

## German foreign direct investment (FDI) relationships: recent trends and macroeconomic effects

Since the beginning of the 1990s, the German economy's international capital links have increased sharply. While German outward FDI stocks have risen sharply (sixfold), inward FDI has also gone up markedly in this period (fourfold). Against the backdrop of comparatively subdued investment activity in recent years and employment problems in Germany, this raises the question of what impact outward FDI by German firms will have on Germany.

The empirical studies presented here come to the conclusion that outward FDI by German enterprises will not have a detrimental effect on investment in Germany over the long term. In macroeconomic terms, the increase in employment at foreign subsidiaries does not mean a loss of jobs in Germany, either. It would appear that the increased foreign presence has made the German economy more competitive overall. Finally, it is evident that the high level of German FDI in the new EU member states has resulted in changes in trade relations with the old EU member states.

### Development and structure of German enterprises' international capital links

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The German economy's international capital links have continued to grow in the past few years, though no longer as rapidly as at the end of the previous decade. All the same,

*Continued  
increase in  
international  
capital links*

German enterprises have invested around €134½ billion abroad since 2001, €26½ billion of it in the first half of 2006 alone. At the same time, foreign parent companies have poured €132½ billion into their German subsidiaries in the past 5½ years (€6 billion in the first half of 2006).

*Different forms of provision of capital*

Essentially, cross-border FDI flows involve using equity capital to set up and expand subsidiaries or for mergers and acquisitions. At times, however, reinvested earnings, as well as the provision of credit (which, as a substitute for capital, likewise counts as direct investment), were also important factors.<sup>1</sup> The form of financing chosen by the investing enterprise depends on various factors: not only the performance of parent companies and subsidiaries and the financing conditions in the financial markets but also tax considerations are often significant.<sup>2</sup>

*FDI stocks up sharply*

The FDI stock statistics, in an even more marked fashion than the flow statistics (which are reported in the German balance of payments), show how German enterprises' international capital links have developed in recent years. The particular advantage of using stock statistics is that, in addition to direct (or primary) participating interests, they include indirect (or secondary) participating interests, often realised via holding companies.

German FDI assets<sup>3</sup> (data are currently available up to and including 2004) most recently amounted to €677 billion. Conversely, €345 billion of foreign funds was invested in subsidiaries of foreign-owned companies in Ger-

### Composition of FDI flows

€ bn; net capital exports: -

	1991-1995	1996-2000	2001-2005	2005 H1	2006 H1
German investment abroad	- 93.1	- 319.5	- 108.2	- 33.3	- 26.4
of which					
Equity	- 91.3	- 273.5	- 167.2	- 11.4	- 16.6
Reinvested earnings	- 1.0	- 4.8	21.5	- 4.5	- 4.9
Loans	- 0.8	- 41.2	37.5	- 17.4	- 4.9
Foreign investment in Germany	17.4	305.9	126.4	8.9	6.1
of which					
Equity	14.4	158.7	156.5	7.8	0.9
Reinvested earnings	- 12.0	- 20.9	- 24.2	1.7	2.7
Loans	14.9	168.1	- 5.9	- 0.6	2.5

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many. At the beginning of the 1990s, the corresponding figures were €116 billion and €85 billion, respectively. German enterprises, in particular, have since considerably strengthened their international orientation and set up production or distribution sites abroad, as well as taken over entire enterprises. Even if the momentum of growth has slowed following the bursting of the "new economy" bubble and the fall in share prices at the begin-

<sup>1</sup> FDI always includes long-term cross-border capital investment in combination with the possibility of influence. Under an operational form of this definition and in accordance with international requirements, an equity threshold of 10% of equity or voting rights is generally used.

<sup>2</sup> See also Deutsche Bundesbank (2004), New provision on corporate borrowing and its effect on direct investment, Monthly Report, March 2004, p 49.

<sup>3</sup> The data refer to the consolidated sum of primary FDI and secondary FDI held through dependent holding companies. The original investment in the holding company is factored out of the latter to avoid double counting.



ning of the millennium, the FDI flows described above indicate a continuation of the internationalisation trend in the corporate sector up to and into the current year.<sup>4</sup>

*Regional and ...*

Germany's FDI stocks<sup>5</sup> are essentially concentrated on Europe and North America. Just under half of the overall stocks are invested in the 14 other old EU countries alone, with a further 30% in the United States. The ten countries that joined the EU in 2004 now account for as much as 6%; at the beginning of the 1990s, before the markets in central and eastern Europe opened up following the fall of the Iron Curtain, they were virtually meaningless as destinations for German FDI. By contrast, emerging Asia has so far not been a significant target of German enterprises' FDI activities. In recent years, however, some

