

COMPETITIVENESS AND THE EXPORT PERFORMANCE OF THE EURO AREA

The euro area is a relatively open economy and export performance represents an important element of its real sector. From a long-term perspective, what is now the euro area has fared somewhat better than most other large economies in the world in terms of maintaining its export market share since the early 1990s. In the more recent period starting with the introduction of the euro in 1999, the euro experienced a depreciation until 2001 and an appreciation between 2002 and 2004, reaching roughly the same level at the end of 2005 as at the beginning of 1999, in both nominal and real terms. As expected, the depreciation episode was associated with gains for the euro area in terms of both price competitiveness and export market share, and the appreciation episode with losses in competitiveness and market share. So far, the effect of the appreciation has been partly attenuated by the pricing behaviour of euro area exporters, which lowered their prices (in euro) in an effort to partly offset the impact of the exchange rate appreciation. The loss in price competitiveness also reflected, among other things, different trends in labour costs and was thus not spread equally across euro area countries, which partly explains the diverse developments in export performance observed at the country level. Other factors also seem to influence export performance, although their effects are more difficult to measure. These relate, in particular, to technological competitiveness and foreign direct investment - two factors that can broadly be referred to as indicators of non-price competitiveness – and to the sectoral composition of foreign demand.

I INTRODUCTION

The euro area is a relatively open economy: extra-euro area exports of goods and services amount to around 20% of euro area GDP, which is significantly higher than the corresponding figure for the United States (10%) and Japan (14%). Consequently, export performance constitutes an important element of the euro area's real sector.

An analysis of the determinants of export performance therefore sheds light on past and future developments in the real economic activity of the euro area. Price competitiveness, defined as the relative price of euro area exports in foreign markets, is one of the most important determinants: all other things being equal, the demand for euro area exports is a decreasing function of euro area export prices in foreign currency, relative to competitors' prices. For instance, the nominal effective exchange rate depreciation of the euro between 1999 and 2001 had a favourable impact on the euro area's export market share in real terms, whereas the subsequent appreciation, from 2002 onwards, has been associated with a decline in the euro area's export market share. However, other factors related to the sectoral composition of exports and to non-price competitiveness – in particular technological competitiveness and foreign direct investment (FDI) abroad – may also play a role.

The purpose of this article is to investigate the link between export performance competitiveness in the euro area over the past 10 to 15 years.² All data related to the euro area in this article, including data prior to the introduction of the euro in 1999, refer to the 12 countries which have adopted the euro as the single currency. The article describes developments since 1992, in so far as data are available, focusing particularly on the period starting in 1999. Section 2 reviews the key definitions of export performance and presents selected stylised facts, while Section 3 looks at the different measures of price competitiveness and how they relate to market share developments. Section 3 also takes a disaggregated approach and provides breakdown of euro area exports by trading

- 1 Unless otherwise indicated, euro area exports refer here to extraeuro area exports, i.e. exports from euro area countries to countries outside the euro area. Trade among euro area countries is referred to as intra-euro area trade.
- 2 This article draws partly on ECB Occasional Paper No 30 entitled "Competitiveness and the export performance of the euro area", June 2005.

partner and by individual euro area country. Section 4 examines the role of the sectoral composition of exports and foreign demand and the role of non-price competitiveness factors, and Section 5 concludes.

2 MEASURING EXPORT PERFORMANCE

To fully understand the impact of competitiveness on export performance, a number of measurement issues must be resolved: first, in relation to exports or export market shares, and second, in relation to the definition of variables in volume or value terms. To start with, it is necessary to distinguish between exports and export market shares, the latter being defined as exports divided by foreign demand.³ Robust growth in exports may not reflect a gain in competitiveness and may simply result from strong world demand. That is why this article focuses on market share developments.

