of the annual national inflation rates measured in terms of the Harmonised Index of Consumer Prices (HICP) across all member states has been only ¾ percentage point from the overall euro-area inflation index, which does not appear very large at first sight. However, the inflation rates of many member states have remained higher than the euro-area average for many years, while other economies have continuously had below average rates of inflation. This indicates how crucially important the observed persistence of the inflation differentials in the euro area is for competitiveness, with the effects cumulating over time. Developments in Greece, Ireland, Italy, Luxembourg, Portugal and Spain have been characterised by relatively high rates of inflation.[12] Annual inflation rates in Germany and Austria, by contrast, have always been lower than the weighted average since the beginning of monetary union. Prices in Finland and France, too, have increased less sharply than average in most of the past few years.

... but relatively persistent

11 This conclusion is reached irrespective of the price or cost indices used; see p 42.
12 The deviation of Italy's prices from the weighted euro-area average has been rather slight, however, particularly in the past few years.

Price competitiveness of the German economy*

Average since 1975 = 100, quarterly, log scale

* Inverted scale: rising curve (decline in values) denotes an increase in price competitiveness.

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Owing to the single currency, the trade-weighted average of bilateral inflation differentials can be used as an indicator of price competitiveness relative to the other euro-area trading partners. A look at the cumulative rates of change of such indicators of price competitiveness based on alternative price or cost indices for each individual euro-area economy since the introduction of the euro[13] initially shows that the choice of index has only a limited effect on the reported change in price competitiveness.[14]

Some considerable changes in competitiveness since the introduction of the euro

It has also become clear that, in the eight years since the euro was introduced, relatively small inflation differentials, owing to their persistent nature, have accumulated into – at times – considerable changes in the indicators of member states' price competitiveness, in several cases going into double-digit percentages. The German economy is the only economy for which the indicators relative to the other euro-area countries have uniformly shown an increase in price competitiveness, ranging from 5% to just under 14%. Austria, France and Finland have also seen slight gains in two of the three indicators. By contrast, according to these calculations, Luxembourg, Spain, Greece, Italy, Ireland and Portugal have seen noticeable falls in price competitiveness. However, these results are also partly an indirect reflection of the increased competitiveness of the German economy, because Germany is one of the key trading partners of each of the aforementioned countries and is therefore heavily weighted in the calculations of those countries' national indicators.

Effects hardly a cause for concern if ...

In the political debate, worries are repeatedly voiced about the impact of the developments described, especially on economies with high inflation rates relative to the euro-area average. In order to determine the extent to which such concerns are justified, one must first analyse whether the reported shifts in the indicators of price competitiveness are actually unwelcome developments which could fundamentally indicate a need for economic policy action. There are two particular possible scenarios in which this would not be the case.

13 Slovenia is not included here or in the following because it only joined the monetary union at the beginning of 2007 and is therefore not comparable with the other countries observed over the reporting period.

14 The suitability of various price and cost indices for calculating price competitiveness indicators is analysed in depth in Deutsche Bundesbank, The indicator quality of different definitions of the real external value of the Deutsche Mark, Monthly Report, November 1998, pp 39-52.

Deviation of national inflation rates from the euro-area inflation rate*

* Annual HICP inflation rate. — **1** Did not join the euro area until 2001.

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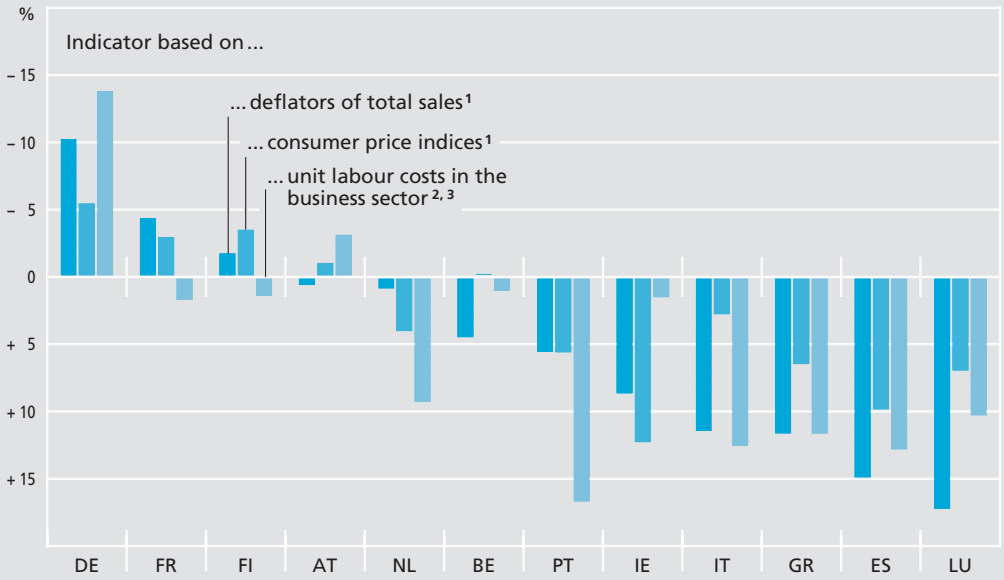
Change in price competitiveness relative to the euro-area partners since the beginning of European monetary union *



* Inverted scale: a negative value denotes an increase in price competitiveness. — **1** 2007 Q1 compared with 1998 Q4. — **2** 2006 Q4 compared with 1998 Q4. — **3** For Greece and Luxembourg: unit labour costs in the total economy.