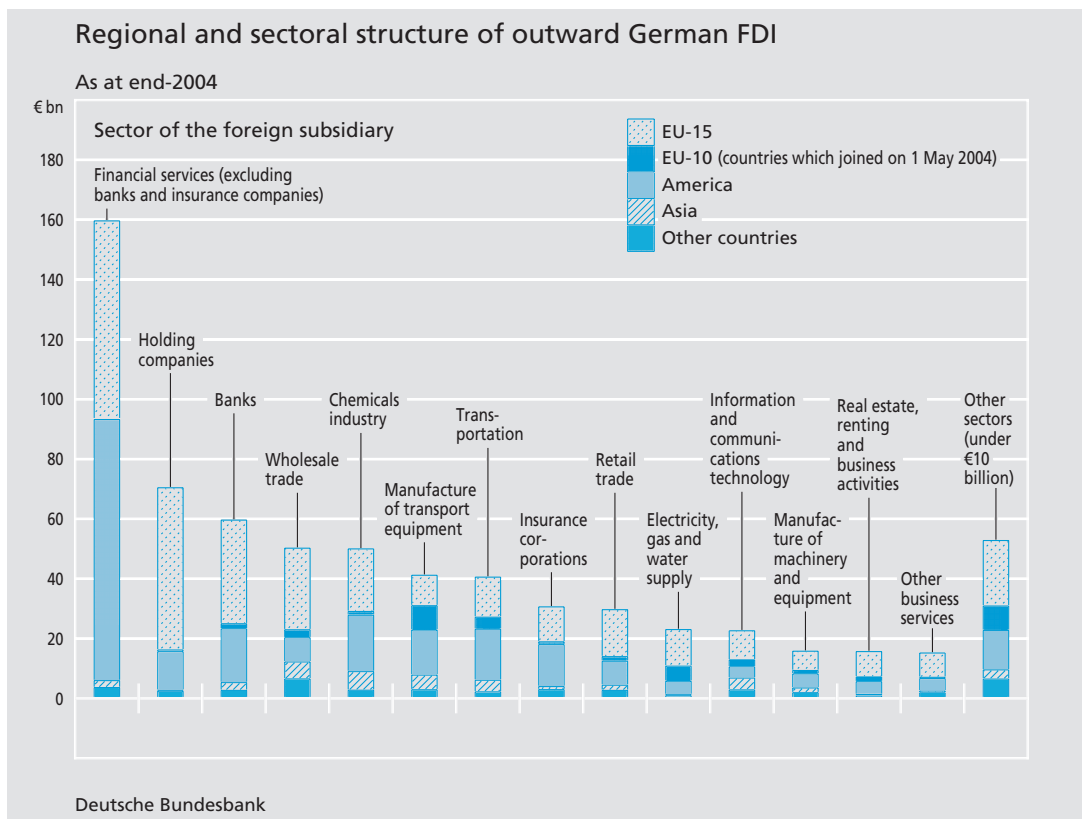
countries in the region have become preferred locations for new investment from Germany. For example, investment in the People's Republic of China increased tenfold between 1994 and 2004. At €8½ billion, it currently amounts to just over 1% of Germany's total FDI stocks.<sup>6</sup>

The dominance of the industrial countries – which account for 90% of German FDI – is even more discernible if one looks at FDI stocks held by foreigners in Germany: a total

<sup>4</sup> Differences between the changes in the stock data and the flows from the balance of payments (see table on p 44) are the result of different time definitions (financial year/calendar year) as well as valuation-related influences (including exchange-rate-related changes). Hence, stocks can fall even when flows are positive.

<sup>5</sup> The data refer to 2004.

<sup>6</sup> See also Deutsche Bundesbank, Germany's external relations with the People's Republic of China, Monthly Report, June 2005, pp 35-50.



97% of investment in Germany come from this group of countries, with the partner countries of the EU-15 (70%) and North America (15%) having the lion's share.

communication sector likewise played a key role. Manufacturing, led by the chemicals industry and the car sector, accounts for around 25%.

... sectoral structure of FDI

In the analysis of the sectoral structure, the advantage of German FDI stock data over transaction data is that secondary FDI is included in the statistics. In the case of dependent intermediary holding companies with participating interests subject to the reporting requirements, the investor's actual interest on which a direct investment is based can therefore be made visible in many cases.

In terms of amounts, German FDI activities are concentrated in the services sector (71%), mainly in the financial intermediation sector (37%). Both trade and the transportation and

With the increasing foreign presence of German firms, employment in direct investment enterprises has increased sharply. The number of persons employed in German-owned foreign subsidiaries has risen to some 4½ million in the past decade and a half, thereby almost doubling. Foreign employment peaked in 2002. According to the companies' data, the number of persons employed at foreign subsidiaries required to report has since fallen slightly, although this may also be due in part

Employment abroad

to statistical adjustments.<sup>7</sup> Staff numbers have therefore moved more or less in parallel with, but not quite at the same pace as, investment amounts. Differences are located mainly in the sectoral distribution. Whereas the vast majority of invested amounts is in the services sector, manufacturing accounts for the majority of persons in work (57%); of these, a large percentage are active in the manufacture of transport equipment (17%). This suggests that labour-intensive activities in these sectors are particularly important. This is more likely, however, to be a sector-specific phenomenon rather than a defining characteristic of FDI subsidiaries.

*Employment  
at domestic FDI  
enterprises*

In the German branches of foreign direct investors, changes in the number of persons employed were comparatively minor. For example, the figure stood at 2¼ million persons in 2004, only just under half a million above the figure for 1990. The sectoral structure of employment in domestic FDI enterprises is similar to that described above. Here, too, manufacturing (60%) dominates, with the manufacture of transport equipment (15%) accounting for the largest share.