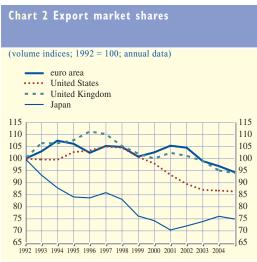
The measurement of export market shares may lead to different conclusions depending on whether trade flows are defined in value or in volume terms.⁴ In particular, developments in export market shares expressed in value terms

partly reflect variations in the exchange rate of the euro against other currencies and therefore may not correspond entirely to real changes. In order to improve the understanding of real economic activity, the use of export market shares in volume terms is therefore preferable.

Three main conclusions can be derived from developments in export market shares. First, the export market share of the euro area has declined slightly since 1992 (see Chart 1). Between the beginning of 1992 and the end of 2005, euro area foreign demand increased by around 130%, and euro area exports rose slightly less, by around 120%. This development in itself should not be surprising: some decline in the export market share of developed economies is to be expected as emerging economies catch up. In turn, this can be explained by the fact that more countries have opened up to free trade (for instance, by joining the World Trade Organization). China, for example, has emerged as a major player in world markets, its share of

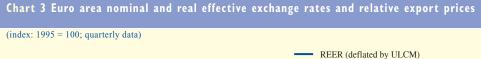
- 3 Foreign demand is a weighted average of the real imports of the euro area's main trading partners, the weights reflecting the share of these countries in extra-euro area exports.
- 4 See Box 1 of ECB Occasional Paper No 30, June 2005, for a comprehensive review of market share concepts.





Source: ECB calculations based on IMF and Eurostat data. Note: For the United States, the United Kingdom and Japan, the chart is based on national accounts data (goods and services), whereas for the euro area it is based on external trade statistics (goods). Foreign demand corresponds to a weighted sum of foreign import volumes.

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Source: ECB calculations based on IMF and Eurostat data.

Note: REER refers to the real effective exchange rate; it is calculated using different deflators, indicated in brackets. Relative export prices are defined as competitors' export prices divided by euro area export prices. Increases in relative export prices and in the exchange rate (both nominal and real) imply an improvement in euro area competitiveness. Competitors' and euro area export prices are measured here in euro (competitors' prices, originally expressed in foreign currency, were converted to euro and aggregated using the same weights as the effective exchange rate). The charts start at 1995, as some of the data for the calculation of the REER are missing for the period 1992-94.

world exports increasing from 2.3% in 1995 to 6.6% in 2005, in line with its economic development and closer integration into world markets. Chart 1 suggests that foreign demand is a key determinant of export volumes. In particular, it seems that euro area exports were affected by the slowdown in foreign demand recorded in 2001, but that they have benefited from the strong demand registered since the second half of 2002.

Second, the decline in the export market share of the euro area over the sample period has been smaller than that of the United States and Japan (see Chart 2). The euro area's market share actually remained roughly constant – with some short-term fluctuations - until 2002, before declining. By contrast, the United States and Japan, in particular, lost market share by a larger magnitude between 1992 and 2005. In the case of Japan, the relocation of production to other Asian countries, particularly China, may account for a large proportion of the recorded decline; indeed, Japan's share bottomed out in 2001, regaining ground thereafter. The market share of the United States increased slightly between 1992 and 1998. Thereafter it decreased (partly due to the US dollar appreciation that started in 1999) and stabilised in 2004 and 2005 following a protracted depreciation of the US dollar. In the case of the United Kingdom, a gain in market share was registered between 1992 and 1995, which was possibly attributable to the gain in price competitiveness resulting from the 1992 depreciation of the pound sterling. Since 1997 the United Kingdom has lost market share almost continuously.

Third, changes in the export market share of the euro area seem to broadly correspond to movements in the exchange rate (see Chart 3 for an overview of nominal and real exchange rate developments for the euro, and relative export prices). For instance, the depreciation of the effective exchange rate of the euro between 1999 and 2001 coincided with a gain in the euro area's market share in real terms. This can be explained by the fact that, all other things being equal, the price of euro area exports expressed in foreign currency tends to drop following a depreciation of the euro, which should lead to higher demand for euro area exports in foreign markets. The same mechanism has been working in reverse following the appreciation of the euro since 2002, which has coincided with a loss in the euro area's market share.

