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A stronger European Industry for Growth and Economic Recovery

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4. FDI FLOWS AND EU INDUSTRIAL COMPETITIVENESS

The European Union is a major player in global foreign direct investment (FDI), in terms of both inward and outward FDI. This reflects not only the potential of the single market, but also the ability of EU companies in different industries to successfully compete in markets outside the EU. The crisis has, as expected, caused a disruption in FDI: the EU□s share of world (inward) FDI flows have declined substantially, from 45% in 2001 to 23% in 2010. Outward investment flows have also dropped significantly and have been accompanied by a shift of FDI outflows to non-EU emerging markets, less affected by the European crisis.

The recent fall in inward FDI flows raises the following questions: what are the main factors influencing the decision to invest in an EU country, and how can we boost Europe□s attractiveness to investors? Despite the conjectural decrease in inward FDI, the EU is generally considered an attractive location for foreign investment, with low FDI regulation, a highly educated workforce, and high productivity levels, to mention but a few of the factors that may make EU countries attractive to foreign investors. The attractiveness of the EU is well reflected in the high inward FDI stock in several industries. An empirical analysis will provide some evidence on the most important determinants.

FDI is generally expected to have positive direct and indirect effects on the recipient economy. On the one hand, foreign enterprises directly increase the capital stock and create employment; on the other, they may bring new technologies, skills and human capital that can spill over to domestic firms and workers. The empirical literature for EU countries finds strong support for positive direct impacts, while the evidence on spillover effects is less clear-cut. A better understanding of the indirect impact of inward FDI is important because it opens the door to public interventions. Hence, governments often provide substantial financial support to attract FDI. The impacts that FDI has on host economies and firms depend on a wide range of factors, e.g. the type of investment, the absorptive capacity of the host country, and the size and other characteristics of firms. It is therefore crucial to gain a clearer picture of how the benefits of FDI for local firms can be maximised and any potential adverse effects minimised.

Likewise, outward FDI is seen as an important engine of economic growth. Multinational enterprises are larger, and more productive, pay higher wages and have better knowledge, technologies and managerial skills. They might also gain competitive advantages by expanding into new markets, through the learning effects of internationalisation, by reducing production costs and by gaining access to natural resources, advanced technologies or know-how. While the positive effects of outward FDI are generally assumed to predominate, there are concerns about its possible drawbacks, particularly the adverse effects on the domestic labour market. The theoretical predictions on home market effects are far from clear-cut and depend on the type of and motive for outward foreign direct investments and the very specific

relationships between the parent company and its foreign affiliates. The analysis of the effects of inward FDI is completed by a discussion on the home country impacts of outward FDI.

In order to better understand the determinants and impacts of inward and outward FDI in Europe this chapter[1] provides the following analysis:

- an overall picture of the main trends and patterns of EU inward and outward FDI flows at the aggregate, sector and firm level;
- the factors that influence FDI flows, both locational factors driving FDI inflows to the EU Member States and the firm specific factors that in turn account for the internationalisation of firms;
- the direct and indirect effects of inward EU FDI on domestic firms and the host country in general;
- the main findings of the literature on the effects of outward FDI on the home country of multinational enterprises (MNEs);

Finally, a policy section discusses a number of debated issues based on the analysis carried out in this study.

Box 4.1 – Definitions

- **Foreign Direct Investment (FDI)**

Foreign direct investment (FDI) is defined as an investment involving a long-term relationship and reflecting a lasting interest and control by an entity resident in one economy (foreign direct investor or parent enterprise) in an enterprise resident in another economy (FDI enterprise or affiliate enterprise or foreign affiliate) (OECD, 1996). FDI has three components: equity capital, reinvested earnings and intra-company loan.

- **Forms of FDI**

(1) Greenfield investment: establishment of an entirely new firm in a foreign country, including new operational facilities;

(2) Mergers and acquisitions (M&A): a complete or partial purchase of an existing firm in a foreign country.

- **Motives for FDI**

Market-seeking FDI involves investing in a host country market in order to be closer to customers and to serve that market directly rather than through exporting (□horizontal□ FDI). Market-seeking investors will rate the attractiveness of a host country mostly with respect to its market size and growth/demand potential, and whether it provides access to both regional and global markets. For non-tradable services (e.g. hotel and catering industry or retail trade), FDI may be the only way to internationalise as there would be no alternatives for accessing foreign markets.

[1] This chapter is based on the background report, Falk et al. (2012) □FDI flows and impacts on the competitiveness of the EU industry□.

Resource-seeking FDI is driven by the need to gain access to natural resources such as oil, gas, minerals or raw materials. Locations qualify as being more attractive the more they provide access to affordable resources, particularly if the domestic supply of such inputs has come under pressure by becoming more expensive. Scarce supply of and growing needs for natural resources explain the EU□s growing interest in resource-rich development countries and the proliferation amount of respective strategies (for instance the Central Asia Strategy and the Joint Africa-EU Strategy launched in 2007).[2]

Strategic asset-seeking FDI aims to gain access to advanced technologies, skills and other highly developed productive capabilities. The aim of this type of investment is to increase the acquiring firm□s global portfolio of strategic resources and to block competitors from obtaining access. Either way, strategic asset-seeking investors value locations depending on the quality of the scientific, technological and educational infrastructure they provide and on the availability of a rich pool of highly skilled labour.

Efficiency-seeking FDI takes place when companies try to exploit economies of specialisation and scope across the value chain (product specialisation) and along the value chain (process specialisation). The company will slice its production chain by allocating different parts (or tasks) to countries that allow low-cost production (vertical fragmentation), particularly where the cost of labour is taken into account. The scope for efficiency-seeking FDI and vertical fragmentation originates from advances in information and communication technology (ICT), trade liberalisation and cost-effective transportation, which enable firms to take advantage of international factor cost differentials. Another key determinant is the competitiveness of local industrial infrastructure and its ability to provide strong subcontracting and business partners.

4.1 Trends and structure of EU-27 inward FDI

4.1.1. Inward FDI trends: Sharp crisis related contraction and greater role of extra-EU inflows

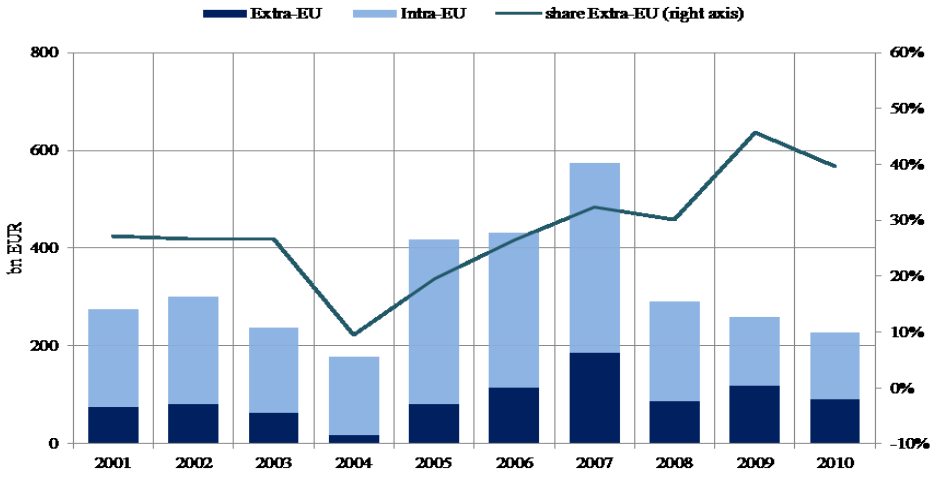
The EU is by far the largest destination for global FDI. This is primarily the result of the size of the EU market but it also has to do with its openness to FDI and the deep economic integration among EU Member States. Over the past decade, however, the share of global FDI destined for the EU, including intra-EU investments, has declined substantially, from 45% in 2001 to 23% in 2010, in favour of emerging economies.