### German outward FDI: effects on domestic investment and employment

*FDI in public  
debate*

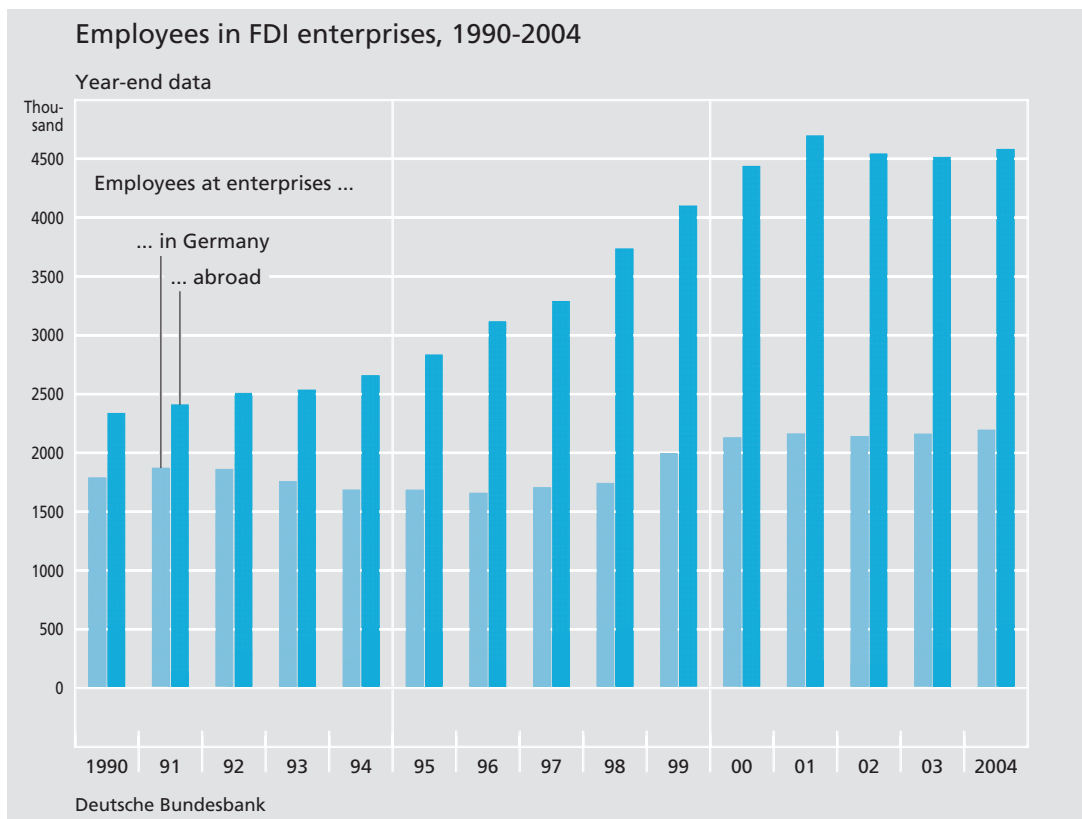
Against the backdrop of comparatively weak domestic investment activity in recent years and the problems in the domestic labour market, the high level of German FDI and the associated establishment of employment abroad have encountered some criticism from the public. This raises the question as to what

economic links exist between these phenomena at the macroeconomic level. In an initial step, a relationship can be created between FDI and employment in direct investment enterprises and the relevant domestic indicators to get an idea of the dimensions involved here. In doing so, however, it should not be overlooked that, precisely in the case of particularly high-value mergers and acquisitions, FDI is, initially, no more than the transfer of ownership, which is far different conceptually from domestic non-residential private fixed investments. Direct conclusions therefore cannot be drawn about implications for the real economy from the data on the size of the investment alone. That will be followed in a second step by an econometric analysis of the relationship.

In terms of domestic non-residential private fixed investments, the German inward and outward FDI flows are currently of fairly minor significance (both around 3% in 2005). Over a ten-year period (1996-2005), the share of German investment abroad was 9% and that of foreign investment in Germany 7½%. However, the higher figures can be attributed mainly to the boom of the last wave of mergers and acquisitions at the turn of the millennium, with some firms being noticeably overvalued. In terms of GDP, FDI made up less than 2% on an average of the last ten years

*Integration into  
the economic  
environment*

<sup>7</sup> In 2002, the reporting thresholds for cross-border capital investment were harmonised. The reporting threshold for majority stakes was raised to €3 million and, at the same time, that for minority stakes reduced to the same amount. This led to a fall in the number of units covered – and thereby also in the level of foreign employment covered. However, since predominantly smaller enterprises were affected, there was no impact on basic growth trends.



and, most recently, only about ½%. The relationships outlined suggest that the extent of FDI should not be assessed as exceptionally large. This is confirmed by an international comparison. In the ten-year period specified, Germany's share of the OECD countries' total outward FDI came to 7%, below Germany's share of the OECD countries' overall GDP, which amounted to just over 7½% in the same period.

*Econometric analysis*

Despite these caveats, a comparison of the sharp increase in German FDI (13% per year on average between 1996 and 2005 as a result of the acquisition of equity interests alone) with the developments in domestic non-residential private fixed investments, which declined slightly at the same time, could suggest a certain substitution effect.

However, an econometric study of this relationship fails to confirm this hypothesis. Instead, it appears that, in the long term, German foreign investment tends to benefit the investment of enterprises in Germany (see also the explanatory notes on p 50). According to the results of this study, the short-term effects of outward German FDI can be assessed as neutral. The overall weakness in investment in the period under review was evidently due to other factors, not least the structural problems of the German economy, as well as the decline in housing investment following the post-German reunification boom.

More difficult to judge is the significance of FDI for domestic employment. Overall, the number of employees in foreign subsidiaries

*Quantitative  
significance of  
FDI for  
domestic  
employment*

in Germany made up around 13% of domestic employees. In the manufacturing sector, foreign employment amounted to just over one-third of employment in this sector in Germany; the figure was approximately three-quarters in the chemicals industry and in the manufacture of transport equipment.<sup>8</sup>

Conversely, slightly more than 6% of all German employees were working at enterprises directly or indirectly held by foreigners in 2004. In the manufacturing sector, this share was around 18% of domestic employees, 28% of whom were in the chemicals industry and around one-third in the manufacture of transport equipment.

These data show, firstly, that FDI and employment in foreign-owned enterprises are not a one-way street, even though the level of employment at foreign branches of German firms is higher than at the branches of foreign enterprises in Germany. Secondly, a look at employment figures of individual sectors, such as the chemicals industry, shows just how different the level of cross-border integration can be.