3 THE ROLE OF PRICE COMPETITIVENESS

Price competitiveness does not depend on the change in euro area prices per se, but on how euro area prices compare with the prices of goods produced in other countries. Thus, to capture the role of price competitiveness, it is necessary to distinguish between nominal and real effective exchange rate changes. This section describes the relationship between price competitiveness and export performance for the euro area.

REAL EFFECTIVE EXCHANGE RATE INDICATORS

The real effective exchange rate corresponds to the nominal effective exchange rate deflated by domestic and foreign prices. In this regard, both domestic and foreign prices tend to react to nominal exchange rate changes: when the euro appreciates in nominal terms, euro area exporters generally lower their export prices in euro terms by decreasing their profit margins in an effort to partly offset the loss in price competitiveness resulting from the nominal appreciation. Consequently, the price of euro area exports in foreign currency increases by less than the amount of the nominal appreciation.6 In turn, the domestic prices of foreign partner countries generally increase following an appreciation of the euro: the depreciation of their own currency implies a rise in their import prices (in local currency terms), which is ultimately passed through, at least in part, to consumer prices. Given that prices tend to be sticky in the short term, the change in export prices in euro terms is not immediate, but rather spread over time.

The real effective exchange rate is also influenced by domestic factors. For example, a rise in domestic costs mechanically reduces the competitiveness of euro area exported goods, unless it is counterbalanced by a reduction in the profit margins of euro area exporters. Similarly, changes in domestic prices abroad modify the relative prices of euro area exports independently of changes in the nominal exchange rate.

Various measures of the real effective exchange rate have been developed, using different deflators (see Chart 3). The deflators used to calculate the real effective exchange rate include consumer prices, producer prices, unit labour costs in the manufacturing sector, and the GDP deflator. Relative export prices can also be understood as a real effective exchange rate deflated by export prices.

Overall, the different measures of the real effective exchange rate tend to show strong comovement. However, relative export prices are much less volatile than the other measures. This is partly because, by definition, they include only traded goods, whereas the price indices used in the other real exchange rate measures include goods that are non-traded.

THE RELATIONSHIP BETWEEN PRICE COMPETITIVENESS AND EXPORT PERFORMANCE

Relative export prices seem to be a good indicator of euro area market share developments over the past decade (see Chart 4). It appears that there is a delay in the reaction of the export market share to changes in relative export prices. This may be due to the presence of market frictions: when a particular good becomes cheaper, it takes time for quantities to adjust. For example, the producers of a good for which demand increases need to boost production, which they can do only gradually, especially if they are already close to full capacity. In addition, in the presence of

- 5 As the focus here is on total euro area exports to all foreign markets rather than to one particular country only, the relevant concept is the effective, rather than the bilateral, exchange rate. The effective exchange rate is a weighted average of bilateral exchange rates across the euro area's trading partners. The weights reflect the importance of each partner country in euro area exports, as well as competition in third markets. For further information, see ECB Occasional Paper No 2 entitled "The effective exchange rates of the euro". February 2002.
- 6 For further details of the mechanisms and magnitudes of the exchange rate pass-through to euro area export prices, see Table 6 in ECB Occasional Paper No 12, April 2004. Another reason why nominal and real exchange rates differ is the reaction of the nominal exchange rate to changes in domestic or foreign prices, if purchasing power parity holds. See also the article entitled "Developments in the euro area's international cost and price competitiveness" in the August 2003 issue of the Monthly Bulletin.