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... inflation differentials can be traced back to price level convergence or ...

Firstly, the observed inflation differentials could have their origin in the convergence of the prices of internationally tradable goods, as a number of studies have shown to be the case in Europe in the early 1990s.[15] The establishment of the euro area was founded *inter alia* on the hope that using the single currency could promote price convergence among its members.[16] Inflation differentials could then be understood as a resultant adjustment process and would thus be only a temporary phenomenon.

... if they are an equilibrium process

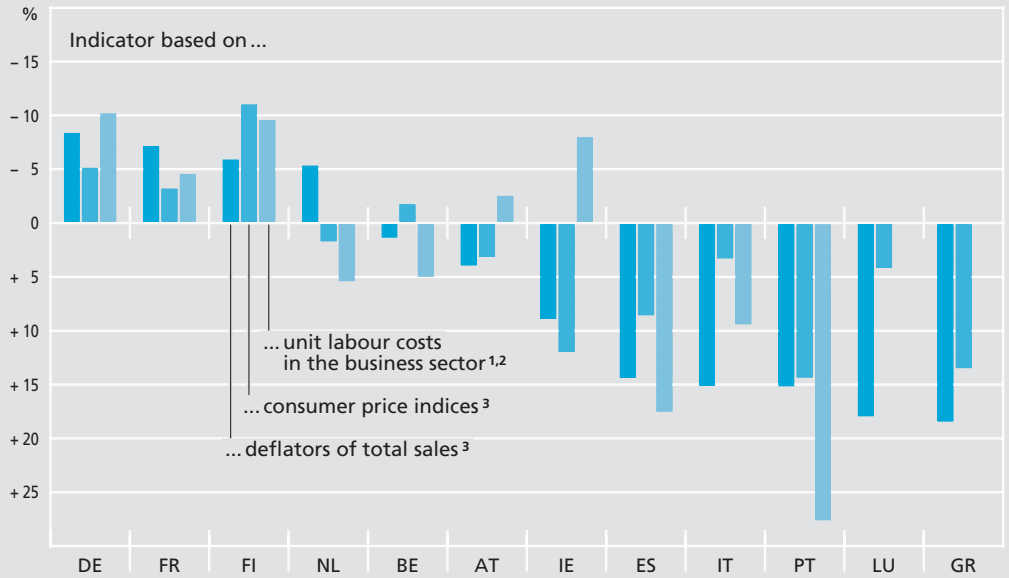
Another such scenario in which inflation differentials could not be regarded as an unwelcome development with regard to price competitiveness is if they represented "equilibrium" processes, which could be attributable, for instance, to differences in productivity growth in the various euro-area countries. According to the productivity approach, they would then be reflected only in adjustments in the prices of goods that are not internationally tradable.[17]

"Equilibrium value" necessary for an assessment

What these reflections clearly show is that the pattern of competitiveness indicators

15 See, for instance, J H Rogers (2001), Price level convergence, relative prices, and inflation in Europe, International Finance Discussion Papers, No 699, or P K Goldberg and F Verboven (2005), Market integration and convergence to the law of one price: evidence from the European car market, Journal of International Economics, Vol 65, pp 49-73.
16 See, for instance, European Commission (1990), One market, one money: an evaluation of the potential benefits and costs of forming an economic and monetary union, European Economy, Vol 44, p 19, or European Central Bank, Price level convergence and competition in the euro area, Monthly Bulletin, August 2002, pp 39-49.
17 For the productivity approach, see Deutsche Bundesbank, Fundamental determinants of real exchange rate movements in the central and east European accession countries, Monthly Report, October 2002, pp 47-59.

Price competitiveness relative to the euro-area partners compared with the long-term average*



* Inverted scale: a negative value denotes favourable price competitiveness at present. — **1** 2006 Q4 compared with the average since 1976 Q3. — **2** Comparable indicators for Greece and Luxembourg are currently not available. — **3** 2007 Q1 compared with the average since 1975 Q1.

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over time by itself is insufficient to assess their significance. Price competitiveness can therefore be interpreted only relative to an "equilibrium level" identified along the lines of economic considerations. A recent Bundesbank study calculated various "equilibrium values" for price competitiveness based on alternative economic concepts.[18]

First concept: relative purchasing power parity theory

The first concept is the relative purchasing power parity theory. Although this theory merely states that the real exchange rate, – and thus the price competitiveness indicator used above – has to be stationary as a time series, its expected value can be approximated with the long-term average of the indicator, which can, under this approach, be regarded as a reference value.[19]

Results

A comparison of current indicator values with the reference values calculated in this manner shows here, too, that the choice of price or cost index has only a limited influence on the results. The price competitiveness of Finland, France and Germany is currently more favourable than the long-term average. By contrast, the economies of Spain, Italy, Portugal, Lux-

18 See C Fischer (2007), An assessment of the trends in international price competitiveness among EMU countries, Research Centre, Deutsche Bundesbank, Discussion Paper, Series 1, No 08/2007. The underlying data were updated for this article. An assessment of the German economy's price competitiveness using these reference values can already be found in Deutsche Bundesbank, Purchasing power parity theory as a concept for evaluating price competitiveness, Monthly Report, June 2004, pp 29-42.

