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## Kurzanalysen und Informationen

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## A survey on European integration, offshoring and trade

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*This note describes Central and Eastern European countries' (CEECs) involvement in production and trade in Europe. After having liberalised their economies in the 1990s, CEECs have become a part of international production networks in Europe. International production/distribution networks in East Asia have been developing simultaneously. The paper compares production and trade patterns in Europe and East Asia.*

### Introduction

International production networks encompass inter-firm affiliations as well as intra-firm relationships, which enable a firm to supply inputs, manufacture, assemble, and distribute its goods more efficiently. This note aims at highlighting the main features of production and trade in Europe following the integration of Central and Eastern European countries (CEECs) into the EU. At no point will the present study be of analytical nature. The intention is rather to provide a description of international production networks in Europe and to compare them to the East Asian experience. More specifically, an attempt is made to answer the question whether European production sharing resembles international production/distribution networks in East Asia as described by Kimura (2006).

Global market integration has vastly altered the nature of production and trade. Internationalisation of production is no longer easily described by increased industry specialisation along the lines of comparative advantage over final goods. Current production and trade patterns suggest another paradigm, namely the fragmentation of vertically integrated production processes into separate stages of produc-

tion.<sup>1</sup> International splitting of production means locating certain fragments of production abroad in order to reduce costs (Jones and Kierzkowski, 2000). Relocation of production takes form of either offshoring or outsourcing. Offshoring refers to intra-firm or extra-firm relocation of preliminary work abroad while outsourcing implies extra-firm relocation of preliminary work within a country or abroad (Jegger, 2008). As a result, trade in parts and components has been growing in total international trade.

### European integration and trade patterns

More specialisation of member states due to inter-industry trade as predicted by traditional

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<sup>1</sup> Different terms describing this phenomenon in the international context have been used in the literature: integration of trade and disintegration of production (Feenstra 1998), vertical specialisation (Hummels et al., 1998), fragmentation of vertically integrated production processes, and intra-product specialisation (Jones and Kierzkowski, 2000).

theories of international trade with respect to final goods did not occur in the first years of the European integration. Instead, since the beginning of the creation of the Single Market in the 1950s, increases in two-way or intra-industry trade (IIT), which involves export and import of similar goods, have been a crucial part of intra-European trade patterns (Fontagné & Freudenberg, 2002, p.132). Intra-European IIT has been increasing particularly rapidly since the breakdown of the central planning system and trade liberalisation in CEECs in the early 1990s. According to Aturupane et al. (1999), all CEECs have displayed high IIT in bilateral trade with the European Union (EU); the Czech Republic, Hungary and Slovenia having particularly high shares of IIT in their trade with the EU-9<sup>2</sup> (pp. 69–70). Poland and Slovakia are also characterised by rapid increase in IIT (OECD, 2002, p. 162).

Decomposing IIT is useful for understanding its structure: *horizontal* IIT deals with products of similar price and quality with differentiated varieties while *vertical* IIT is trade in products differentiated by quality and price. The term 'vertical trade' is also used to describe two-way trade in goods related to the fragmentation of production. While the first definition of vertical IIT is used in this section, following sections will deal with two-way trade resulting from fragmentation and offshoring.

Fontagné & Freudenberg (2002) show that within the EU-15, before the eastern enlargement, the share of vertical IIT has increased over the period 1980–99. This pattern has been significantly reinforced since the EU enlargement. Several studies suggest that vertical dominates horizontal IIT for the CEECs, suggesting specialisation in high *versus* low quality goods across the EU-27 (Aturupane et al., 1999; Gabrisch and Segnana, 2002).

Prior to the 1980s, East Asian trade patterns were dominated by a traditional North-South divide along comparative advantages, where developed countries produced capital-intensive goods and developing countries exported labour-intensive and natural resource-based products. It was not until the 1990s that less developed East Asian countries started producing manufacturing goods. Neither within

the EU-15 nor within the EU-27 has this divide ever been as extreme as between the East Asian economies: IIT has been an important part of intra-European trade since the beginning of European integration.