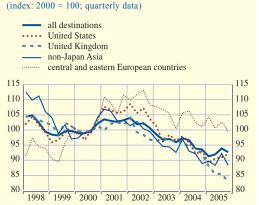
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Source: ECB calculations based on IMF and Eurostat data. Note: Relative export prices are defined as competitors' export prices (converted to euro) divided by euro area export prices. An increase in relative export prices implies an improvement in competitiveness.





Sources: Eurostat and ECB data

switching costs (defined as the cost of shifting from one product to another), ⁷ the price difference may need to persist for some time before triggering a shift in demand.

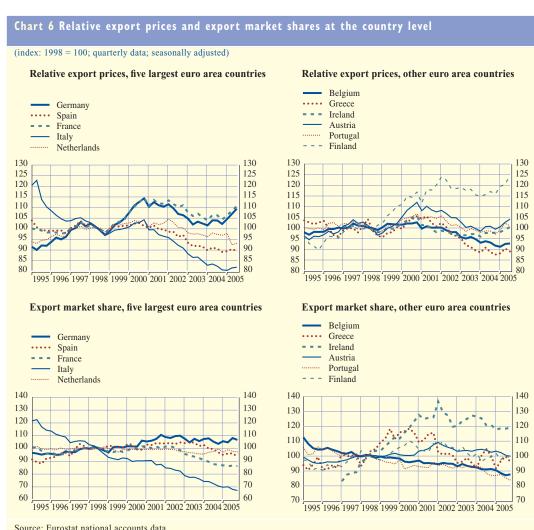
A few episodes highlight the nature of the relationship between relative export prices and export performance. To focus on two recent periods, the initial depreciation of the euro between 1999 and 2001 can be associated with the rise in market share in 2000; the share remained at this higher level for more than a year. The subsequent appreciation of the euro, starting in 2002, was associated with a decline in market share from 2003 onwards. Of course, it is difficult to disentangle the effect of relative export prices from that of other factors that may have been at play at the same time. As already mentioned, the rapid increase in China's trade flows, which have actually been accelerating since the late 1990s, as well as the integration of the new EU Member States into world markets, may also have played a role in the euro area's loss of market share between 2002 and 2005. Overall, available evidence indicates a strong correlation between relative export prices and the euro area's real export market share, suggesting that the link between these

two variables is relatively robust, although the quantification of that link may not be unambiguous.

Taking a more disaggregated approach, euro area export volumes to key trading partners are partly related to price competitiveness vis-à-vis those destinations (see Chart 5). For instance, the fact that the euro area's loss of market share to "all destinations" between 2002 and 2005 was smaller than that in the United States can be partly explained by relative developments in the bilateral exchange rates. In particular, the appreciation of the euro between 2002 and 2004 was stronger against the US dollar (nearly 39%) than in effective terms (less than 19%)8 and therefore triggered a greater loss in competitiveness against the United States. However, factors other than price competitiveness also influence developments in bilateral market

⁷ Switching costs can arise for a variety of reasons. For example, it may be costly for a factory using machines to switch to a different brand, as workers need to be trained to use the new machinery.

⁸ These figures refer to the comparison of the average value of the euro in 2005 with the average value in 2001.



Notes: An increase in relative export prices implies an improvement in competitiveness. Last observation refers to the fourth quarter of 2005. At the country level, exports refer to intra- and extra-euro area exports.

shares. For instance, developments in the euro area market share in central and eastern European countries (CEECs) may be related to FDI activities in these countries (euro area firms investing in CEECs may export more to these countries if FDI and exports are complements; see the box for further details).