19 The usual procedure here is to create an average from 1975 onwards. The point in time from which the average is formed is negligible, however, at least for Germany if the underlying time period is sufficiently long. See Deutsche Bundesbank, Purchasing power parity theory as a concept for evaluating price competitiveness, loc cit.

embourg and Greece are marked by competitive disadvantages compared with the long-term average. The same may be assumed for Ireland, even though the indicator based on unit labour costs – unlike the others – shows the opposite to be the case.[20]

Dispersion of these indicators has been increasing since the introduction of the euro

On the basis of the relative purchasing power parity theory, current price competitiveness may be regarded as unfavourable precisely in those countries in which it has taken a visible turn for the worse since the establishment of monetary union. The reverse is true for Germany. Consequently, the changes in price competitiveness within the euro area over the past few years cannot be interpreted as an adjustment towards a reference value defined by relative purchasing power parity theory. This conclusion can also be reaffirmed by dispersion measures which show that the dispersion of indicators has risen noticeably since the introduction of the euro.

However, it is also possible that a relatively low price level in the 1970s, the beginning of the averaging period, could be the reason why the economies of countries such as Greece, Portugal, Spain or Ireland, which have been in a catching-up process in the past few decades, are classified as being relatively uncompetitive in comparison with the long-term averages. In this case, it should be questioned whether concepts other than the long-term average would make better reference values, since the relative purchasing power parity theory does not reflect such catching-up processes.

Second concept: absolute purchasing power parity theory

An alternative reference value can be calculated using the concept of the absolute purchasing power parity theory. However, this concept requires a comparison of price levels between the euro-area countries that cannot be performed with the price and cost indices used so far. For this reason, indicators of price competitiveness containing relative price levels were calculated.[21] They indicate the extent to which the domestic price level deviates from the weighted average of the price levels of the euro-area trading partners which forms the reference value according to this concept.

Results

Since the introduction of the euro, for most countries the indicators of price competitiveness calculated in this fashion have moved similarly to the index-based indicators introduced above. However – as is to be expected – there are distinct differences in the assessment of competitiveness at the current end.[22] According to this concept, it is precisely the Mediterranean countries of Greece, Portugal

20 The arguments put forward in P Honohan and B Walsh (2002), Catching up with the leaders: the Irish hare, Brookings Papers on Economic Activity, No 1, pp 1-77, suggest that the current values for the unit labour cost indicator for Ireland are biased in Ireland's favour. Honohan and Walsh show that Irish labour productivity, which forms the denominator of unit labour costs, has recently been overstated. This is attributable to a small number of multinational enterprises which have used the low tax rate in Ireland and the usual transfer price rules to report a rather large percentage of their global profits in Ireland.
21 The relative price levels were calculated as the quotient of purchasing power parity exchange rates taken from the European Commission's "Annual macroeconomic database" (AMECO) and actual nominal exchange rates. This database is based on surveys by the national statistical offices for a comprehensive GDP-oriented basket of goods. The nominal exchange rate between the euro-area countries is to be set at 1 for the period since the introduction of the euro.
22 The calculations are based on annual data which are available up to and including 2006. The latest revisions of the data and potentially different collection methods in the individual countries call for caution when interpreting the results.

and Spain – the price levels of which are relatively low compared with their competitors – whose price competitiveness is high. This stands in contrast to the results obtained using the first approach, as does the finding that Finland – along with Ireland and Luxembourg – has a lower than average level of competitiveness.

Price level convergence in the euro area

The still relatively favourable current assessment of the aforementioned Mediterranean countries' economies despite their competitiveness losses over the past few years indicates that, according to the concept of the absolute purchasing power parity theory, price competitiveness in the euro area has converged as of late. This is evidenced by a falling coefficient of variation over time, according to which price levels in the euro area have drawn more closely together.[23]

Third concept: the productivity approach

This could be due to higher than average inflation rates largely being triggered by increases in the prices of goods that are not internationally tradable. According to the aforementioned productivity approach, which goes back to Balassa and Samuelson,[24] greater productivity in the manufacture of tradable goods is reflected in wage increases. In order to deter employees from seeking employment in other sectors, the manufacturers of internationally non-tradable goods will thus also pay higher wages. Since, by assumption, productivity in this sector has not risen as fast as in the tradable goods sector, the higher wages will cause prices for this group of goods to rise, which will also increase the overall rate of inflation.