FDI inflows to the EU were hit significantly by the global recession of 2008/2009. FDI flows to the EU dwindled in 2008 to half of their 2007 peak value and continued to decline slightly in 2009 and 2010 (Figure 4.1). Intra-EU flows continued to decline in 2009, while FDI inflows from non-EU countries recovered somewhat in 2009. In 2010 total FDI flows to the

[2] http://register.consilium.europa.eu/pdf/en/07/st10/st10113.en07.pdf, http://ec.europa.eu/development/icenter/repository/EAS2007_joint_strategy_en.pdf

EU amounted to EUR 230 bn of which about 60% originated from EU Member States. Although EU FDI inflows seem to have recovered somewhat in 2011, it seems most unlikely that in the coming years FDI levels will return to that of the 2007 boom year when investment activities were fuelled by excessively high stock prices and overly optimistic business sentiments in some sectors. The current situation may be better described as a return to □normal□ levels than a state of depression.

Figure 4.1 – EU-27 FDI inflows, 2001-2010, EUR bn



Note: EU is EU-25 for 2001-2003 and EU-27 for 2004-2010. EU flows calculated as the sum of EU Member States. Intra-EU flows to Luxembourg are adjusted downwards by 90% in order to exclude activities of Special Purpose Entities (SPEs). Extra-EU flows exclude offshore centres (Guernsey, Jersey, Isle of Man, Gibraltar, Bahamas, Bermuda, British Virgin Islands, Cayman Islands, Netherlands Antilles).

Source: Eurostat, wiiw calculations.

Until recently a standing feature of EU inward FDI was that intra-EU flows were much larger than flows from non-EU countries. The downturn in FDI after the boom years of 2005-2007 affected both extra-EU and intra-EU inflows but the contraction was stronger in the case of the latter. As a consequence the share of extra-EU FDI in total EU inward flows, which until 2006 was less than a third, continued to increase after 2008. In 2010 the share of FDI inflows stemming from non-EU investors stood at 40%. This is clearly linked to the depth of the recession in the EU and the relatively good performance of most emerging economies.

The severe drop in intra-EU FDI flows seems to be linked to a reduced capability of European firms to invest abroad. This appears to be the driving force behind falling FDI activities of European banks whose international expansion plans have been halted by the economic crisis. Outside the financial sector, the low intra-EU flows in the period 2008-2011 may primarily reflect the trouble EU firms are undergoing in this period. Indeed, FDI from outside the EU is not that affected by the contraction. Furthermore, the declining share of intra-EU FDI may also reflect the natural adjustment towards long-run conditions after the exceptional increase in intra EU-FDI flows caused by EU enlargement in 2004 and 2007 and strong economic growth during that period.

4.1.2. FDI inflows from non-EU countries: continued dominance of US investors, but new sources emerging

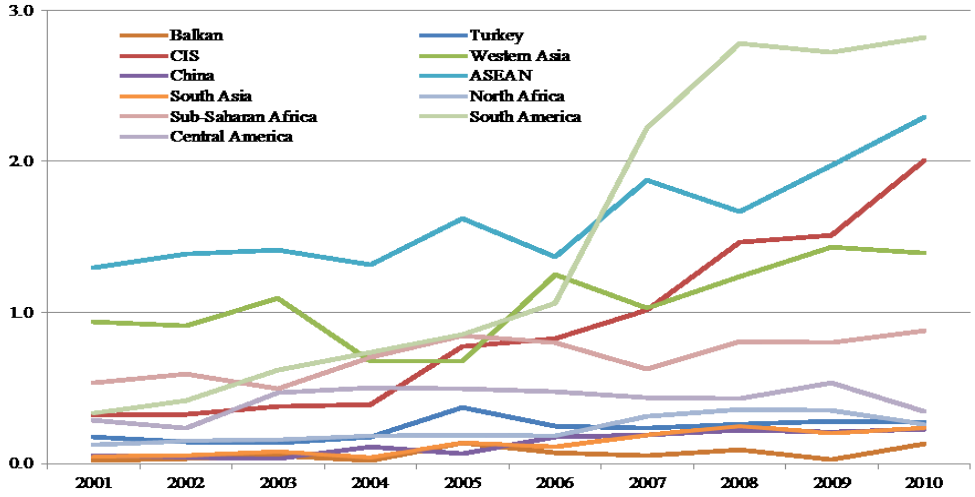
Given the increased volume of extra-EU inflows it is interesting to have a look at the main investor countries and potential new sources of FDI. A first observation is that FDI inflows to the EU from the rest of the world are extremely concentrated.[3] The US and the EFTA countries, principally Switzerland, are the largest investors, accounting for more than half of the total inward FDI stock in 2010. The leading position of US multinationals in EU inward FDI was largely unaffected by the crisis: in the period 2008-2010 the US accounted for about 45% of total extra-EU inflows. At the same time the share of the EFTA countries declined significantly over 2001-2010. A declining trend is also observable for Japan. Investors from these countries are expected to continue to determine the aggregate trend in inward FDI from non-EU countries. This is in accordance with their economic weight and their high degree of integration with the EU.

In contrast to developed regions, the share of developing regions and transition economies as a whole increased substantially (Figure 4.2). In value terms Western Asia is the most important new investor region for the EU, with average annual inflows amounting to EUR 19 bn in the period 2008-2010[4]. Just to compare, the annual average inflows from developed economies were over EUR 70 bn in the same period. However, the increasing role of the emerging markets in inward EU FDI is not only a crisis-induced phenomenon but a longer-term trend as evidenced by the development of emerging markets' shares in overall extra-EU inward stocks since 2001.

Figure 4.2 – Share of emerging regions and countries in extra-EU inward stocks, 2001-2010, shares in %

[3] FDI in R&D has been found even more concentrated (European Commission, 2012).

[4] A particularity of the FDI from Western Asia, however, is that much of it constitutes investments by Sovereign Wealth Funds (SWFs) which must be assumed to have little impact on the EU's real economy in general and to EU competiveness in particular because SWFs do not normally become involved in the management of the firms in which they take a stake. The appetite of SWFs for FDI engagements in the EU seems to have lasted only until 2009 (UNCTAD, 2011). As a consequence, EU inflows from Western Asia dropped to a mere EUR 400 m in 2010.



Note: EU is EU-25 for 2001-2003 and EU-27 for 2004-2010. Shares calculated on the basis of the inward stocks of the EU-27 aggregate.

Source: Eurostat, wiiw calculations.

The magnitude of FDI inflows (and also stocks because of the shorter □FDI history□) from emerging regions and countries, including China and India[5], is likely to grow, but is still rather small. China□s FDI flows to the EU increased substantially in 2010, to EUR 4.5 bn[6] (of which EUR 2.4 bn was destined for Luxembourg).[7] As a comparison, FDI inflows from the US amounted to more than EUR 30 bn in 2010. Furthermore, FDI stocks in 2010 stemming from the US represented 40.5% of the total extra-EU inward FDI, while China□s stock of FDI to the EU amounted to only 1.2%.