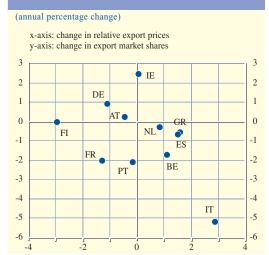
Developments in relative export prices clearly also have an effect on the export performance of the individual euro area countries⁹ (see Chart 6). Developments in price competitiveness between 1995 and 2005 indicate that, for some countries, the loss in price competitiveness was substantial, especially for Belgium, Greece,

Spain and Italy. By contrast, the gain in price competitiveness was strong for Germany, France, Austria and Finland, while the other countries (Ireland, the Netherlands and Portugal) did not record a substantial change either way. Such developments could explain why Italy and Belgium, for instance, lost market share, while Germany gained market share over this period. However, other factors may have played a role and it needs to be kept in mind that these data do not take into account the initial level of the

⁹ At the country level, the focus is on total exports (both intra- and extra-euro area exports), whereas for the euro area as an aggregate, the focus is on extra-euro area exports only.

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Chart 7 Relative export prices and export market shares across euro area countries



Source: ECB calculations based on Eurostat data Note: The data show average annual rates of change for the period 1998-2005. Relative export prices correspond to country export prices divided by competitors' export prices. An increase in relative export prices implies a fall in competitiveness.

relative prices. Focusing on the period following the introduction of the euro (for which nominal effective exchange rate changes were broadly similar across countries¹⁰), there appears to be a correlation between relative export prices and export performance at the euro area country level, although it is not particularly strong, also suggesting that other determinants influence export performance at the country level (see Chart 7).

THE ROLE OF THE SECTORAL COMPOSITION OF DEMAND AND OF NON-PRICE **COMPETITIVENESS**

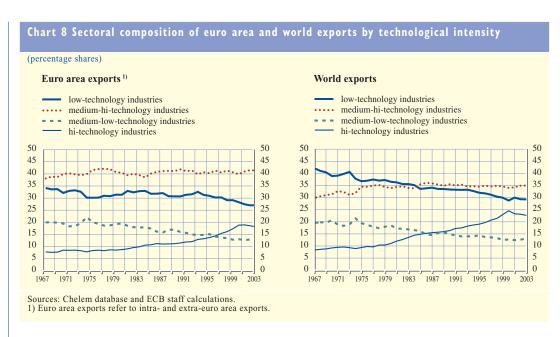
While the above analysis focused on price competitiveness, other factors also play a role in explaining export performance, although they are more difficult to measure. The aim of this section is to highlight the role of such factors, focusing in particular on the role of the sectoral composition of demand, as well as on factors that can broadly be referred to as indicators of non-price competitiveness. Although the concept of non-price competitiveness covers many issues, this section will focus on two major

elements: technological competitiveness (proxied by, for example, patenting activity or spending on research and development) and the role of FDI.

THE ROLE OF THE SECTORAL COMPOSITION OF **DEMAND**

Although looking at total trade yields important insights into the evolution of exports, it does not take into account an important aspect of world trade related to the changing sectoral composition of trade flows (see Chart 8). Disaggregated databases show, in particular, that the sectoral composition of euro area exports differs substantially from the composition of world exports. Overall, euro area exports tend to be less intensive than world exports in key categories that can be classified as "hi-tech" goods.11,12 By contrast, euro area exports are more intensive in several goods usually classified as "medium-hi-tech" goods.¹³ World exports appear to have been increasingly concentrated in the share of the hitech industries (from less than 10% in the 1960s to nearly 25% in 2003), although the share of these goods ceased to increase in 2001. The main counterpart of the rise in the share of hi-tech goods was a fall in the shares of low and medium-low-tech goods (from more than 40% to around 30% and from 20% to less than 15% respectively). Meanwhile, the share of mediumhi-tech goods rose by 5 percentage points in the mid-1970s and since then has remained broadly unchanged at 35%.

- 10 Except for Greece, which joined in 2001.
- 11 Like any classification, the classification of exported goods into categories reflecting their technological intensity is somewhat arbitrary. For instance, some tasks performed during the production process of an electronic good can have a low technological content, whereas some parts of the production of goods commonly classified as "low-tech", such as textiles, can be of an inherently "hi-tech" nature. However, the aim here is just to illustrate the difference between the composition of euro area exports and the composition of world demand.
- 12 The category "hi-tech goods" includes in particular "aircraft and spacecraft", "office and computing machinery", as well as 'electronics and communication equipment".
- 13 The category "medium-hi-tech" covers such items as "motor vehicles, railroad and transport equipment", "chemicals excluding pharmaceuticals" and "machinery and equipment".