Empirical approach

Where euro-area inflation differentials are attributable to such phenomena,[25] the price competitiveness of the economies concerned would not be affected. Unlike in the case of relative or absolute purchasing power parity theory, in this third concept, the relevant "equilibrium value" for assessing competitiveness is not a constant but depends instead on relative productivity developments. In order to take into account potential Balassa-Samuelson effects, relative price levels were regressed on relative productivities in a panel regression and the residuals united to form an indicator of price competitiveness adjusted for relative productivity developments.[26]

Results

The relative productivity variables, however – despite the high level of statistical significance in the estimation – seem to have a fair-

23 The question of whether prices converged following the introduction of the euro has also been studied using more strongly disaggregated data. Earlier studies, such as C Engel and J H Rogers (2004), European product market integration after the euro, Economic Policy, Vol 19, pp 347-384, as well as M Lutz (2004), Price convergence under EMU? First estimates, in A V Deardorff (ed), The Past, Present and Future of the European Union, did not find any evidence of this. N F B Allington, P A Kattuman and F A Waldmann (2005), One market, one money, one price?, International Journal of Central Banking, Vol 1, No 3, pp 73-115, by contrast, come to the opposite conclusion.

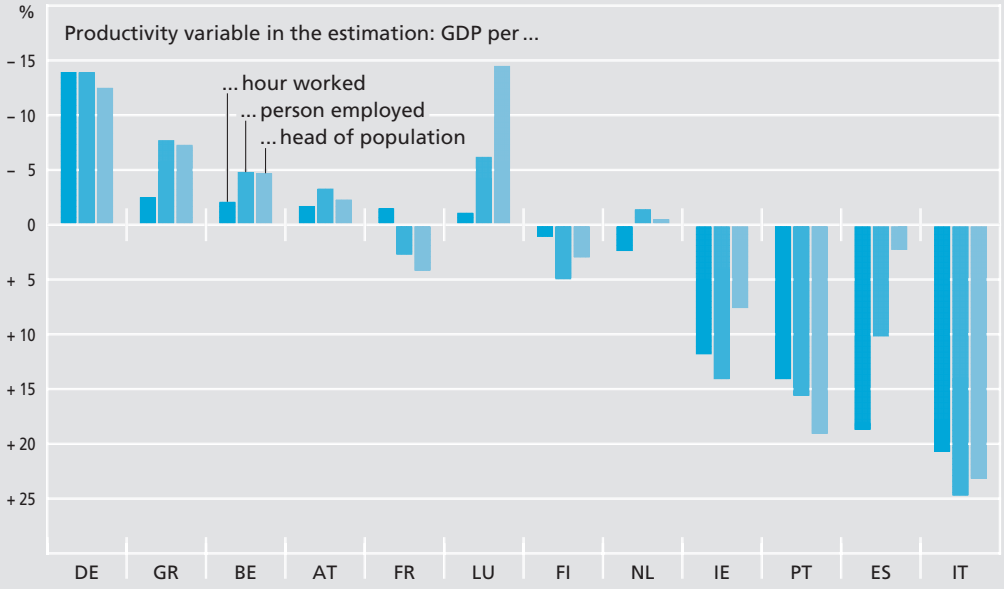
24 See B Balassa (1964), The purchasing-power parity doctrine: a reappraisal, Journal of Political Economy, Vol 72, pp 584-596, and P A Samuelson (1964), Theoretical notes on trade problems, Review of Economics and Statistics, Vol 46, pp 145-154.

25 According to analyses by, for instance, the German Council of Economic Experts (*Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung*) (2001), For steadiness – against actionism (English summary of *Für Stetigkeit – gegen Aktionismus* – complete report available only in German), as well as H Gischer and M Weiß (2006), Inflationsdifferenzen im Euroraum – Zur Rolle des Balassa-Samuelson-Effekts, List Forum für Wirtschafts- und Finanzpolitik, Vol 32, pp 16-37, euro-area inflation differentials can be partly explained by Balassa-Samuelson effects.

26 For the technical details of the calculations, see C Fischer, loc cit.

Change in price competitiveness relative to the euro-area partners since the beginning of European monetary union calculated using the productivity aproach*

2006 compared with 1998



* Inverted scale: a negative value denotes an increase in price competitiveness.