*Motives for FDI*

It would be a mistake, however, to equate the above-mentioned rise in the number of employees in the foreign branches of German enterprises to a movement of jobs away from Germany. In the case of mergers and acquisitions, in particular, the increase in foreign employment (by the number of employees at an enterprise that has been taken over) does not allow any conclusions to be drawn regarding current or potential movements of jobs abroad. Although possible (long-term) effects

of such transactions on domestic employment cannot be ruled out, they take place only over time. The establishment of new manufacturing sites abroad, which is associated with a shift in production away from Germany, may be a different matter; however, the microeconomic and macroeconomic effects may likewise differ.

The crucial elements in assessing FDI and its effects on employment from a microeconomic point of view are the motives for deciding to engage in FDI. The academic literature differentiates between horizontal and vertical FDI. The latter includes a fragmentation of the production process and the spinning-off of parts of the production chain to foreign subsidiaries. Vertical FDI results, for example, from various factor endowments and factor costs of the countries and involves – for Germany, for example – the movement of production processes, most of which are labour-intensive, to lower-wage countries. The cost savings motive is regarded as the driving force behind vertical FDI.

In the case of horizontal FDI, the (end) product is produced in the potential distribution market. The primary purpose of horizontal FDI is to help obtain market access; as a rule, it takes place between countries with a very similar economic structure. It can be expected when proximity to buyers (in respect of transport costs, customs duties, hedging against exchange rate fluctuations or the circumvention of trade restrictions) is more important than the advantage of concentration at the

*Vertical and ...*

*... horizontal  
FDI*

<sup>8</sup> The criterion for these data is the sector to which the foreign subsidiary belongs.

## Foreign direct investment and domestic investment

It is occasionally assumed that investors decide between outward foreign direct investment (FDI) and domestic investment, thereby placing outward FDI and domestic investment in direct competition. If FDI abroad results in domestic investment projects being undertaken only to a limited extent or not undertaken at all, one could also indirectly infer potential effects on employment. There is a variety of opinions in the literature.

Feldstein (1995)<sup>1</sup> used data for selected OECD countries to calculate a negative relationship between outward FDI and domestic investment. Desai, Foley and Hines (2005)<sup>2</sup> confirm Feldstein's results, yet, in limiting the analysis to the United States and companies engaging in direct investment abroad, found a positive relationship.

Indeed, one may reasonably assume that more innovative and profitable companies will engage in FDI. This is consistent with recent theories concerning FDI decisions<sup>3</sup> and has also been confirmed by some empirical studies. The positive effect for multinationals described by Desai, Foley and Hines is therefore quite conceivable. Hence, the weak propensity of the other companies to invest is then more likely to be the result of their low profitability and not so much the fault of FDI activities.

Macroeconomically, however, both studies agree that domestic and foreign investment projects are substitutes and accordingly assume that outward FDI will tend to be associated with domestic job losses. An empirical study using exclusively German data has therefore been conducted to determine whether this also applies to Germany.

This econometric analysis seeks to calculate the extent to which a relationship exists between German outward FDI, inward FDI in Germany and German non-residential private fixed investments. The equation

$$\beta_1 \frac{PFI}{BIP} + \beta_2 \frac{FDI_{IN}}{BIP} + \beta_3 \frac{FDI_{OUT}}{BIP} + c = \varepsilon$$

is estimated as a vector error correction model (VECM).<sup>4</sup> *PFI* denotes non-residential private fixed investments, *FDI<sub>IN</sub>* and *FDI<sub>OUT</sub>* inward and outward FDI flows respectively, and *GDP* gross domestic product; *c* is a constant and  $\varepsilon$  is the error term.<sup>5</sup>

1 M S Feldstein (1995), The Effects of Outbound Foreign Direct Investment on the Domestic Capital Stock, in M S Feldstein, J R Hines and R G Hubbard (eds), The Effects of Taxation on Multinational Corporations, pp 43-66. — 2 M A Desai, C F Foley and J R Hines (2005), Foreign Direct Investment and the Domestic Capital Stock, *American Economic Review*, 95, pp 33-38. — 3 See E Helpman, M J Melitz and S R Yeaple (2004), Export Versus FDI with Heterogeneous Firms, *American Economic Review*, 94, pp 300-316. — 4 According to various unit root tests, the vari-

### Foreign direct investment and domestic non-residential private fixed investments<sup>6</sup>

Variable	Cointegrating vector	Error correction equation	Loading coefficient
$\frac{PFI}{GDP}$	$\beta_1 = 1^7$ —	$\frac{\Delta PFI}{GDP}$	- 0.62 (- 4.78)
$\frac{FDI_{IN}}{GDP}$	$\beta_2 = 2.44$ (5.07)	$\Delta \frac{FDI_{IN}}{GDP}$	- 0.39 (- 2.45)
$\frac{FDI_{OUT}}{GDP}$	$\beta_3 = -1.64$ (- 4.41)	$\Delta \frac{FDI_{OUT}}{GDP}$	0 <sup>7</sup> —
<i>c</i>	- 0.12 (- 53.24)		

It follows from the results of the estimation (see table) that, for the German data, a long-run complementary relationship exists between German outward FDI and domestic non-residential private fixed investments ( $\beta_3 < 0$ ). Moreover, causality tests reveal that outward FDI has an impact on domestic investment.<sup>8</sup> In the long run, German outward FDI is therefore associated with an increase in domestic investment. By contrast, there is a negative long-run relationship between foreign companies' FDI in Germany and domestic companies' fixed capital formation. As it is not possible to identify a causal relationship here with any certainty, it does not seem appropriate to interpret this as a displacement of German companies' investment by inward FDI. Rather, the substitutional relationship could be seen as a sign that, in both cases, investment decisions are being guided by different locational factors.