Kimura (2006) suggests that the proportion of horizontal in total IIT in East Asia is minimal, and claims the proportion of horizontal in total IIT to be significantly larger in Europe. An inclination to agree with him is supported by the fact that, as mentioned above, East Asian countries rapidly shifted from one-way trade of North-South pattern to vertical IIT. Unlike European IIT, which shows a diminishing share of horizontal IIT, East Asian IIT has never had a significant share of horizontal IIT.

### Trade in parts and components

Due to the fragmentation of production processes, there has been an increase in machinery parts and components trade in the 1990s. Figure 1 shows that the early 1990s evidenced high shares in total exports and imports of machinery goods and machinery parts and components primarily among the developed countries namely, Japan, the United States, the United Kingdom, France and Germany. Some ten years later, the transition economies showed higher shares of machinery goods and machinery parts and components than many developed countries; Hungary, the Czech Republic and Poland moved to the left side of the picture. Amplified trade in parts and components in these countries implies increased back-and-forth transactions of intermediate goods.

As well as in Europe, trade in machinery parts and components has increased dramatically in East Asia: during the 1990's, the Philippines, Thailand, China, and Indonesia have also moved towards the left side (Figure 1). Yet the shift towards higher shares of machinery parts within the less developed countries is even more explicit than in Europe.

### Two-way intra-European trade in parts and components

The highest shares of parts and components trade in total trade between the CEECs and Western Europe can be found in SITC groups 7 (machinery and transport equipment) and 8 (miscellaneous manufactured articles), Romania and Bulgaria being the exceptions to this pattern. An analysis of this pattern does not

<sup>2</sup> The authors define EU-9 to refer to Belgium, Luxembourg, France, Germany, the United Kingdom, Italy, the Netherlands, Denmark, and Ireland. Belgium and Luxembourg are reported as one aggregate. The CEECs referred to by Aturupane et al. (1999) are Bulgaria, Czech Republic, Hungary, Moldova, Poland, Romania, Slovak Republic, and Slovenia.