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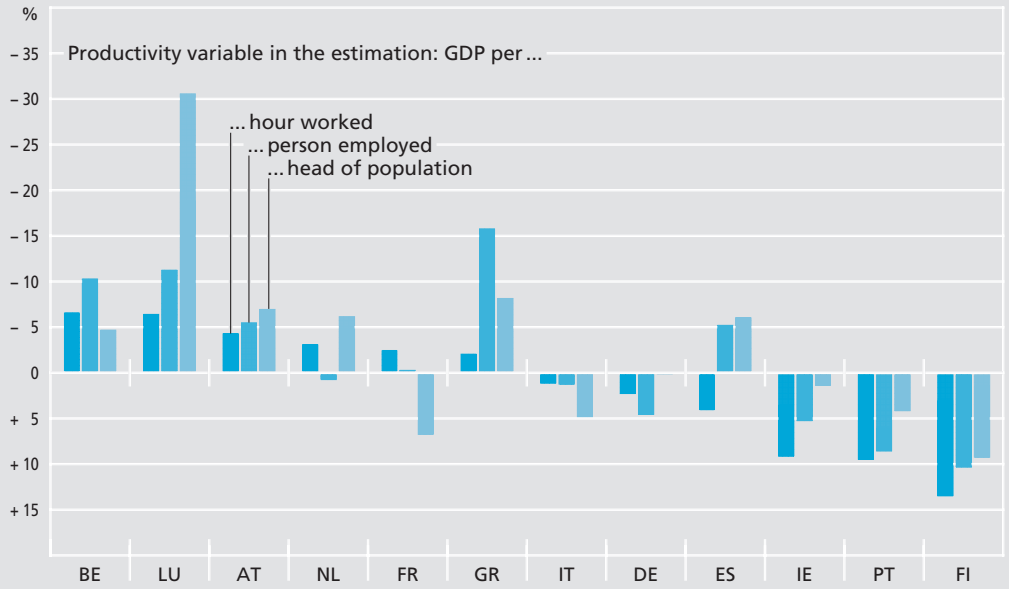
ly small quantitative effect on the cumulative change in competitiveness. Thus, this third concept likewise diagnoses an increase in competitiveness for Germany and Austria, among other countries. Unlike the other concepts, however, it also detects improved competitiveness, for instance, for Greece, implying that, according to this assessment, the strong productivity growth in Greece more than offset the adverse effects of the relatively high rate of Greek inflation. By contrast, Italy, Spain, Portugal and Ireland faced more or less pronounced losses of price competitiveness – as also established when using the other two concepts.

When comparing current competitiveness with an "equilibrium value" based on this concept, the positions of Austria, Belgium, Greece and Luxembourg tend to appear favourable, while the situation for Finland, Ireland and Portugal appears to be less favourable. All in all, this also suggests a convergence of competitive positions within the euro area.

Conclusions

If the results obtained with the various approaches are summarised, the following conclusions may be drawn – with all due caution. Firstly, the concepts hardly differ in their assessment of the development of price competitiveness since the beginning of monetary union for nearly all of the countries. For instance, according to all of the indicators, Germany's price competitiveness has improved, while Italy, Portugal, Spain and Ireland have seen theirs deteriorate. Secondly, the inflation differentials observable in the euro area can

Deviation of price competitiveness relative to the euro-area partners from the estimated "equilibrium level" in 2006 calculated using the productivity aproach*



* Inverted scale: a negative value denotes favourable price competitiveness at present.

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be attributed to corresponding changes in productivities probably only to a limited extent. They should thus be relevant for member states' competitiveness.

Convergence of price competitiveness in the euro area is questionable

Thirdly, the different concepts are not consistent in their assessment of whether the price competitiveness of the individual euro-area countries is converging (in which case the inflation differentials ought to be regarded as less problematic and temporary): the results based on the productivity approach and the absolute purchasing power parity theory confirm a tendency towards adjustment, while the results obtained according to the relative purchasing power parity theory point to a pronounced divergence.[27] This does not necessarily imply a contradiction, as real economic catching-up processes can be reflected in different "equilibrium values" according to the relative and the absolute purchasing power parity theories. However, the productivity approach results show that the real economic convergence within the euro area is insufficient to explain the empirical findings.

Assessment fraught with relatively high level of uncertainty

The varying results also need to be seen in the light of the generally high level of uncertainty with which such estimations are fraught. One argument against the assumption of converging competitiveness in the euro area, however, is that the indicators based on relative price levels, are possibly biased by measurement errors. This is suggested, for example,

27 This outcome is all the more remarkable as the three concepts reach widely similar results for the time prior to the introduction of the euro regarding the issue of converging competitive positions in the sense that they largely confirm convergence.

by the fact that these approaches show Germany's price competitiveness to be somewhat unfavourable for several decades despite its export successes. Moreover, the productivity approach fails to recognise that internationally non-tradable goods, by functioning as inputs in the production or distribution of tradable goods, can affect a country's price competitiveness as well.

Possible reasons for diverging price competitiveness within the euro area

If euro-area members' price competitiveness is only partly driven by catching-up processes, the question is then whether the persistent inflation differentials in the euro area are also attributable to other factors. Probably the most prominent hypothesis in this direction asserts that the inflation differentials are caused by the asymmetric effects of external shocks. It is supported by a study which finds that the euro's nominal effective depreciation in the first few years of its existence contributed to inflation differentials insofar as the countries with a large share of non-euro-area imports were affected more harshly by imported inflation.[28] Given differences in energy intensity, rising oil prices could have had a similarly asymmetric impact on member states' inflation rates.

Asymmetric effects of external shocks

Recently, however, this hypothesis has been somewhat discredited following evidence that the described results are attributable only to the special case of Ireland and that, even after taking Ireland into account, they lose their significance once inflation persistence is factored into the estimation.[29] Moreover, given the euro's nominal effective appreciation in the past few years, the hypothesis is hardly compatible with the continued persistence of the inflation differentials.