The growing number of greenfield investment projects suggests the prominent role of China and India as a new source of FDI.[8] Both countries figure among the main new greenfield investors in the EU. China and India established 137 and 93 projects, respectively, followed by Russia, with 44 projects in 2010. The chances are high that in the near future Chinese firms will also become increasingly active in Europe through FDI and no longer serve the EU market only via exports.[9] However, despite the more intensive investment activity of emerging multinationals, the general trend in inward FDI to the EU is expected to be driven by traditional investors.

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5 For example, EU inflows from South America and Sub-Saharan Africa amounted to approximately EUR 1.7 bn annually in 2008-2010 while inflows from South Asia (mainly India) and the ASEAN countries amounted to EUR 1 bn and EUR 1.3 bn respectively. For China Eurostat reports inflows of only EUR 80 m for 2008-2010.

6 According to the Ministry of Commerce of China. However, Eurostat reports only EUR 100 m for 2010. The difference is partly explained by the fact that for instance, for confidentialility reasons Sweden did not report data on inflows from China.

7 The strong increase in Chinese FDI flows to the EU in 2010 is mainly but not entirely due to the purchase of the Swedish car company Volvo by China's car manufacturer Geely.

8 Crossborder Greenfield investment data stem from the fDi Intelligence, service provided by The Financial Times Ltd (also called fDi database) See http://www.fdimarkets.com.

9 This is a natural path in which FDI follows previous export activities. See Conconi, Sapir and Zanardi (2010). In the case of China or India, however, to the extent that trade is based on their specialisation in low-tech, low-wage sectors, the step from exports to FDI may be less straightforward.

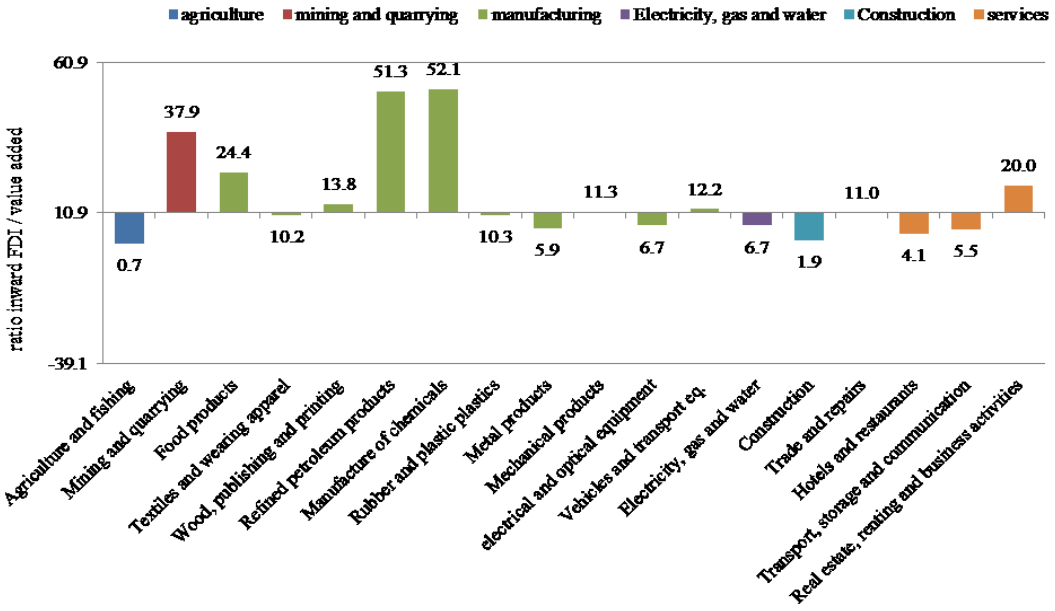
4.1.3. Industry structure of EU inward FDI from non-EU countries: high foreign presence in manufacturing industries

Regarding the structure of inward EU FDI stocks manufacturing industries and services took 47% and 43% shares, respectively, in 2008 - when excluding the financial sector and other business activities.[10] This is in line with the structure of EU trade, which is dominated by manufacturing, with services typically accounting for only 20% of trade.

Among the manufacturing industries the largest shares of investment stemming from non-EU countries are to be found in the chemical industry (EUR 98 bn and 14%) and the food industry (EUR 53 bn and 8%). In contrast, the automotive (and transportation equipment) industries account only for slightly more than 3% of the EU□s inward stocks owned by the rest of the world, which is a comparatively low share given the industry's high degree of internationalisation and its great importance in EU trade relations. Turning to the services industries but leaving aside the important financial sector and the activities of holding companies, trade and repairs (20%), real estate (6%) and computer services (4%) emerge as the industries with the largest EU inward stocks owned by non-EU investors.

In an attempt to gain an idea of the foreign presence in EU markets, inward stocks can be compared with the value added generated by the respective industry in the year 2008. For the EU economy as a whole, the ratio of inward FDI to value added amounts to 10.9. [11] This means that non-EU MNEs account for approximately 11% of the EU□s value added.

Figure 4.3 – Ratio of EU inward stocks owned by the rest of the world to value added, by industry, 2008



[10] The overwhelmingly large FDI stocks of the financial sector (EUR 1357 bn) include the activities of Special Purpose Entities. □Other business activities□ (EUR 430 bn) include business and management consultancy activities,i.e. FDI undertaken by holding companies. When including other business activities in total inward FDI the share of services increases significantly (64%) and that of manufacturing falls below 30%.

[11] This calculation again excludes the financial sector.

Note: EU stocks are stocks of the EU-27 aggregate. FDI stocks and value added excluding financial intermediation (6895).
Source: Eurostat, wiiw-calculations. The horizontal axis intersects the vertical axis at the EU average of 10.9 so that the bars of industries with a lower than average ratio are pointing downwards.

The industry-specific ratio of inward FDI stocks of MNEs from non-EU countries to value added in the EU economy suggests that the foreign presence is above the average in manufacturing industries. In the area of R&D, FDI occur primarily in the manufacturing sector and in particular in high-tech and medium-high-tech manufacturing sectors (European Commission, 2012). It is especially true for capital-intensive branches such as the chemical industry and the petroleum refining industry (Figure 4.3). Probably due to the large number of M&As the European mining industry also faces a competitive pressure. In contrast, the FDI to value added ratio is below the economy-wide average for most services industries (the hotel, transport, storage and communication industries). This is somewhat unexpected given the fact that in several services industries, such as the hotel industry, FDI is the only way to enter a foreign market because market access via exports is not possible. At the same time it also indicates the importance of the domestic EU enterprises in these sectors.

4.2 Determinants of FDI - locational attractiveness and firm specific factors

Global investment flows have increasingly tended to shift towards high-growth emerging markets. The recession and the eurozone crisis have adversely affected FDI flows in Europe. Nevertheless, the EU in general has maintained its fundamentals (e.g. good institutions, openness, highly skilled workforce), which can be considered as key determinants of inward FDI. In terms of investment perception, Western Europe ranks as the second most attractive region and Central-Eastern Europe as the third most attractive destination worldwide for FDI.[12] The heterogeneity of Member States in terms of factors determining FDI inflows reveals differences between EU countries: several countries have remained among the most popular investment destinations (e.g. Germany or Poland) while others have not attracted substantial amounts of FDI for many years already (e.g. Italy). The literature has investigated extensively what makes a country attractive for foreign real investors. Below a summary and new empirical evidence are provided.