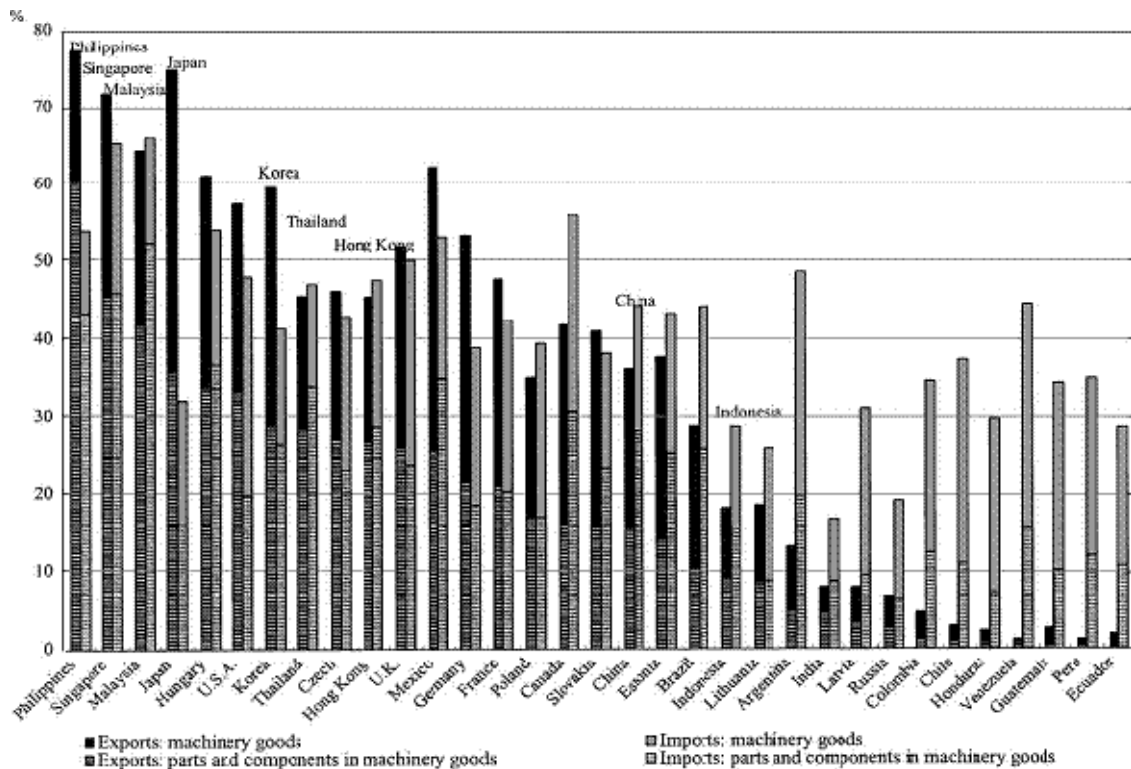
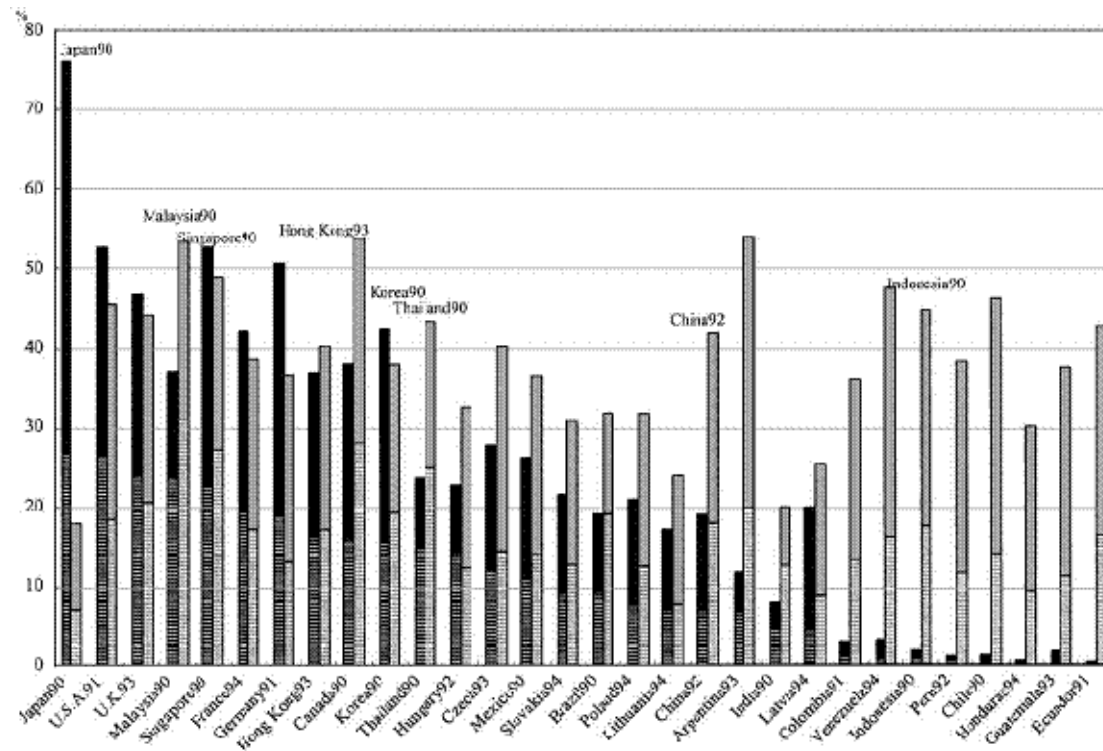


Figure 1: Machinery goods and machinery parts and components: shares in total exports and imports in 1990-1994 (top) and 2000 (bottom)

Source: Ando and Kimura (2005). Original data source: UN COMTRADE, PC-TAS.