Accordingly, the reaction of euro area exports to a rise in world demand can differ depending on the sectoral composition of the increase. If demand grows for goods in which the euro area specialises, it is more likely that the volume of euro area exported goods will increase to meet this rising demand than if demand rises for goods for which the euro area is not so well positioned. An empirical analysis of the euro area market share for the period 1985-2001¹⁴ shows that the euro area's specialisation in medium-tech products helped to support export performance, as world demand in medium-tech sectors maintained a robust pace of growth over this period. However, the euro area was unable

to capitalise fully on the relatively faster growth of world export demand in the hi-tech sectors over much of the sample period, as hi-tech products represent a smaller share of euro area exports relative to world exports. At the same time, euro area exporters benefited from being less exposed to the volatility of the hi-tech sector associated with the boom and bust related to information and communication technology (ICT) that took place in the second half of the 1990s and early 2000s.

14 For full details of the constant market share analysis, see Section 2 of ECB Occasional Paper No 30, June 2005.

Box

THE ROLE OF NON-PRICE COMPETITIVENESS

This box discusses the role of two factors – technological advances and foreign direct investment (FDI) – that may affect export performance and that can broadly be described as indicators of non-price competitiveness.

Technological advances

Although price competitiveness is a key factor behind export performance, technological competitiveness – driven by the capacity to innovate and serve fast-growing sectors of world demand, as well as to increase efficiency and reduce costs – may also be an important element

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influencing export performance, especially in the longer run. Despite the difficulty in measuring the ability to innovate, several proxies have been used, such as the intensity of patenting activity. A comparison with other large industrialised economies indicates that the euro area has been lagging behind its competitors in this respect since the mid-1990s. Although the link between patenting activity and export performance is difficult to estimate, this lag may have notable negative repercussions on euro area exports in the long run and calls for enhanced innovation efforts if the euro area is to keep up with its international competitors.

An additional indicator of technological advances is provided by R&D intensity, calculated as spending on research and development expressed as a percentage of value added in the manufacturing sector (see table). A comparison with other large developed economies reveals that the level of R&D intensity is lower for the euro area (5.8%) than for the United States (8.5%) and Japan (9.6%) (these figures refer to the average for 2000-01, as more recent data are not available on a consistent basis). The higher level in the United States and Japan is mostly attributable to R&D on hi-tech goods, although R&D spending on low and medium-tech goods is also slightly higher in these two countries. R&D spending in the hi-tech sector is particularly low in Germany, Italy and Spain. Meanwhile, according to this measure, there is substantial heterogeneity across the euro area countries in terms of their technological competitiveness, i.e. R&D intensity for Italy is one-third of that for Germany, which may explain some of the diversity in export performance among the euro area countries.

R&D intensity according to technological intensity

(percentages; 2000-2001 averages)

	Belgium	Germany	Spain	France	Italy	Netherlands
Low	1.9	0.8	0.6	1.0	0.2	1.2
Medium	9.5	12.6	3.0	11.0	4.2	7.7
High	20.2	11.1	6.6	17.5	10.4	24.2
Total	7.3	7.7	1.8	6.9	2.3	5.7
	Finland	Euro area	United Kingdom	United States	Japan	
Low	1.7	0.7	0.7	1.3	1.7	
Medium	8.4	9.9	12.4	10.6	11.3	
High	22.9	13.3	9.8	21.4	20.7	
Total	9.1	5.8	6.4	8.5	9.6	

Sources: OECD STAN and ANBERD databases (see ECB Occasional Paper No 30).