4.2.1. Locational attractiveness

FDI activity depends on a wide range of factors and conditions, including location-specific (host country) determinants and home country characteristics. The next section tries to address some of these questions. According to UNCTAD (1998) the host country determinants of FDI can be classified into three groups: policy framework for FDI, economic determinants and business facilitation (see Table 4.1). Several of the determinants listed below have received quite a lot attention in the literature in the last ten years.[13] However, little is known about whether the sign and magnitude of the FDI determinants differ according to (i) the country of origin of the investors (e.g. EU versus non-EU investors), (ii) the target industry (e.g. high- vs low-tech), (iii) the type of FDI activity (e.g. production, services, research and development), (iv) the mode of entry (greenfield FDI or cross-border M&As),

[12] Ernst &Young (2012).
[13] The backround study (Falk et al., 2012) provides a summary of the literature on the FDI determinants.

(v) the type of FDI (vertical and horizontal) (vi) the geographical destination (capital region or elsewhere).

The available empirical findings based on EU countries make it difficult to draw general conclusions about the source of heterogeneity in the determinants of FDI for EU countries. This section therefore also provides some results based on an FDI gravity model estimation using FDI stocks and greenfield FDI flows from 26 OECD/BRIC countries to the EU-27 in the period 2000-2010. (Table A.1 in the Appendix shows the results of the gravity equation estimated in the background study, Falk et al, 2012.) The basic gravity model is augmented by the inclusion of corporate taxes and labour costs of the host and home country, the impact of EU membership in 2004 and 2007 and the introduction of the euro in some EU countries during the period 2007-2010. A number of policy factors (e.g. FDI regulation, costs of starting a business and labour market flexibility indicators) and indicators of factor endowments (e.g. skills, R&D and broadband penetration) are also included.[14]

Table 4.1. – Host country determinants of FDI

[14] The main contribution of this analysis is to investigate the determinants of both total FDI stocks and greenfield FDI flows using panel data methods that make it possible to control for fixed host and homecountry and common time effects. In addition, the presence of zero values of FDI flows is taken into account by using a variant of the Poisson regression model.

I. Policy framework for FDI
Economic, political and social stability
Rules regarding entry and operations
Standards of treatment of foreign affiliates
General legal and administrative system that shape the structure and functioning of markets (e.g. competition & M&A policies, corporate and labour taxation, product & labour market regulations, IPRs)
International agreements on FDI
Privatization policies
Trade policies (tariffs and non-tariff barriers) and the coherence of FDI and trade policies
II. Economic determinants (by FDI motive)
II. 1 Market seeking
Market size and per capita income
Market growth (potential)
Access to regional and global markets
Country-specific consumer preferences
Structure of markets (e.g. market concentration, entry barriers, pricing)
II. 2 Resource seeking
Availability of natural resources (e.g. oil and gas, minerals, raw materials, agricultural land)
Physical infrastructure (ports, roads, power, telecommunication)
II.3 Strategic asset seeking
Skilled labour and quality of educational infrastructure (e.g. schools, colleges, universities)
Quality of technological and R&D infrastructure (e.g. research institutions, universities, ICT)
Innovation clusters
II.4 Efficiency seeking
Cost and productivity of local labour supply
Cost of raw materials and intermediate inputs
Cost of transport and communication to/from and within host economy
Financing cost
Industrial infrastructure (e.g., subcontracting and business services, supplier industries, industry clusters)
III. Business facilitation
Investment promotion
Investment incentives (tax and financial)
Costs related to corruption and bureaucratic inefficiency
Social amenities (e.g. quality of life)
Infrastructure and support services
Cluster and network promotion
Social capital

Source: Adapted from UNCTAD (1998).

4.2.1.1. Policy framework for FDI

The institutional settings, such as the rules regulating entry and operations, and the legal and administrative system, are very important factors in determining every type of investment decision. For instance, FDI barriers (such as legal, legislative and regulatory frameworks, the strength of investor protection, foreign ownership restrictions and red tape) are likely to discourage inward FDI since they lead to higher investment costs. FDI restrictions have declined considerably in the EU and they are currently among the lowest in the world,[15] providing a favourable business environment for foreign companies. Similarly, the administrative burden on enterprises and product-market regulations in the host country impose additional costs on businesses and create barriers to entry for FDI (Azémar and Desbordes, 2010). In the EU-27 countries there is a significant and negative relationship between the foreign employment share in the manufacturing sector and the costs of starting a

[15] Most EU countries have a low (under 0.1) FDI Restrictiveness Index (OECD).

business. A significant and positive correlation between the ratio of FDI inflows and the strength of investor protection has been found for the EU countries. Labour market flexibility is also considered to have positive impacts on FDI inflows. For instance, based on a sample of 19 EU countries Javorcik and Spatareanu (2005) found that a more flexible labour market in the host country leads to higher FDI inflow (see also Bénassy-Quéré et al., 2007, based on OECD data; Dewit, Görg and Montagna, 2009).

Most of the policy and non-policy factors are excluded from the final specification for the gravity model on the EU-27, because they are not significant at conventional significance levels (see explanatory variables in Table A. 2. in the Appendix). In particular, labour market flexibility, indicators of intellectual property rights protection and investor protection are not significant when source and host country fixed effects and common time effects are taken into account. The cost of doing business and the FDI regulatory index have the expected negative sign but are statistically insignificant. One reason for the insignificance of these variables is that the annual time variation is very small.

Trade policies, trade agreements and regional integration have significant effects on FDI flows. Regional preferential trade agreements (RTAs) not only stimulate trade in goods and services due to the removal of trade barriers but may also have an impact on FDI flows for the participating countries and on third countries. The empirical literature strongly suggests that European economic integration (e.g. EU membership, creation of the European single market in 1992) has been accompanied by a rising level of foreign direct investment within the EU, and increased FDI flows from third countries (Pain, 1997; Clegg and Green, 1999; Lafourcade and Paluzie, 2011). The introduction of the euro is also expected to have a positive impact on FDI flows because of lower transaction costs and elimination of exchange rate uncertainty. The gravity model estimation (Table A.1 in the Appendix) finds that the introduction of the euro and EU membership (2004, 2007) leads to higher FDI activity among the euro area and EU members. The effect is more pronounced in the case of countries that joined the EU in 2007, with an increase in FDI inflow of more than 100% between 2007 and 2010. Previous empirical studies also found large positive effects of the euro on FDI inflows (Coeurdacier, De Santis and Aviat, 2009; Petroulas, 2007; De Sousa and Lochard, 2011; and Brouwer et al., 2008).

The signature and ratification of double taxation agreements (DTAs) have reduced barriers to FDI. DTAs deal with the allocation of the taxable capital flows, dividends, interest and royalties generated by multinational firm activity (Hallward-Driemeier, 2003). DTAs are expected to have a positive impact on FDI flows. Since most EU countries had double taxation treaties with other EU and/or OECD countries at the end of 2010, the expected effects of DTAs are not likely to be significant for the last decade.

4.2.1.2. Economic determinants

The second group of FDI determinants comprises economic factors which can be further classified according to the motives for FDI. Surveys among foreign investors typically find that factors such as the size and growth of the local market, the presence of suppliers and business partners and access to international/regional markets are the most important

determinants for a location□s attractiveness (UNCTAD, 2011). In the case of the EU-15 countries, market size and a stable investment environment play the most prominent role. For EU-12 countries, growth of the market is the most important factor, followed by cheap labour, the availability of skilled labour, a stable investment environment and the size of the market (see Table 4.2).[16] Results of the gravity model also confirm this: a 1% increase in the level of GDP in the EU-27 countries in the previous year leads to an increase in the inward FDI stock in the current year by 1% on average.