Note: The figure organises countries from left to right, beginning with the country with the highest export share of machinery parts and components.

support the idea of the CEECs being net-exporters and the Western European countries being net-importers of parts and components. Instead, the pattern of trade in parts and components suggests two plausible alternatives: either there exists fragmentation-based two-way trade between the countries, or the reason is vertical (in terms of quality) specialisation in production of parts and components whereby CEECs specialise on lower quality parts and components (Zeddies, 2007, pp.12–14). Western-Central Europe automobile production network gives evidence on both. Export-oriented component plants and assembly plants have been constructed in Central Europe in the 1990s. Audi's and Opel's assembly plants in Hungary, for example, use parts and components imported from Germany to assemble engines destined for Germany. Yet some local suppliers regained momentum due to restructuring and upgrading by multinationals such as Fiat and Volkswagen involved in the region (Humpfrey and Memedovic, 2003, p. 12–13).

Two-way trade in machinery parts and components can also be seen in international production and distribution networks among East Asian countries with different per capita income levels. This phenomenon, Kimura (2006) claims, "presents a distinctive contrast with horizontal IIT among core EU countries that are largely at similar development stages and income levels" (p. 330). While "core EU countries" may relate to the EU-15 (or even to the EU-6<sup>3</sup>), today, however, it is necessary to observe IIT among the EU-27 countries. This, as discussed above, shows features similar to intra-East Asian trade.

### Automobile industry production networks and two-way trade

A closer look at the automobile industry may be helpful for two reasons: first, contributions to empirical studies on outsourcing/offshoring within other industries in Europe are yet scarce. The empirical literature mainly concentrates on the impact of relocation of production of European firms on employment and welfare effects in the home country (Becker et al., 2005; Hatzius, 1998; Konings and Murphy, 2003; Marin, 2004; Geishecker, 2007). Second, existent case studies allow for the conclusion that offshoring activities are common

<sup>3</sup> Belgium, France, West Germany, Italy, Luxembourg, the Netherlands

across manufacturing firms especially for sophisticated manufactured products such as motor vehicles and chemical products (see for instance Kaminski and Ng, 2005; OECD Economic Outlook, 2002).

The automobile industry has been particularly crucial in CEECs. According to van Tulder and Ruigrok (1998), car production in Central and Eastern Europe (including the former GDR) amounted to 3.2 million units in 1988 (p. 1). Some of the largest producers since the post-war period had been Škoda in former Czechoslovakia, Fabryka Samochodów Małolitrażowych and Fabryka Samochodów Osobowych in Poland, Industrija motornih vozil in Slovenia, Uzina de Autoturisme Pitești in Rumania, and Zastava Automobili in Serbia. As illustrated in Figure 2, in the late 1990s the passenger car production in CEECs has reached almost a quarter of total European passenger car output. In part, this reflects CEECs' rapidly becoming part of automobile production networks in Europe and their attracting assembly activities from Western European countries.<sup>4</sup>

Kaminski and Ng (2004) concentrate their research on automobile, information technology, and furniture sectors, where they show the CEEC-10<sup>5</sup> share in total world network trade to have increased dramatically. According to the study, "network trade [trade within production network] has been the driving force of CEEC-10 integration into global market" (p. 389). The share of CEEC-10 in EU network trade turnover has grown from 7.1 per cent in 1995 to 18.2 per cent in 2002. Automobile network trade dominates, accounting for some 20 per cent of all manufactured exports excluding chemicals. More crucially, the authors find that two-way trade within automobile networks is indeed due to fragmentation and offshoring rather than to horizontal or vertical (in terms of quality) intra-industry trade.

<sup>4</sup> Assembly is the final task towards producing a final good. Accordingly, it is no surprise that countries to which assembly tasks have been offshored, export final goods. Especially China's involvement in offshoring has been deliberately encouraged by a selective trade policy granting preferential tariff treatment to assembly (Lemoine and Ūnal-Kesenci, 2004). Growing component exports to China result in China's ever-increasing extra-regional trade in final goods (Athukorala, 2008).