It is therefore not possible to confirm here that outward FDI has a negative effect on the domestic sector, as has been frequently alleged in the public debate. Rather, the results suggest that, in the long run, outward FDI may be expected to have a favourable impact on domestic investment.

ables are integrated of order 1. A Johansen cointegration test suggests one cointegrating relationship. — 5 The annual data are available for the 1971-2005 period. By analogy to Feldstein and to Desai, Foley and Hines, all variables are divided by GDP at constant prices. — 6 t-values in brackets. — 7 Restricted. — 8 An LR test shows that the relevant loading coefficient can be restricted to 0 (weak exogeneity). At the same time, the corresponding coefficients of the lags of  $\Delta PFI/GDP$  are insignificant (strong exogeneity).



home location (particularly through economies of scale).

*Distribution*

Another motive for FDI is the sale of domestic products. Once an export market has attained a certain level of importance, exports are followed by FDI so that, for instance, sellers can orient their distribution strategies in the foreign market more closely to their customers.

*Motive drives potential effects*

The potential effects on the domestic economy will probably vary depending on the prevailing motive. Vertical FDI, through which labour-intensive, and thus in high-wage countries cost-intensive, parts of production is generally relocated, could initially lead to a reduction in domestic employment in the investing enterprise. By contrast, FDI with the idea of tapping markets or of setting up and expanding distribution structures primarily contributes to the creation or safeguarding of domestic jobs.

*Emphasis on sales-oriented motives*

In the case of German FDI, the strong links with developed economies and the mutual interrelationships at the same sectoral level indicate that market access and distribution are the predominant motives, and not pure cost saving. However, there is evidence – particularly for the central and east European countries – that German enterprises are also increasingly engaging in vertical FDI, alongside horizontal FDI.

*Chamber of Industry and Commerce study on the motives for German FDI*

The latest survey by the German Chamber of Industry and Commerce on the investment of German enterprises abroad essentially confirms this line of thinking.<sup>9</sup> According to the

survey, German enterprises are planning to continue their major expansion of their foreign manufacturing sites as well as of their customer service and distribution structures. However, this development is now also coinciding with an upturn in domestic investment. Whereas cost savings continue to present a strong motive for foreign investment, the more sales-oriented motives of market access and distribution prevail (combined 69% of replies, up from 66% in the previous year), increasingly so, in fact, according to the findings of this study. Even for regions in which the cost advantages of production would normally be considered to be the main motive, such as the central and east European countries which joined the EU in May 2004, as well as other east and south-east European and Asian countries, FDI decisions were guided by sales-oriented considerations. At the same time, however, these are also the regions in which German enterprises, owing to locational disadvantages in Germany, prefer to invest. In total, 39% of all foreign investment projects could also be carried out in Germany in situations where locational conditions were more favourable.

At the macroeconomic level, it is in no way clear that FDI necessarily leads to negative employment effects – even if it takes place primarily for cost motives. A shift in production can result in quite positive – mostly indirect – stimuli for domestic employment. The following aspects could play a role in this re-

*Macroeconomic effects*

<sup>9</sup> German Chamber of Industry and Commerce (Deutscher Industrie- und Handelskammertag), Investitionen im Ausland, Ergebnisse einer DIHK-Umfrage bei den Industrie- und Handelskammern, spring 2006.

spect: increased productivity and competitiveness of the domestic enterprises that have transferred parts of the production chain abroad in order to cut costs, a lower price level for the end customers in some cases, increased export growth, as well as higher returns on investment, and larger real income, associated with a stimulation of domestic demand.

However, relocation of research and development units has a detrimental macroeconomic effect, as such relocation could lead to a decline in domestic innovativeness. Even if the research and development functions remain at home, there is still usually a transfer of knowledge abroad. In addition, there may be a loss of tax revenue as a result of FDI because profits are transferred to the host countries and taxed at lower rates. The regional effects of individual shifts of operations are likely to be comparatively significant, especially in the case of structurally weak regions, whereas at the macroeconomic level the effects of individual activities are normally negligible.

*Problems with identification and measurement*

Empirical studies of the employment effects of German FDI are adversely affected by the fact that measuring employment effects leads to a host of data-related problems. One fundamental problem is that, at the level of economic units relevant to FDI decisions and effects, no link can be made between the information on employment and investment in Germany or abroad using the microdata available. In addition, the international links of the production processes do not exclusively have to be via FDI; intermediate goods can also be

purchased by third-party foreign contracting parties. Although overall effects can be analysed at the aggregate level, in the absence of suitable data, not all facets of offshoring (the relocation of business processes to other countries) can be taken into consideration here, either.<sup>10</sup> The findings of econometric studies on the macroeconomic effects of FDI could therefore be biased.

Despite these limitations, various empirical studies do not find any evidence to support the popular view that outward German FDI is associated with negative employment effects in Germany. As mentioned above, German FDI has also benefited domestic investment in the long term. If a positive link between investment and the creation of jobs is assumed, outward FDI can be expected to have a favourable impact on the domestic labour market in the long term. It should be noted, however, that the shifting of labour-intensive processes to other countries is likely to be accompanied by more labour-intensive production in Germany and a higher skill level among employees.<sup>11</sup>

*Domestic investment*

However, a positive employment effect of outward FDI on Germany can also be confirmed by estimating the labour demand function using the Bundesbank's macroeconomic model. For this purpose, employment

*Domestic demand for labour*

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<sup>10</sup> In addition to FDI, this includes the order-based production abroad not captured in the statistics.