Table 4.2 - Locational attractiveness: the view of business

	World	EU-15	EU-12
Size of local market	21	20	12
Growth of local market	20	12	19
Stable investment environment	10	19	12
Access to regional markets	10	11	7
Cheap labour	9	n.a	12
Availability of skilled labour	9	11	12
Access to natural resources	6	4	8
Access to capital market (finance)	2	6	2
Incentives, government effectiveness	5	11	6
Follow the leader	4	3	3
Total	100	100	100

Note: The table provides the main location factors for attracting FDI for the period 2007-2009 in %.
Source: UNTCAD□s World Investment Prospect Survey (2009).

Among the economic determinants both cost- and non-cost based factors have been intensively discussed in the literature. Cost-based factors such as the unit labour costs and effective average corporate tax rate in the host country are expected to have a negative impact on bilateral FDI stocks.

Differentials in labour costs (unit labour costs, labour taxation) between the home and host countries play an important role, particularly for vertical or efficiency-seeking FDI. Results of the gravity model show that a 1 percentage point increase in the unit labour costs of the host country leads to a decrease in the FDI stock by 1%. Unit labour costs increased over the sample period on average but the change is highly uneven across EU countries. While the literature based on data for the EU-10 countries shows that unit labour costs have a negative impact on FDI inflows into the host country, for the EU-15 countries a number of studies found that labour costs are not a significant determinant (Wolff, 2007, for EU-25 and EU-15 countries; de Sousa and Lochard, 2011, for EMU countries; Bellak and Leibrecht, 2011, for 10 EU countries and the US). This is in contrast with what has been found for the EU-15 in the current analysis: in some EU-15 countries rising unit labour costs are considered as a major factor in the slow growth of inward FDI. One explanation of the higher impact of unit labour costs is the difference in the time period: the sample used for the current analysis ends in 2010. The increase in unit labour costs particularly accelerated between 2007 and 2010 in most of the EU-15. The increase in unit labour costs is associated with a 3% lower growth

[16] Similar results are found when focusing on R&D only. In that case however, the labour costs proved to be a less important determinant. (European Commission, 2012).

rate of the bilateral FDI inward stock as compared to EU-15 countries with stable unit labour costs. Furthermore, the analysis shows that high productivity growth together with moderate wage growth plays an important role in attracting FDI flows in the EU-15 countries.

Regarding indirect labour costs, such as labour taxation, Egger and Radulescu (2011) found that average effective taxes on individual earnings have a significantly negative effect on FDI. Other authors (Head and Mayer, 2004) find negative effects of the social security contributions and/or labour taxation on FDI inflows in the EU. With respect to other indirect taxes, Buettner and Wamser (2009) find that indirect taxes do not play a role for foreign location choice.

Previous empirical studies largely agree that FDI flows are sensitive to changes in corporate tax rates in the host and also the home countries. In general, higher home country tax rates lead to higher FDI outflows, whereas a higher host country tax rate leads to lower FDI inflows (De Mooij and Ederveen, 2003). On the other hand, some recent studies based on data for the EU-15 countries did not find that corporate taxes had a significant impact on FDI activity (e.g. Hansson and Olofsdotter, 2012, for the EU-15 countries; Egger, 2001, for the EU-15 countries; Bénassy-Quéré, Gobalraja and Trannoy, 2007, for 18 EU countries; and Wolff, 2007, for the EU-15 and EU-25 countries). Similarly, using FDI data for 28 OECD countries for the period estimates, Hajkova et al. (2006) found that the effects of taxation on FDI are quantitatively small and are much less relevant than other factors such as labour costs, the regulation of FDI and product markets and openness. In contrast, studies that explicitly focus on the EU-12 countries find that corporate taxes have a negative effect on FDI activity (Bellak et al., 2007).

The results of the gravity model on the effects of taxes on FDI stocks are difficult to compare with previous studies due to the difference between country coverage and time period, etc. Corporate tax rates decreased in both the EU-15 and the EU-12 by 8 and 9 percentage points, respectively, over the sample period. According to the estimations a 1 percentage point increase in the effective average tax rate reduces the bilateral FDI stock by 1.6%. Furthermore, the coefficient on statutory corporate taxes in the home country are not significantly different from zero, indicating that the outward FDI stock is not higher in high-tax countries than in low-tax countries. In addition, the factors of FDI are different when the sample is split into EU-15 and EU-12 host countries. The results show that corporate taxes matter only in the EU-12 countries and not in the remaining EU-15 countries. Taking exclusively greenfield investments into account, it has been found that greenfield FDI is much more sensitive to changes in taxes than total FDI in both the EU-15 and the EU-12 (See Table A.3. in the Appendix). The insignificance of corporate taxes for total FDI might be related to the composition of FDI stocks and flows, since in the EU-15 the bulk of FDI activity is due to M&As whereas in the EU-12 greenfield investments account for the most of the FDI flows.

Among the non-cost determinants a skilled labour force in the host country has long been recognised as being important to FDI inflows. For the sample of EU-12 host countries tertiary education has a significant impact. Hence, investing in education and training helps to attract FDI and to increase the benefits from FDI. For the EU-15 countries, no significant relationship has been found. The European Commission (2005) also found that a high

qualification of the workforce in the EU-10 is a more important location factor for multinationals as compared to the EU-15 countries. Furthermore, when focusing only on R&D internationalisation human capital, as proxied by the share of tertiary graduates in technology related fields is important only for the group of EU-12 countries (European Commission, 2012). A possible explanation is that the EU-15 countries already have a high proportion of workers with tertiary education, while in the case of the EU-12 a significant increase in the number of graduates can be observed during the sample period. The insignificance of the education variables might also be related to the fact that length of education quantity is a poor measure of the skills of the workforce in the EU-15. Based on the sample of OECD countries, Nicoletti et al. (2003) found that the average number of years of education in the host country is significantly positively correlated with FDI inflows. Studies investigating the location choice of multinational companies within a European country also found a positive relationship between the level of formal qualification of workers and FDI. However, it is important to be aware that in European countries differences in skill quantitative measures of skill levels (e.g. average years of schooling) are much less pronounced than differences in education quality (e.g. PISA scores).

Infrastructure covers a range of aspects such as transport infrastructure, ICT infrastructure and electricity generation capacity. In particular, the accessibility of highways, railways, airports and seaports is an important aspect for location choice, for all types of FDI. Studies based on regional data for individual EU countries confirm this (see Cieślik, 2005a; Cieślik, 2005b for Poland; Barrios, Görg and Strobl, 2011 for Ireland). Based on FDI inflows for eight EU countries in Central and Eastern Europe, Bellak, Leibrecht and Damijan (2009) found that information and communication infrastructure is more important than transport infrastructure and electricity generation capacity. Using a broader sample of inward FDI activity in EU countries and the US, Bellak and Leibrecht (2011) confirm that ICT endowment is a significant and important location factor.