<sup>5</sup> CEEC-10 refers to Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia

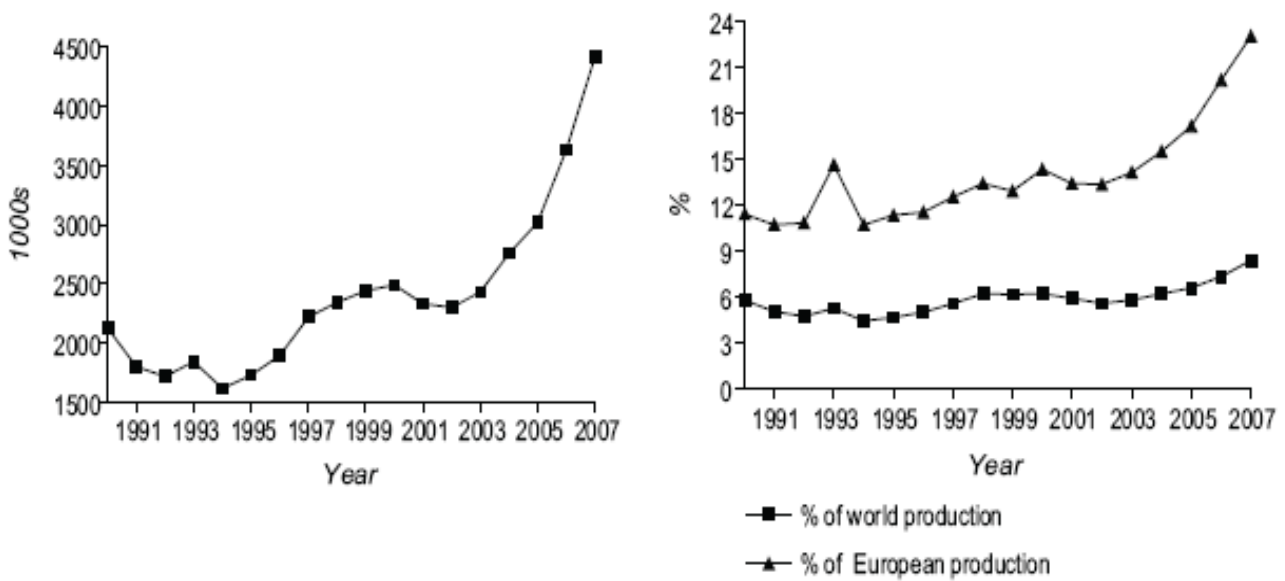


Figure 2: Passenger car production in Central European (CE) countries, 1990–2007 (left). Share of CE countries in the European and the world passenger car production, 1990–2007 (right).

Source: Pavlínek et al. (2009). Original data source: production data from national statistical yearbooks of individual CEE countries (1990–6); OICA (2008).

East Asia has undergone similar development in the 1990s. As shown by Kimura et al. (2007), due to fragmentation and offshoring, sophisticated production and distribution networks in machinery industries have become important in the region, creating two-way trade.

offshoring, and trade. By investing into production facilities in foreign countries substituting production facilities at home, multinational enterprises (MNEs) create a large share of world trade in cross-border interactions with their affiliates. MNEs' affiliates specialise in different stages of production processes to produce either final or intermediate goods.

### FDI

FDI plays an important role in setting up production networks, and thus in fragmentation,

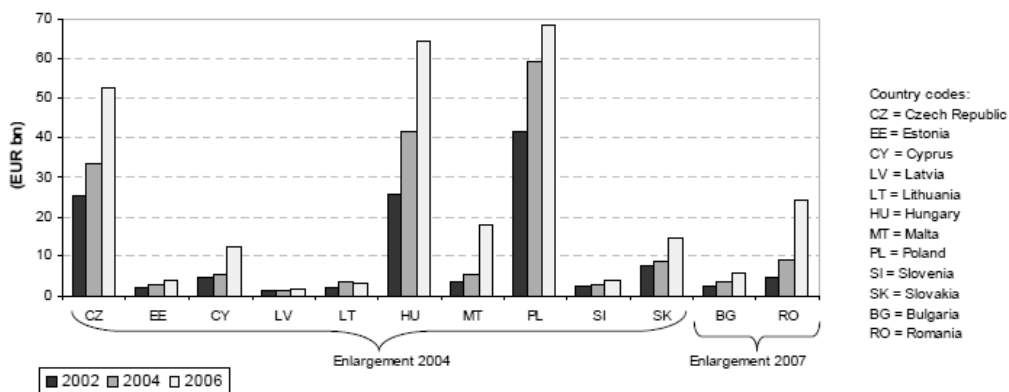


Figure 3: EU-15 outward stocks in the new Member States

Source: EUROSTAT (2008)

As to be expected, Western European countries amplified FDI towards CEECs as the latter liberalised their economies in the 1990s (Resmini, 2000; Molnar et al., 2007). Austria, Germany, and the Netherlands are the major investors. The Czech Republic, Hungary, and Poland receive the highest inflows of investment (Figure 3).