Divergent business cycles

A further conceivable cause of the inflation differentials in the euro area is the existence of divergent business cycles that could be caused, for instance, by regional demand shocks. The establishment of the euro area, too, could have triggered relative demand effects since, in some countries, it led to a perceptible fall in capital market rates and, therefore, through favourable terms of financing, could have helped property prices to rise, without this occurring in other member states. Another potential reason for divergences in the euro-area countries' business cycles could lie in differences in national economic and fiscal policies.[30]

Inflation persistence

Although the impact of diverging cyclical developments on inflation differentials and ultimately on price competitiveness should be regarded as temporary and thus less severe, it ought to be noted that the significant inflation persistence that is empirically determinable in Europe can perceptibly prolong these effects. This can lead to longer-term inflation

28 See P Honohan and P R Lane (2003), Divergent inflation rates in EMU, Economic Policy, Vol 18, pp 357-394.
29 See I J M Arnold and B A Verhoef (2004), External causes of euro zone inflation differentials: a re-examination of the evidence, Intereconomics, Vol 39, pp 254-263.
30 See, for instance, European Central Bank, Monetary policy and inflation differentials in a heterogeneous currency area, Monthly Bulletin, May 2005, pp 61-77. The article also finds that the impact of changes in indirect taxes and administered prices at the national level, which could likewise lead to inflation differentials, is only minor.

differentials, especially if the persistence is also asymmetric.[31]

Wage policy

In addition, national wage policies could also have played a key role. The differences in wage developments between the individual member states are possibly not so much a purely cyclical phenomenon. This is already evidenced by the fact that the price competitiveness trends also recur in the indicators calculated on the basis of unit labour costs: wage developments adjusted for labour productivity show visible discrepancies between the euro-area countries, which accumulate over time. This could also be suggestive of catching-up processes, although the causes could also be institutional, such as national wage-setting mechanisms, indexation clauses or country-specific labour market rigidities.

The current account and competitiveness: an empirical study

Empirical study …

Irrespective of the detailed reasons for the shifts in price competitiveness, theoretical considerations and the largely parallel development of the current account and competitive positions of individual euro-area countries suggest a connection between the two variables. Moreover, other factors are also likely to be reflected in current account developments.

The answer to this question is pursued in an empirical study (see the box on pages 50-51). It is revealed that the national current account positions of the euro-area countries are materially affected by their price competitiveness and the dynamics of their economic and financial environment – in this case, using domestic credit growth as an example.[32]

… verifies diminishing persistence of exogenous disruptions

The changeover to monetary union itself, however, also apparently seems to have played a role of some import. For instance, the estimation results indicate that the persistence of current account positions has diminished since the introduction of the euro. The improved absorption of exogenous disruptions could be a sign that monetary union has noticeably fostered the integration of the goods and financial markets.

Private credit growth more important, price competitiveness less so

The increased (relative) influence of private credit growth on the development of net exports of goods and services also points in this direction. One possible explanation is that access to foreign sources of financing to satisfy the domestic appetite for capital has been made easier by the single currency. By contrast, the long-term impact of price competitiveness on the balance of trade, although still significant, has diminished perceptibly. This is consistent with the conclusion reached by other studies that price competitiveness

31 The Eurosystem's Inflation Persistence Network has analysed inflation persistence in the euro area. The extent and spread of inflation persistence in the euro area is studied in, for instance, G Gadzinski and F Orlandi (2004), Inflation persistence in the European Union, the euro area, and the United States, ECB Working Paper No 414.

32 Luxembourg has a special position because of its function as a financial centre. It is not always possible to examine the balance of payments data for Luxembourg and Belgium separately for the period prior to 1999 because a large percentage of the externally relevant data are available only for the two countries together. The analysis thus focuses on the other ten euro-area countries which were already members of the monetary union before 2007.

Determinants of current account developments in the euro-area countries

In the following, an econometric approach is used to examine the influence of several different variables on the ratio of national net exports of goods and services to gross domestic product (NEXGDP). This ratio is a good barometer of the general trends in the individual euro-area countries' current account developments and may be expected to correlate closely with competitiveness. The analysis covers ten euro-area countries[1] over the 1980-2005 observation period and uses annual data.[2]

LNPC denotes the logarithm of the indicator of price competitiveness relative to 19 industrial countries based on consumer prices.[3] The index describes relative price developments between home and abroad, converted to a single currency and normalised to the long-term average. A deterioration in price competitiveness is likely to result in a decline in exports and a rise in imports, thus causing the net export ratio to tend to fall.

The regressions likewise clearly show how dependent net exports are on the financing terms for private investment and consumption. The growth rate of credit to the private sector (CRDGRT) proved to be significant in the estimations. It reflects the dynamics of economic growth and financing terms. Since an economic upswing is generally associated with greater investment, an increased demand for imports and a growing appetite for capital, its impact on net exports can be expected to be negative.[4]

In a first step, all variables were tested for the existence of a unit root. NEXGDP and CRDGRT turned out to be stationary, whereas, according to the tests used, the time series of the price competitiveness indicator is integrated of order one.[5] The variable LNPC therefore enters into the equation in first differences. Moreover, the estimations point firmly to lagged effects and so the results in the table below are based on the previous year's values of the explanatory variables. The equation used can be interpreted as a reduced form.