Agglomeration economies are one of the most important factors affecting firm location decisions of multinational enterprises. FDI tends to cluster in certain locations that are characterised by a large share of foreign enterprises. One explanation for this is that foreign subsidiaries tend to co-locate with foreign suppliers and foreign customers. Another reason is that foreign firms may interact with each other rather than with domestic firms if the quality or the productivity of local suppliers is low (Pusterla and Resmini, 2007). Another reason for clustering of foreign firms is to take advantage of a common pool of skilled workers and knowledge inputs and ideas. Previous studies based on the location choice of foreign firms moving into EU countries found strong agglomeration effects (e.g. Crozet et al., 2004; Disdier and Mayer, 2004; Pusterla and Resmini, 2007; Basile et al, 2008; Hilber and Voicu, 2010; Procher, 2011).

4.2.1.3. Business facilitation

The third group of FDI determinants consists of business facilitation measures, including investment incentives and promotion, measures directed at reducing costs linked to corruption

and administrative inefficiency, and social amenities (e.g. quality of life).[17] Proactive measures aimed at facilitating the business that foreign investors undertake in a host country include investment incentives and investment promotion. Investment promotion mainly reduces the transaction costs of foreign investors, who are not familiar with the business environment of some locations, while incentives more directly increase the rate of return on some investment projects. Investment incentives fall into two broad classes: financial incentives and tax incentives (Thomas, 2000). The most common forms of financial incentives include subsidies and government loans at subsidised rates. Tax incentives may take the form of general measures to reduce the corporate tax burden (e.g. through lowering the rates of corporate income tax or providing tax holidays). Alternatively, countries may offer investment allowances, accelerated depreciation or tax credits, all of which would promote capital formation (OECD, 2003).

State aid rules prohibit aids to undertakings that distort competition and affect trade between member States unless they meet one of the exceptions. These exceptions principally deal with equity issues and market failures (e.g. the development of disadvantaged regions, the promotion of SMEs, R&D, training, employment and protection of the environment). While the EU-12 countries predominantly focus on tax reliefs or allowances, the EU-15 countries prioritise innovation policies to stimulate investment from abroad.

According to business surveys among foreign investors, financial incentives and grants are not regarded as primary location factors for multinational enterprises (UNCTAD, 2011). However, in a number of EU countries, local authorities often use regional policy grants to attract FDI.[18] More recently, Basile et al. (2008) found a positive relationship between FDI inflows and the overall amount of Structural Funds.

Within the EU, investment promotion activities have proliferated both, in terms of numbers and in terms of scope (Harding and Javorcik, 2011; Filippov and Costa, 2007). In the EU countries, investment promotion agencies offer a variety of services, such as practical information and guidance on setting up the business and assistance in obtaining financial support (grants) from public resources.[19] Furthermore, generally investment promotion agencies may concentrate activities on a few priority sectors or target activities. The priority sectors most often listed are ICT (computer, software and IT services), pharmaceuticals, medical devices, biotechnology, aerospace, automotive, energy and environmental technologies. The existence and activities of investment promotion agencies (IPAs) are expected to have a positive and significant effect on attracting FDI flows. Harding and Javorcik (2011) show that the effect is only significant for developing countries, including the EU-10. For high-income countries no significant relationship has been found. This may indicate that investment promotion does not work in high income countries where information asymmetries are relatively low and bureaucratic procedures are less complex.

17 This overview is based on various issues of UNCTAD's World Investment Report.

18 According to Wren and Jones (2011) countries such as the UK and France spend half of their regional grant budgets on attracting FDI flows.

19 Information is based on the websites of the investment promotion agencies of the EU-27 countries.

4.2.2. Firm-level determinants of FDI

Using firm-level data enables important observations to be made that cannot be drawn from aggregate statistics. In this section new evidence is provided on the specific characteristics of firms and firm-level determinants of FDI decisions is provided. The theoretical and the empirical literature on multinational enterprises (MNEs) actively investing abroad suggests that MNEs score better than non-MNEs on a number of performance indicators. The performance gaps between MNEs and other firms are born out of the existence of firm-specific assets such as specific know-how, technology, unique products or intangibles (trademarks, reputation for quality). In turn, only the most productive firms can pay the entry costs associated with exporting and FDI and will find it profitable to engage in foreign production. This idea goes back to Dunning (1977) and Markusen (2002) and was most recently formalised by Helpman et al. (2004), who link productivity differences to exporting and FDI and suggest a productivity ranking with the most productive firms setting up production facilities abroad. At the same time firms with an intermediate level of productivity choose to export and the least productive firms neither export nor invest abroad.[20] The econometric model used here[21] integrates and tests separately two parts of the FDI decision: the decision whether or not to invest in a foreign location (the logit part of the model), and then the decision on the number of affiliates to be set up (the count data component of the model).

The evidence on multinational activity in the EU-15 is largely consistent with the set of predictions drawn from the theoretical MNE literature and from the earlier empirical findings for individual countries and the euro area. The analysis reveals that EU-15 multinational firms are larger, employ more capital per worker, pay higher wages and are more productive than domestic firms and these firm characteristics are significant determinants of the FDI decision. This is confirmed by the non-parametric Kolmogorov-Smirnov stochastic dominance test (not shown) and by the econometric results based on the count data model.[22]

The analysis also corroborates theoretical results establishing the fact that foreign direct investment activities are driven by firm-specific advantages and superior performance in the pre-investment period and that firms self-select into FDI. Comparing purely domestic firms with investing firms at the beginning of the investment period, the evidence reveals that they are larger and more productive, have a larger share of intangible assets, and are more capital-intensive. Firms that start foreign activities are ex-ante different from purely domestic firms. Foreign MNEs (multinationals with foreign headquarters) dominate domestic MNEs in all size and performance indicators except for the share of intangible assets. This could signal the fact that in the case of multinational networks, firms still tend to undertake most of their R&D and related activities in the home country of the headquarters (Dunning and Lundan, 2009).

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20 The sample is limited to the EU-15 countries due to severe data limitations and the very low coverage of MNEs with respect to a number of EU-12 countries.

21 To test the significance of the results the Kolmogorov-Smirnov stochastic dominance test is applied along with the more formal econometric tests based on the zero-inflated negative binominal (ZINB) count data model.

22 See the background study, Falk et al. (2012).

Results from the count data model (see Table A.4. in the Appendix) show that the size and the capital intensity of firms have the strongest effects, while productivity and the share of intangible assets play a statistically significant, but quantitatively more limited role in determining the FDI status of EU-15 firms. The relatively small impact of labour productivity might be due to (a) the lack of a more detailed distinction among different types of non-MNEs such as between domestic exporters and domestic non-exporters and (b) inadequate discrimination between the various types of MNEs. Both reasons might confound the relationship. Domestic exporters are more productive than non-exporters; MNEs with only one subsidiary might be more equal to domestic exporters than MNEs with a higher number of subsidiaries.

The analysis also finds significant heterogeneity within the group of MNEs. Multinational firms holding more than one foreign subsidiary outperform all MNEs with a single subsidiary in terms of size, productivity, capital intensity and the share of intangible assets. Multinationals holding subsidiaries in more than one market score better on performance indicators than multinationals serving only one foreign market.

Furthermore, entry costs vary across locations of foreign subsidiaries. First, the analysis reveals a strong relationship between firm size and location choice. Larger firms invest in more distant high-income and emerging countries overseas. It also finds the highest performance premium in terms of productivity and capital intensity for EU-15 multinational firms setting up affiliates in emerging regions in Asia and in CEEC. Furthermore, a significant, but lower impact of capital intensity on the decisions to invest in Eastern Europe has been found. This might indicate that relative to other host regions, a greater share of MNEs invest in Eastern European markets for vertical (□cost-seeking□) motives.