<sup>11</sup> Jäckle (2006), for example, shows that German FDI leads to an increase in the skill level in Germany. Accordingly, the demand for highly-skilled labour rises faster relative to that for low-skilled employees. This correlation applies to FDI in developed and developing countries alike. See R Jäckle (2006), The Impact of FDI on the Skill Structure in German Manufacturing, *Applied Economics Quarterly*, 52, Supplement.

at foreign branches of German firms was added to the relevant equation as an additional explanatory variable. According to this, the link between domestic demand for labour and foreign employment by German enterprises tends to be neutral in the short term. In the long term, a slightly positive effect on the demand for labour can be demonstrated.<sup>12</sup>

### Changes in the locational decisions of German enterprises following EU enlargement and their effects on German foreign trade

*New export markets and production sites*

The strategic options of domestic enterprises have increased markedly with the opening of the central and east European markets in the 1990s and the enlargement of the EU in 2004: new export markets and cost-effective potential production sites appeared right on Germany's doorstep. German enterprises have seized the available opportunities and – as described – invested heavily in the new EU member states. At the same time, German foreign trade with these countries has increased sharply. The way this has affected German FDI in, and foreign trade with, the old EU countries is examined below.

*Shift in FDI*

The setting-up of new sites in central and eastern Europe and the relocation of production processes there could have had a negative effect on the number of branches of German enterprises in the old EU countries. To find out whether the suspected geographical reorientation has indeed happened, the number of investment objects held by each individual enterprise (with affiliates abroad) in the

### Changes in the number of German foreign direct investors' affiliates between 1996 and 2004 \*

		New EU countries		
		More	Un- changed	Fewer
Old EU countries	More	39.6 (↑↑)	8.4 (↑↑)	2.2 (↑↓)
	Un- changed	11.3 (↑↑)	10.9 (↓↑)	2.0 (↑↓)
	Fewer	6.9 (↓↑)	9.2 (↓↑)	9.4 (↓↓)

\* ↑ more ↓ fewer employees in the old EU (first arrow) and new EU (second arrow) countries respectively.

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old and new EU countries between 1996 and 2004 was counted using the Bundesbank's Microdatabase Direct Investment (MiDi).<sup>13</sup> Subsequently, the researchers determined whether there were more, fewer or the same number of affiliates in the old and new EU countries over time. The results are shown in the table above. The arrows indicate whether

<sup>12</sup> The findings on the effects of German FDI described here are consistent with similar findings for the United States, which likewise witnessed an intense debate on the employment effects of relocating production abroad; see N G Mankiw and P Swagel (2006), *The Politics and Economics of Offshore Outsourcing*, NBER Working Paper 12398.

<sup>13</sup> In order to eliminate the effects of the changes to the reporting thresholds over time, uniform criteria were used throughout the observation period.

## The impact of FDI on import structure

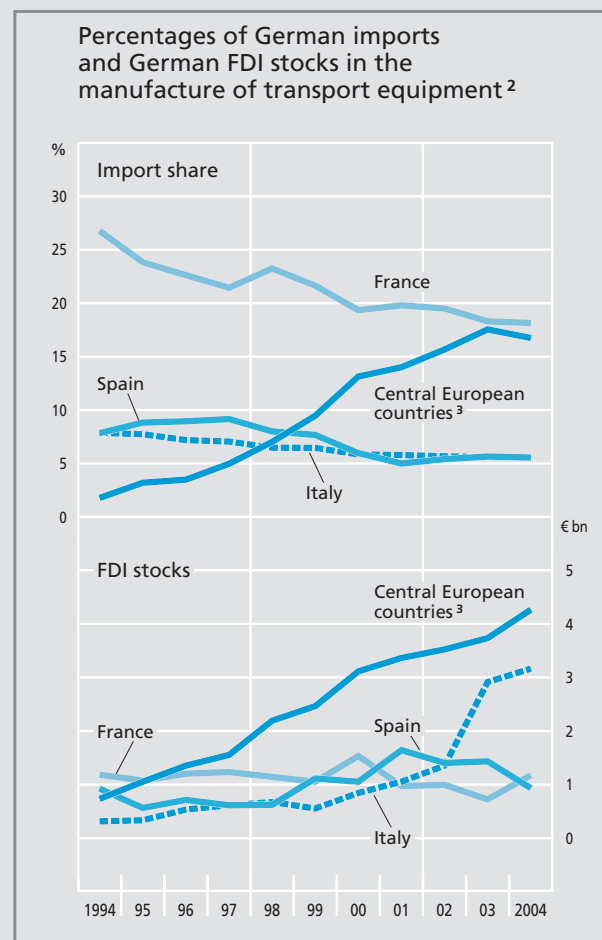
The increasing integration of the EU since the completion of the single market in 1993 and the greater involvement of the central and east European economies in the international division of labour are also reflected in the structure of German production and in German foreign trade. One example is that some old EU member states have seen a fall in their share of German imports, while there has been a sharp rise in German imports from the new EU member states in central and eastern Europe.

This raises the question of whether the regional shift in German imports is solely the result of direct competition between foreign sellers in the global market or whether it can also be partially attributed to German companies' strategic decisions. Indeed, it emerges that the shifts observed in the structure of German imports are partly due to German FDI.

In the following study, the manufacture of transport equipment will serve as an example. The second half of the 1990s, in particular, saw the import shares of three of Germany's most important EU trading partners (France, Italy and Spain) and those of the central European EU member states – the Czech Republic, Hungary, Poland, Slovakia and Slovenia – move in opposite directions in this sector. Whereas the old EU member states witnessed a fall in their share of German imports, the share of German imports attributable to the new EU member states jumped particularly dynamically, from 2% in 1994 to just under 16% in 2005 (at 2000 prices).