Notes: R&D intensity is calculated as spending on research and development expressed as a percentage of value added in the manufacturing sector. R&D data are missing for Greece, Luxembourg, Austria, Portugal and Ireland for some years. Accordingly, the R&D intensity for the euro area is proxied by a weighted average of the seven euro area countries in the table.

Foreign direct investment

The role of FDI has received increasing attention given the rise in cross-border FDI activity over the past 20 years. For instance, at the world level, the share of inward FDI as a percentage of GDP has roughly doubled in the past ten years, according to data from the United Nations Conference on Trade and Development. In the case of the ten new EU Member States, the

¹ See Chart 21 in Section 3 of ECB Occasional Paper No 30, June 2005.

increase has been even greater. The relationship between trade and FDI is complex, mostly because of the heterogeneous nature of FDI. The key issue is whether FDI is a complement to or a substitute for trade, which is important in the analysis of market shares: for instance, the loss in Japan's market share in the 1990s is largely related to the fact that Japanese firms relocated part of their production facilities to other countries, such as China. A loss or gain in export market share may therefore not necessarily be due to developments in price competitiveness.

One relevant distinction to make is that of vertical versus horizontal FDI. Multinational firms engaging in vertical FDI geographically divide the production process along the value-added chain; in other words, they outsource part of the production process to a foreign affiliate. Multinational firms engaging in horizontal FDI, by contrast, aim to replicate the entire production process in the host country. Vertical FDI is likely to have a positive effect on exports, as it increases trade between the parent company and its affiliate (for example, the parent company can export individual components to be assembled in the host country, the final good being subsequently imported back to the country of the multinational). In this case, FDI is a complement to, rather than a substitute for, exports. However, if the final good is re-exported to a third market (instead of being entirely produced in the home country of the multinational firm and exported to the destination market), then FDI can reduce exports. By contrast, horizontal FDI is more likely to have a negative direct effect on exports. If a multinational invests in a foreign country to serve the local market, then FDI is clearly a substitute for trade in the short term.

However, the impact of FDI is also influenced by other factors. For instance, one of the motives of horizontal FDI activities is to acquire technology, in which case FDI may improve technological competitiveness and stimulate exports in the longer run. Generally, FDI flows aim to increase efficiency and reduce costs, which in turn is likely to have a positive effect on export performance and economic development. Accordingly, the acquisition of technology via M&A activities may compensate somewhat for weak euro area performance in terms of technological competitiveness, as measured by patenting activity and R&D. However, vertical FDI and the associated relocation of production to the new EU Member States has entailed a regional shift in trade patterns away from some euro area countries, while increasing the competitiveness of the parent firms (primarily German).²

2 This hypothesis seems to be supported by some recent empirical work based on firm-level data which shows that German outward FDI to eastern European countries has increased German imports from those countries as well as enhancing German exports to those destinations (see Box 7 of ECB Occasional Paper No 30).

5 CONCLUSION

This article has reviewed the main determinants of the export performance of the euro area and has shown that, particularly in comparison with its major competitors, the euro area's export performance has been fairly resilient since 1992. In recent years, the euro's depreciation between 1999 and 2001 was associated with a gain in market share, and its subsequent appreciation was associated with a loss. Overall, price competitiveness – as measured by real

exchange rate indicators and, in particular, by relative export prices – appears to have had a large impact on the export market share. It seems to explain a large part of the evolution of export market share at the euro area aggregate level, as well as developments in bilateral exports and in the export performance of the individual euro area countries.

In addition, other factors related to non-price competitiveness influence export performance, although their effects are more difficult to

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measure. In particular, the ability of euro area firms to innovate appears to play an important role, as does FDI and the sectoral composition of world demand. Accordingly, further structural reforms in the labour and product markets of the euro area countries are necessary in order to cope with the challenges arising from globalisation and to speed up the adjustment process, thereby enhancing the ability of euro area firms to innovate and to move flexibly towards expanding sectors, as well as helping to contain cost pressures and improve competitiveness.