The evidence reported in this section also reveals that while MNEs are clearly larger than domestic firms, the median size of foreign direct investors is found to be about 60 employees. It is larger in manufacturing (131 employees) than in the services sectors (35 employees). For first-time foreign direct investors in 2011 (□switching firms□), the median firm size is about 100 employees in manufacturing and 30 employees in non-manufacturing. Thus, many medium-sized manufacturing firms and small service firms engage in FDI. Multi-country FDI strategies and FDI in more distant emerging markets, however, involve mostly larger manufacturing firms with a median size between 200 employees and 300 employees.

4.3 Host country effects of inward FDI in the EU-27

What are the channels through which FDI stimulates economic growth and productivity? What are the main factors that influence the magnitude of this effect? Does FDI contribute to growth? The question should rather address whether and when foreign-owned companies contribute to more desirable patterns of resource allocation or industrial restructuring. Policy making sees FDI as positive for long-term development; however, the impacts of FDI depend on many factors that can be varied in order to maximise the benefits of foreign investments.

The aim of this section is to provide a conceptual framework offering a better understanding of the main factors and channels through which FDI affects productivity and economic growth. Most importantly, FDI can provide financing for the acquisition of new plants and

equipment, and can be an important catalyst of economic restructuring. It can also directly transfer technology to foreign affiliates, as well as indirectly diffuse or □spill over□ into local economies. While FDI is capable of producing all these effects, this does not mean that it necessarily does so. Whatever the direct and indirect impact FDI has on a given host economy, the effects produced will be conditional upon many factors (Table 4.3). For instance, the nature of FDI and the reasons why MNEs carry out investments in foreign economies can be very different (distinguishing between efforts focused on markets, resources, efficiency, and strategic assets). Furthermore, the scale of the effects of FDI also depends on the industries targeted by foreign companies e.g. setting up a retail store vs establishing a business in high-tech manufacturing. Similarly, the mode of entry of MNEs (greenfield; takeover, merger and acquisition; minority shares in domestic firms) may exert different impacts on host economies. Greenfield FDI is linked to setting up a completely new business establishment in a foreign country, and therefore the impacts on employment, human capital, productivity and growth might be larger than in the case of a takeover, where these impacts are generally less pronounced. The impact of FDI also depends on the development level of the host country, including the absorptive capacity of local firms, as well as other factors such as the size of the market, institutional settings or the level of competition.

Table 4.3 - Main determinants of the magnitude of FDI impact on local firms

Local firm/ economy characteristics	Foreign investor (MNE) characteristics	Other environmental characteristics
Absorptive capacity	Country of origin of the investor	Distance
Technological gap	Entry mode (i.e. M&A versus greenfield)	between local
Exporting markets	Degree of foreign ownership (e.g. wholly owned, JVs)	firm and foreign
Intangible assets/R&D	Industry affiliation (i.e. primary sector, manufacturing, services)	subsidiary
Human capital	High-tech, medium and low-tech industries	
Size of the local firms	Innovation and training activities	
Level of competition in the local markets	Investment motives	
Government assistance, incentives for FDI	Technology-based ownership	
	Technology sourcing	

Source: Crespo and Fontoura (2007) and Kravtsova (2008).

4.3.1. Direct effects of inward FDI

A distinction can be drawn between direct and indirect effects of FDI. If foreign-controlled firms achieve higher labour productivity and capital productivity and create more jobs than domestic firms, then the direct effects are positive. This is because MNEs provide a bundle of characteristics in the host countries that are not necessarily available locally: technologies, brands, management procedures, market access, and so on.

In a more systematic taxonomy, FDI has the potential to directly provide:

- Financial resources, FDI inflows are more stable, long-termist, and easier to service than commercial debt and portfolio investment.
- Technology, MNEs can introduce modern technologies, some of which are only available through FDI, some through technology licences. These corporations can

stimulate the technical efficiency of local firms by providing assistance, acting as role models, and intensifying competition.

- Market access, MNEs can provide access to export markets for goods and some services that are already provided in the host country.
- Skills and management techniques, MNEs have worldwide access to individuals with advanced skills and knowledge, which they can transfer to their foreign affiliates.
- Good practices (regarding the environment, for example), MNEs are leading the way in clean technologies and modern environmental management systems. Some of these can also spill over to host country firms (see the next section on indirect effects) and other MNEs.

4.3.1.1. Growth effects of FDI

One possible approach to measure the direct impact of FDI in the EU countries is to estimate Barro-type growth regressions based on cross-section data where GDP per capita growth is a function of initial GDP per capita, average years of education and the domestic investment ratio. OLS estimates of Barro-type growth regressions [23] show that FDI stocks and flows have a direct impact on growth of GDP per capita with relatively large marginal returns given the factor share of FDI in GDP (see Table A.5. in the Appendix). Overall, a 1 percentage point increase in the ratio of FDI inflows to GDP increases the growth rate by 1.5 percentage points in the EU-12 countries and 1.2 percentage points in the EU-15 countries. The magnitude of the effects indicates that for the EU-12 countries the increase in FDI inflows between the second half of the 1990s and the second half of the 2000s by 2 percentage points accounted for 30% of the increase in the growth rate of GDP per capita (from 1.4% to 5.1% based on unweighted averages)[24].

4.3.1.2. Employment share of foreign affiliates in the EU countries

The direct importance of inward investment can be measured by the share of employment of foreign affiliates in the host market based on the inward FATS statistics (i.e. foreign controlled enterprise statistics).[25] Foreign-controlled companies play a major role in the EU Member States in terms of employment, value added and turnover.

Based on NACE rev. 2 for the year 2008 the employment share of foreign affiliates in manufacturing was 21% (EU-15: 19% and EU-12: 30%). Other industries where the employment share of foreign-controlled enterprises is significant are the followings: information and communication (EU-27: 18%; EU-15: 16% and EU-12: 32%), administrative and support service activities (EU-27: 15%; EU-15: 14% and EU-12: 22%) and financial and insurance activities (EU-27: 13%; EU-15: 9% and EU-12: 68%). The role of

[23] The data consist of a sample of 29 EU and EFTA countries plus Turkey for the period 1985-2010 where data are measured as five-year averages.

[24] Unreported results show that the growth effect of FDI increases with the relative level of GDP per capita to the country with the highest GDP per capita.

[25] Note that inward FATS statistics and balance of payments based FDI flows are not directly comparable since FATS is based on the 50.1% rule (share of the voting rights) while FDI is based on 10% voting power. The number of countries for which data are avaialbe is limited to 20-22, depending on the sectors.

foreign multinationals in employment in the EU is smallest in construction (3%) and real estate activities (4%). Within manufacturing a very large variation can be observed in the employment share of foreign affiliates. This is much higher than the average in pharmaceuticals, chemicals, transport equipment and electrical and optical equipment. At the same time, textiles and wood are considered as the least FDI-intensive sectors. Almost all industries in the EU-12 proved to be more reliant on FDI than in the EU-15.