At the same time, the manufacture of transport equipment is by far the most important industrial sector for German FDI in the central European EU member states. German FDI stocks in those countries, at over €4 billion (at 2000 prices) in 2004, were nearly twice as high as

the amount of FDI in the chemicals industry, the second most important industrial sector for German investors. Moreover, German enterprises' foreign investment in the central and east European economies in the transport equipment manufacturing sector has been rising continuously in the past few years, whereas in France, Italy and Spain such activities have largely stagnated.<sup>1)</sup>



<sup>1</sup> However, there was a spike in Italy in 2003 caused by a significant one-off transaction. — <sup>2</sup> At 2000 prices. The charts are based on the 1994-2004 period because figures for FDI stocks for 2005 are not yet available. However, the empirical study includes the year 2005 since the previous year's FDI stocks are used for the estimation. — <sup>3</sup> Czech Republic, Hungary, Poland, Slovakia and Slovenia. — <sup>4</sup> The data are from the Bundesbank's Microdatabase Direct Investment (MiDi) and the Federal Statistical Office's Foreign Trade Statistics. The variables in the equation are integrated of order 1. A panel cointegration test

according to Im, Pesaran and Shin, taking into account the corrected t-values according to MacKinnon and the aggregated probabilities using the procedure devised by Demetrescu, Hassler and Tarcolea, confirmed the existence of a cointegrating relationship at the 10% level. — <sup>5</sup> A complementary relationship between German FDI and imports from the host country has already been established in earlier studies. See Task Force of the Monetary Policy Committee of the European System of Central Banks, Competitiveness and the Export Performance of the Euro Area, ECB Occasional Paper Series, No 30/2005, and S Herrmann

The econometric analysis covers the manufacture of transport equipment and is based on the 1994-2005 period, and the country panel is based on bilateral data between Germany and the five central European economies (Czech Republic, Hungary, Poland, Slovakia and Slovenia), on the one hand, and the three old EU member states (France, Italy and Spain), on the other. The estimation is based on the following equation:

$$im\_eu_{t,j} = \alpha_0 + \alpha_1 im\_wt_t + \alpha_2 fdi\_eu_{t-1,j} + \alpha_3 fdi\_ce_{t-1,i}$$

where *im\_eu* denotes German imports from France, Italy or Spain in the respective year; *im\_wt* denotes total German imports in the respective year; *fdi\_ce* denotes German FDI stocks at the end of the year in the respective central European country; *fdi\_eu* denotes German FDI stocks at the end of the year in France, Italy or Spain; *i* is the index for central European countries; *j* is the index for France, Italy and Spain; and *t* is the time index. The data are the logarithms of real variables at 2000 prices.<sup>4</sup>

The estimates presented here show a direct relationship between the subdued momentum of German imports of transport equipment from France, Italy and Spain and the relative inactivity of German investors in these economies.<sup>5</sup> What this indicates is that, as a consequence of the lower amount of activity of German enterprises, fewer semifinished or finished products are exported from those countries to Germany.

Moreover, the increase in the FDI of German manufacturers of transport equipment in central Europe impacts adversely on Germany's imports from the old EU member states. As expected, this indirect relationship is not as strong as the direct relationship between FDI and imports. However, the assumption that outsourc-

and A Jochem (2005), Trade Balances of the Central and East European EU Member States and the Role of Foreign Direct Investment, Deutsche Bundesbank Discussion Paper Series 1, No 41/2005. The low value of the elasticity can be explained by the fact that a relationship has been established between stocks (of FDI) and flows (of imports). The long-run impact of FDI on foreign trade, however, results from the cumulative value throughout the lifetime of the foreign activity. — <sup>6</sup> Whereas FDI-induced imports from central Europe are thus implicitly integrated into the estimation, total imports from the five central European coun-

### Impact of German FDI on German imports of transport equipment from France, Italy and Spain

Determinants	Panel estimation
<i>im_wt</i>	0.574 (10.83)
<i>fdi_eu_1</i>	0.069 (3.02)
<i>fdi_ce_1</i>	-0.025 (-2.08)

ing elements of the production process also influences external economic relationships to third countries is also confirmed. This implies a direct competitive relationship between FDI-induced imports from the five central European countries and imports from the old EU member states.<sup>6</sup>

Finally, what the studies also clearly show is that, in the manufacture of transport equipment – irrespective of the impact of German FDI – German imports from the three old EU countries are growing more slowly than imports from the rest of the world. In other words, France, Italy and Spain are losing import shares in Germany: the elasticity of imports from these countries relative to all imports in this sector, at 0.6, is clearly smaller than 1. This indicates that there are other factors behind those countries' relatively weak export performance.

This is consistent with the observation that nearly all industrial countries have lost ground in world trade in the past 20 years to new competitors in Asia and Europe. The explicit inclusion of price competitiveness based on nominal unit wage costs<sup>7</sup> yielded no significant results. One likely reason is that price competitiveness also impacts on the host country's attractiveness for FDI and correlates strongly with the relevant variables.

tries turn out not to be statistically significant in the econometric study. This is probably attributable to the high multi-collinearity between outward FDI to central Europe and imports from central Europe. The lack of significance, however, could also be because imports not caused directly by outward FDI are not mutually competitive. — <sup>7</sup> In the production sector.

*Symmetric  
behaviour  
dominant*

employment in the old and new EU countries accordingly rose or fell.<sup>14</sup>

The largest individual group of German enterprises (just under 40%) increased its investment in both regions. These enterprises, which are expanding greatly abroad, focused on trade, the manufacture of transport equipment, the manufacture of (other) machinery and equipment, the metal-working industry, as well as on information and communications technology. According to the German Chamber of Industry and Commerce study, too, the above sectors are among those expanding the most, with – in line with the observations made here – tapping new markets or setting up distribution and customer networks being listed as the main motives for the FDI decisions. About 9½% of firms reduced the number of their branches both in the new and old member states. It can be observed that symmetric behaviour generally tends to be the dominant method of locational decisions (six out of ten enterprises). Only in the group of enterprises whose investment in the old EU countries did not change in the observation period do the enterprises with more investment objects in the new EU countries at the same time slightly outweigh the others. A general tendency to relocate branches from the old EU countries to the new EU countries cannot be inferred from these observations. On the contrary: in most cases, enterprises which invested heavily in the new EU countries between 1996 and 2004 also invested more heavily in the old EU countries at the same time.