The panel estimations were conducted using the Arellano-Bond GMM technique.[6] The table presents not only an estimation covering the entire period but also separate results for the period before the third stage of European monetary union (1980-1998) and the years since the introduction of the euro (1999-2005).[7]

In the three estimations, all variables enter into the equation with the expected sign and are significant at least at the 5% level. A (more rapid) improvement in price competitiveness (a decline in Δ LNPC) will tend to stimulate net exports.[10] By contrast,

1 Countries belonging to the euro area on 31 December 2006 excluding Belgium and Luxembourg which, owing to their historic economic union, have not been included in the study. — **2** The indicators of price competitiveness have been calculated by the Bundesbank; the other data are derived from the International Financial Statistics of the International Monetary Fund (IMF). — **3** The reason for choosing consumer prices as a base was that a comprehensive array of appropriate competitiveness indicators are available, thus ensuring comparability between the countries and between different methods of calculation (see below). Economically speaking, however, deflators of total sales are fundamentally preferred. — **4** Private lending represents a link between the real economy and the financial sector and is therefore related to all subcomponents of the balance of payments. In the literature, credit growth is often used as an indicator of economic momentum. — **5** The tests used here were the panel unit root tests according to K S Im, M H Pesaran and Y Shin (2003), Testing for unit roots in heterogeneous panels, Journal of Econometrics, Vol 115, pp 53-74, and M Demetrescu, U Hassler and A-I Tarcolea (2006), Combining significance of correlated statistics with application to panel data, Oxford Bulletin of Economics and Statistics, Vol 68, pp 647-663. The existence of a unit root in the price competitiveness indicators is a subject of dispute in the literature (see footnote 18 on page 43). The lack of evidence for the relative purchasing power parity theory for the sample tested here is probably linked with the heterogeneity of the countries in the study and the associated convergence (or divergence) processes. — **6** M Arellano and S R Bond (1991), Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations, Review of Economic Studies, Vol 58, pp 277-297. The second and third lags of NEXGDP were used as dynamic instruments. The lagged first differences of CRDGRT and LNPC

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strong growth of lending to the private sector is reflected in a decline in net exports relative to GDP.

Particularly in the years before the beginning of the third stage of monetary union, the individual euro-area countries' current account positions showed a rather high degree of persistence. All other influences being neutral, a current account deficit, once it had developed, was reduced by only around one-quarter of its value annually. The medium to long-term impact of credit growth and price competitiveness was accordingly much greater than the short-run effects shown in the table.[11]

Potential deviations from the long-term equilibrium have been eliminated much more quickly since the introduction of the euro, as shown by the smaller coefficient for $NEXGDP_{t-1}$. At the same time, the (relative) significance of financing terms has grown. By contrast, the long-term impact of price competitiveness on the balance of trade – despite a slight increase in the short-term coefficient – has dropped off.[12]

The estimates were also performed using the alternative indicators of price competitiveness introduced in the text. The deviations from the variables calculated according to both absolute purchasing power parity theory and the productivity approach were used. The three methodologically different measurement approaches were each calculated relative to a broader group of 19 industrial countries and in a direct comparison with the 11 other euro-area countries (excluding Slovenia).

The coefficients calculated in the various estimations are similar to the ones presented in the table. Adjustment for productivity differences led to only minute changes in the estimated parameters.[13] Moreover, the broader indicator vis-à-vis 19 industrial countries often did not have a stronger impact on net exports than the narrower indicator vis-à-vis the other 11 euro-area countries. Especially since the introduction of the euro, the price competitiveness trend within the euro area actually seems, in some cases, to be more important for foreign trade than changes in price competitiveness relative to 19 industrial countries.[14]

Determinants of NEXGDP in a panel of 10 euro-area countries[8]

Item	1980-2005	1980-1998	1999-2005
$NEXGDP_{t-1}$	0.765	0.768	0.241
	(13.44)	(15.50)	(3.24)
Δ $LNPC_{t-1}$	– 0.100	– 0.104	– 0.129
	(– 3.23)	(– 3.05)	(– 7.88)
$CRDGRT_{t-1}$	– 0.063	– 0.040	– 0.110
	(– 2.61)	(– 2.11)	(– 3.56)
J-statistic[9]	8.628	8.287	9.618