Figure 4 illustrates the FDI stocks held in CEECs by main activity. FDI in CEECs concentrates on manufacturing sector. This is not

the case in the rest of the EU, where investment in services takes the largest share (Kärkkäinen, 2009, p. 3).

Japanese FDI in East Asia also concentrates on manufacturing activities. The number of developing East Asian countries covered is, however, larger. Japanese FDI in East Asia does not exclusively come from multinational enterprises but also from a large number of small and medium enterprises (SMEs) (see Kimura, 2006, pp. 332–3).

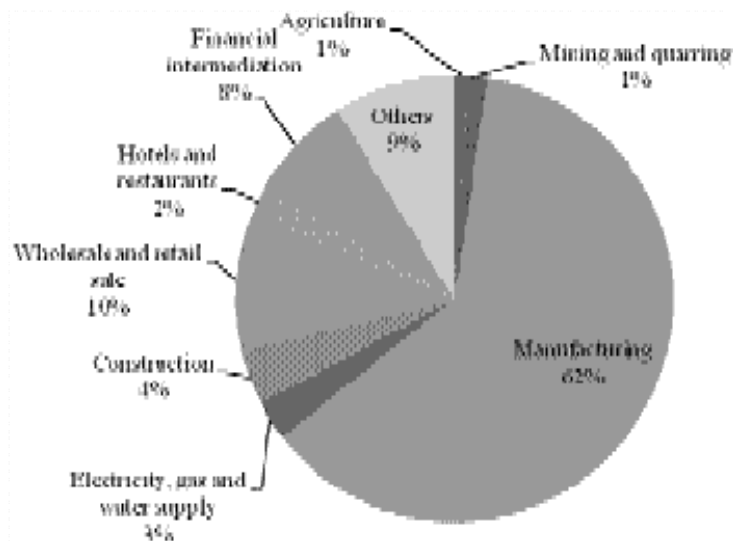


Figure 4: **Sectoral breakdown of FDI in CEECs (percentages of total number of MNEs)**

Source: author's elaboration based on Almonte and Guagliano (2003). Original data source: calculations in Almonte and Guagliano (2003) based on the PECODB and DBMEDA datasets.

This phenomenon is no contrast to FDI distribution across European countries. Figure 5 shows the size distribution of German manufacturing firms, which have relocated part of their production abroad. It is largely multinational firms investing in CEECs, however, German SMEs also start taking advantage of relocation of production (Kinkel et al., 2008).

It is useful to distinguish between horizontal or market-seeking FDI and vertical or efficiency-seeking FDI. The former takes place when firms produce the same type of goods abroad as at home, creating horizontal IIT; the latter implies the geographical fragmentation of the production process and location of certain stages of production to other countries thus

differentiating production abroad from production at home. Vertical FDI usually involves cost advantages, especially in terms of lower wages. As mentioned above, automobile industry and related industries attract a large share of total FDI in many CEECs (van Tulder and Ruigrok, 1998). In the case of the German automotive industry in Central European countries, the vertical type of FDI seems to be dominant (Nunnenkamp, 2006). Cheaper labour as well as possibility of capacity expansion are by far the most important motivations for the German firms to invest in CEECs (Kinkel et al., 2008).