Essentially, affiliation to an economic sector could be significant in this context for the behaviour of direct investors. Even in a sectorally disaggregated analysis, however, there are only minor differences in the choice of investment site. For example, limiting the analysis to manufacturing enterprises does not lead to a qualitatively different outcome: around 60% of enterprises still exhibit symmetric behaviour.

If the analysis is based on the change in the number of employees, a similar picture is obtained. Here, too, symmetric behaviour dominates (over 60%), and the relative trends in the number of affiliates are also reflected in the relative trends in employee figures.

Some 1,200 additional affiliates were set up or acquired in the old EU countries in the observation period, compared with “only” slightly more than 800 in the ten new EU countries. At the same time, however, the number of staff in the new EU countries rose somewhat more sharply than in the old EU countries (by 252,000, compared with 195,000). Average staff numbers evidently rose more sharply at the manufacturing sites of the new EU countries than they did in the old EU countries. Relevant factors will probably include shifts between existing manufac-

*Sectoral differences not pronounced*

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<sup>14</sup> For a further study of the restructuring in the target regions of German FDI and especially of shifts from the EU periphery to central and east European countries, see C Borrmann, R Jungnickel and D Keller (2004), Strukturwandel und Dynamik deutscher Direktinvestitionen, *Wirtschaftsdienst*, 84, pp 658-664.

turing sites<sup>15</sup> – ie without affecting the number of them – as well as the conducting of more labour-intensive processes in the new member states.

*Trade diversion effects*

FDI in general, and the shift in production processes observed here, in particular, are associated with changes in foreign trade. This applies both directly to trade with the countries with which there is an investment relationship and indirectly to trade with third countries. For example, the setting-up of manufacturing and distribution sites in a region may be associated with increased deliveries of capital goods and intermediate goods to that region from Germany. On the other hand, the on-site production associated with FDI could conceivably displace German exports to the target countries. Finally, rising imports of goods from newly established branches may lead to a substitution of imports from other countries.

*Complementary relationship between FDI and foreign trade*

Earlier studies which focused mostly on the direct effects came to the conclusion for Germany that, all in all, FDI has a positive effect on imports and exports; ie it has a complementary effect. According to these studies, the shift in production to the export markets, which tends to reduce trade, is more than offset by the stimulating effect of the setting-up of new distribution channels, the opening of markets and the vertical integration of the production processes.<sup>16</sup>

*FDI affects regional structure of foreign trade*

A more recent econometric analysis has now examined the extent to which German outward FDI has affected Germany's trade with third countries (see explanatory notes on

pp 54-55). Using the manufacture of German transport equipment, it can be shown that the subdued pace of German imports of motor vehicles and motor vehicle parts from the old EU countries (particularly from France, Italy and Spain) is associated with the German car industry's declining propensity to invest in these countries. Furthermore, these trade flows are detrimentally affected by the increasing direct investment of German manufacturers in the new EU countries. Although this indirect effect is weaker than the direct effect, it – along with other factors – is statistically significant. The significant German investment in the manufacture of transport equipment in the central and east European countries has evidently led to a rise in imports from those countries and – in some cases, at least – displaced imports from the traditional supplier countries specified.

## Summary and conclusions

German enterprises have further expanded their foreign presence in recent years. Horizontal FDI, the primary purpose of which is to help open up markets, is the dominant form. This is consistent with both the analysis of the data to hand and the findings of a recent sur-

*Horizontal FDI dominant*

<sup>15</sup> This is also apparent when looking at, among other things, changes in staff numbers for the enterprises with an unchanged number of affiliates in both regions (see table on p 53). Here, average employment fell in the old EU countries and, at the same time, rose in the new EU countries.

<sup>16</sup> See *inter alia* Deutsche Bundesbank (1997), Development and determinants of international direct investment, Monthly Report, August 1997, p 63 ff, and Task Force of the Monetary Policy Committee of the European System of Central Banks, Competitiveness and the Export Performance of the Euro Area, ECB Occasional Paper No 30/2005.

vey carried out by the German Chamber of Industry and Commerce. The international expansion can be attributed primarily to the growth of multinational enterprises and not to major shifts of production sites.

*Positive long-term effects*

Cost-driven FDI is to be seen against the backdrop of increased competitive pressure. Domestic enterprises evidently have specific qualities which make it possible for them to compete internationally. However, these advantages cannot always be exploited in Germany. Shifting production abroad is therefore necessary to ensure the competitiveness and, ultimately, the long-term survival of enterprises and jobs in Germany. Although isolated negative short-term effects of foreign investment – such as on domestic employment – cannot be ruled out, overall, the studies presented here suggest that – in the longer term, at least – the positive effects on both investment and employment will prevail.

Nevertheless, it should be borne in mind that some investment projects could also be realised in Germany with better locational conditions. However, this is fundamentally predicated on progress regarding the framework for investment in Germany. This includes reforms to the labour, wage and tax laws, as well as a significant reduction in bureaucracy.

*Further improvement in locational conditions*

The international expansion of German enterprises has also affected Germany's existing economic relationships with foreign countries. Even though there has not been a major migration of affiliates from the old EU countries to the new EU countries, the structure of foreign trade has certainly undergone a perceptible shift. In particular, imports from France, Italy and Spain appear to have been dampened in certain sectors, such as the manufacture of transport equipment, by the creation of new production capacity in neighbouring central and east European countries. This shows that FDI can also affect countries which are not directly involved.

*Effects on third countries*