were used as additional instruments. — **7** An estimation covering the entire period with country-specific dummies for the period since the introduction of the euro showed a significant influence of monetary union on the net exports of Austria, Greece, the Netherlands and Spain at the 5% level. A Wald test for the overall significance of the country dummies likewise confirmed the existence of a structural break. The Sargan test (J-statistic) for the correct specification of the instruments is not rejected for any of the estimations, although the Jarque-Bera test rejects the null hypothesis of normally distributed residuals. — **8** t-values in parentheses. — **9** With 7 overidentifying restrictions. — **10** Since LNPC was tested as I(1) and NEXGDP as I(0), changes to LNPC in themselves do not permit any definite conclusions regarding changes in competitiveness. The interpretation here therefore takes into account the fact that – at least some – euro-area member countries have in the past shown trend-like changes in the level of this indicator that did not necessarily reflect a change in their competitive position. — **11** The long-term coefficients result from the steady-state assumption where $NEXGDP_t=NEXGDP_{t-1}$. A one-percentage-point acceleration in credit growth accordingly reduced the net exports to GDP ratio by around 0.17 percentage point over the long term. A sustained one-percentage-point decline in Δ LNPC, however, caused net exports to increase by nearly 0.45% of GDP. — **12** Owing to the lower persistence, the calculated semi-elasticity value falls to 0.17. However, the long-term effect of credit growth remains largely unchanged. — **13** However, the coefficients lose some of their significance in some cases. With the exception of the coefficient for CRDGRT in the period before the introduction of the euro, however, at least the 10% level is maintained. — **14** As described above, the long-term coefficients of price competitiveness have fallen since the beginning of monetary union.

has become a much less influential factor for German exports over the past few years.[33]

Nominal exchange rate fluctuations absorbed in part by adjusting profit margins

Moreover, a comparison of the indicators presented in the foregoing clearly shows that price competitiveness vis-à-vis non-euro-area countries in particular has become less important with regard to net exports. By contrast, the sensitivity of net exports to relative price changes vis-à-vis the other euro-area partners has dropped less sharply since the beginning of the third stage of monetary union. This indicates, for one thing, that nominal exchange rate fluctuations are reflected to only a limited extent in the foreign trade relationships of the group of countries studied and are partly absorbed by the profit margins.[34] For another, this observation lends support to the assumption that the euro-area countries also compete with one another in third markets and that their intra-group price competitiveness has a greater impact on their export developments than the intra-trade share of total trade initially suggested.

Growing current account positions caused not merely by real economic convergence

Lastly, the estimations have proven to be robust to the choice of method for measuring price competitiveness. A rise or fall in the productivity differences-adjusted indicator is reflected in net exports in a manner similar to changes in unadjusted indicators. This leads to the conclusion that the growing current account positions cannot be interpreted solely as a side effect of a real economic convergence process in Europe.

Concluding remarks

Inflation differentials and current account positions in the euro area: summary of results

In summary, it can be noted that the current account positions within the European monetary union are only partly attributable to differences in the economic momentum between the deficit and the surplus countries. Price competitiveness developments also play an important role.

Changes in the price competitiveness of individual euro-area countries, however, are not so easy to assess clearly in economic terms. Although the different indicators usually reach a relatively uniform assessment of the underlying trends, two of the concepts used (the absolute purchasing power parity theory and the productivity approach) indicate that the changes in price competitiveness between the euro-area countries since the beginning of the third stage of monetary union have been reducing previous disparities and, to that extent, are contributing to a convergence of price competitiveness positions within the euro area. However, according to the third indicator – based on the relative purchasing power parity theory – the individual euro-area countries' levels of price competi-

33 See, for instance, K Stahn (2006), Has the impact of key determinants of German exports changed? Results from estimations of Germany's intra euro-area and extra euro-area exports, Research Centre, Deutsche Bundesbank, Discussion Paper, Series 1, Economic studies, No 07/2006. Stahn notes a structural break upon German reunification which has caused the importance of price competitiveness to dwindle significantly. This can be explained, among other things, by a change in German enterprises' price-setting behaviour.

34 This result is consistent with the literature on exchange rate pass-through. See especially K Stahn (2006), Has the export pricing behaviour of German enterprises changed? Empirical evidence from German sectoral export prices, Research Centre, Deutsche Bundesbank, Discussion Paper, Series 1, Economic studies, No 37/2006.

tiveness have been increasingly growing apart. At least for Germany, this indicator has, in the past, been largely consistent with its export developments.

Additionally, the estimations of the determinants of the euro-area countries' net exports provide evidence that the individual member states' current account positions seem to be shifting more than could be expected within the framework of a real economic catching-up process. Against this background, the possibility that, for instance, labour market rigidities could also have led to losses of price competitiveness or to a worsening of individual countries' current account positions cannot be ruled out. [35]

Monetary union itself could have played a role in the widening of national current account positions observed over the past few years insofar as increased economic integration has made it easier to obtain access to foreign funding in order to satisfy the national appetite for capital and has provided additional incentives for cross-border investment. This tends to increase existing surpluses or deficits. At the same time, however, greater international integration can also help to reduce existing balances if the original motivation for capital movements is no longer given.

Monetary union facilitates access to foreign sources of funding

35 See European Commission (2006), Focus: Widening current account differences within the euro area – achievements and remaining challenges, Quarterly Report on the Euro Area, Vol 5, No 4, pp 25-37, and OECD (2007), Going for growth, Paris.