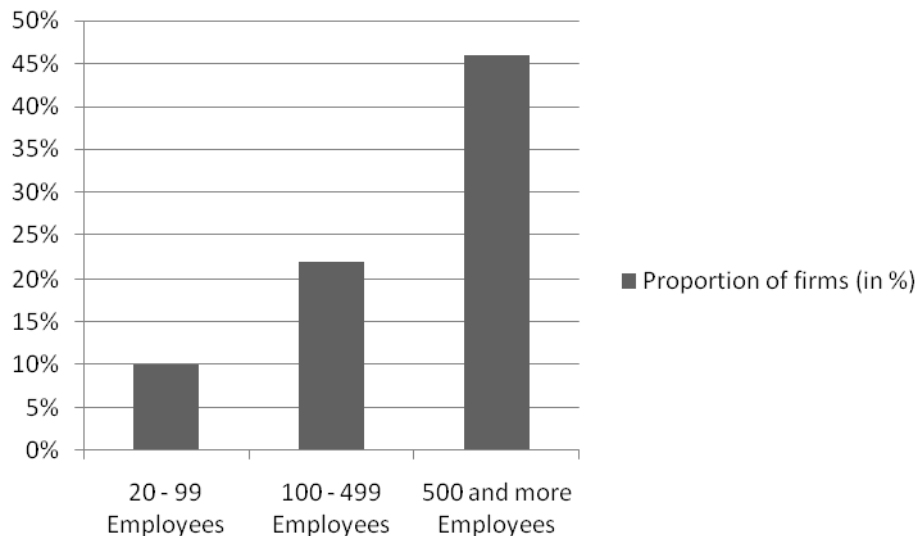


Figure 5: **The size distribution of German manufacturing firms relocating their production abroad**

Source: author's computations based on Fraunhofer Institut System- und Innovationsforschung (2008).

Less distinct, the market potential of the Central European countries also motivates German FDI in the automotive industry. Trade liberalisation in 1990s offered investment opportunities as well as export opportunities for the Western European firms (Buch et al., 2005). Market potential motives, however, are certainly subordinate, given that German parent companies usually import a large share of production of their CEEC affiliates (Marin, 2004).

A lower wage level remains the most important reason for the Japanese firms to invest in East Asian countries. The distinctive features of developing East Asia are related to agglomeration in industrial estates and parks. Here, agglomeration appears both as facilitating further investment as well as an external effect of FDI. This sort of agglomeration is not a comparable feature of international production and distribution networks in Europe, at least up to this point.

### Offshoring related FDI spillovers

Offshoring related FDI in CEECs is often the basis for productivity and knowledge spillovers from Western European affiliates to the local suppliers (backward linkages) through:

1. direct knowledge transfer from foreign customers to local suppliers;

2. higher requirements regarding product quality and on-time delivery introduced by multinationals, which provide incentive to domestic suppliers to upgrade their production management or technology;
3. indirect knowledge transfer through movement of labor;
4. increased demand for intermediate products due to multinational entry, which allows local suppliers to reap the benefits of scale economies;
5. competition effect – multinationals acquiring domestic firms may choose to source intermediates abroad thus breaking existing supplier-customer relationships and increasing competition in the intermediate products market. (Javorcik, 2002, p. 5)

Local governments may offer bargains encouraging foreign car producers to help restructure the parts suppliers local industry. Kaminski and Ng (2005) describe the example of the Czech VW-owned Skoda factory, which advanced the development of backward linkages with local suppliers as well as with other foreign firms (p. 381). Boosting local suppliers enables them to find new markets in other countries and to expand their exports of parts and components. Javorcik finds that in Lithuania productivity spillovers also take place in form of backward linkages (2002). Local firms'

benefit can be seen in the foreign company's region as well as in the rest of the country.

According to Kimura (2006), many affiliates of Japanese firms have been expanding their exports to markets other than Japanese. Moreover, Japanese firms' affiliates actively import from East Asian countries other than Japan.

### Concluding remarks

This study provides a description of international production networks in Europe and com-

pare these to networks in East Asia as described by Kimura (2006). Both regions have developed relatively significant production networks over the 1990s, which are fairly similar in regard to significance and extensiveness, represented by present IIT, shares in total exports and imports of machinery parts and components, and the sectoral breakdown of the FDI concentration. International production networks in East Asia, however, feature strong tendencies towards agglomeration with noticeable effects on FDI spillovers.

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