The employment share of foreign-controlled enterprises in the manufacturing sector increased in almost all Member States between 1997 and 2007.[26] In terms of employment multinationals play an important role in the EU-12 (most importantly in Hungary, the Czech Republic and Slovakia), employing 42-50% of the total workforce in 2007. Other FDI-intensive countries reach similar levels of employment share (e.g. Ireland and Belgium). Over a roughly ten-year period the increasing role of multinationals can be also observed in the Scandinavian and UK manufacturing sectors. At the same time in southern countries, such as Italy, Spain and Portugal, the share of total workers employed by foreign manufacturing multinationals did not change much and remained at a relatively low level.

It is interesting to compare the change in the share of foreign affiliate employment in services to that in manufacturing. In the case of non-financial services and business services, all EU countries for which data are available show an increase in the employment share of foreign affiliates, with larger increases than in manufacturing. A high (21-23%) and increasing employment share of foreign enterprises can be observed for instance in Denmark, Sweden and Estonia. However, manufacturing is still much more globalised than services with the exception of information and communication services.

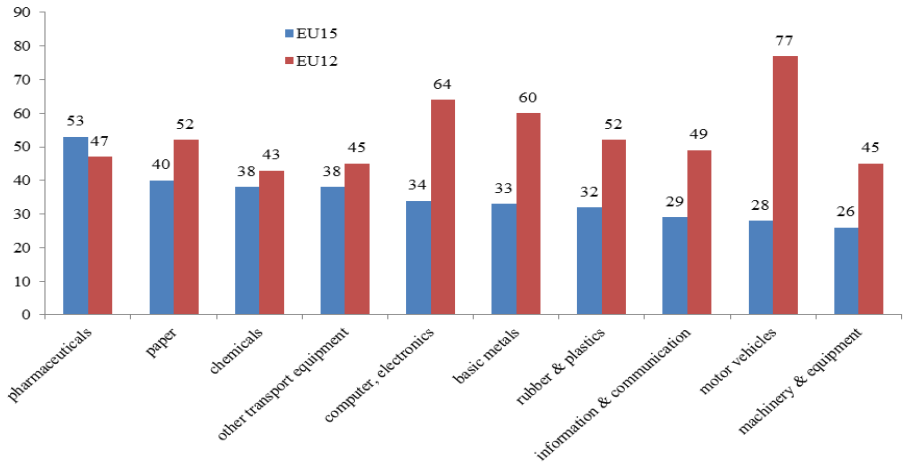
4.3.1.3. Value added share of foreign MNEs

Regarding the manufacturing sector foreign firms' share of value added was larger than their share of employment: 28% in the EU-15 countries and 42% in the EU-12 countries. The economic importance of foreign-controlled enterprises varies significantly across industries. In the EU-15 foreign affiliates have the highest share of value added in pharmaceuticals (53 %) followed by paper, chemicals, other transport equipment, computer, electronic and optical products, basic metals and motor vehicles (see Figure 4.4). These industries feature either high capital intensity (e.g. paper and metals) or a high level of innovation and R&D activities (e.g. pharmaceuticals, computer, electronic and optical products).[27] Within services, information and communication services have the highest share of foreign-controlled enterprises (29%), exceeding the degree of internationalisation of total manufacturing. One reason for the high degree of internationalisation in terms of FDI in this sector is the rise of ICT. For the EU-12 there is a similar ranking of industries with respect to foreign presence.

[26] Except Ireland, Spain and Portugal.

[27] In these high-tech and medium high-tech manufacturing sectors, the internationalisation of firms R&D activities more pronounced than in other sectors (European Commission, 2012).

Figure 4.4 – Share of value added of foreign affiliates in the EU based on NACE rev. 2



Note: Number of EU countries for which data are available range between 16 and 21, except for pharmaceuticals with 10 countries.

Source: WIFO calculations using Eurostat Foreign-controlled enterprises data (Eurobase).

4.3.1.4. Productivity of foreign controlled enterprises

Foreign-controlled firms exhibit a productivity advantage over domestically owned firms and this holds true for almost all industries. The ratio of labour productivity between foreign-controlled and nationally controlled enterprises is highest in information and communication services, and wholesale and retail trade (see Table 4.4).

However, productivity differences between foreign-owned firms and domestic firms should be interpreted with some caution. The productivity gap between foreign and local firms may also be due to foreign investors' cherry-picking of the best firms.

Table 4.4 - Labour productivity of foreign-controlled and nationally controlled firms (□000 EUR)

Value added per person employed in 2008										
	EU-12 countries					EU-15 countries				
	For-eign	Dom estic	all	ratio	# ind	For-eign	Do-mestic	all	ratio	# of ind
manufacturing	29	17	21	171	(10)	89	53	60	168	(11)
water supply sewerage, waste	30	23	24	128	(6)	75	82	81	91	(8)
construction	35	19	20	182	(11)	71	55	55	131	(11)
wholesale & retail trade; repairs	32	19	21	*167*	(8)	84	37	43	*228*	(10)
transportation & storage	29	22	23	132	(7)	61	56	57	109	(10)
accommodation & food service	16	13	13	122	(8)	32	39	38	82	(8)
information & communication	73	36	48	*200*	*(9)*	209	97	115	*216*	*(11)*
professional, scientific & tech. act.	39	30	31	132	(7)	83	58	60	143	(10)
administrative & support service act.	24	16	18	143	(8)	53	37	39	145	(10)

Note: The ratio is defined as value added per person employed. Number of countries for which data is available in parenthesis.

Source: WIFO calculations using Eurostat Foreign-controlled enterprises data (Eurobase).

Recent firm-level studies show that the productivity gap partly disappears when foreign affiliates and domestically owned multinationals are compared (Griffith, Redding and Simpson, 2002, 2004; Criscuolo and Martin, 2009). This suggests that multinationality rather than foreign ownership per se is the main explanation for the higher productivity level of foreign owned firms as compared to domestic firms.

Empirical evidence on the direct effects of FDI can be obtained by calculating the contribution of foreign-controlled enterprises to total labour productivity growth. Table 4.5 provides evidence on the direct contribution of foreign-controlled enterprises to real labour productivity growth for the EU manufacturing sector using the growth accounting framework introduced by Criscuolo (2005). The results show that foreign affiliates contribute more than proportionally to productivity growth when compared it with the employment share of foreign affiliates. In the EU-15 countries foreign-controlled enterprises in the manufacturing sector account for 54% of total labour productivity growth. The corresponding contribution for the EU-15 countries is 62%. This is a large effect given that employment share of foreign-controlled enterprises is 20% in the EU-15 and 29% in the EU-12. When the direct contribution of foreign-controlled enterprises is decomposed into the within effect and the between or compositional effect (i.e. contribution by the increase in the employment share of foreign affiliates in the host economy), it can be seen that the between effects account for 45% in the manufacturing sector in EU-15 countries and 55% in EU-12 countries.

Table 4.5 - Contribution of foreign-controlled enterprises to labour productivity growth in manufacturing

		Contribution in percentage points				foreign	between
	Average annual productivity growth	domestic	foreign	within	between	%	effect
EU-15	4.0	1.8	2.2	1.2	1.0	54	45
EU-12	10.1	3.7	6.5	2.9	3.6	62	55

Note: The EU-15 countries include Austria, Denmark, Estonia, Finland, France, Italy, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. The EU-12 countries include Bulgaria, the Czech Republic, Latvia,

Hungary, Romania, Slovakia and Slovenia. The time spans are 1999-2007 for the EU-15 countries and 2003-2007 for the EU-12 countries.

Source: WIFO calculations using Eurostat Foreign-controlled enterprises data, National accounts database (Eurobase) and the EUKLEMS database.

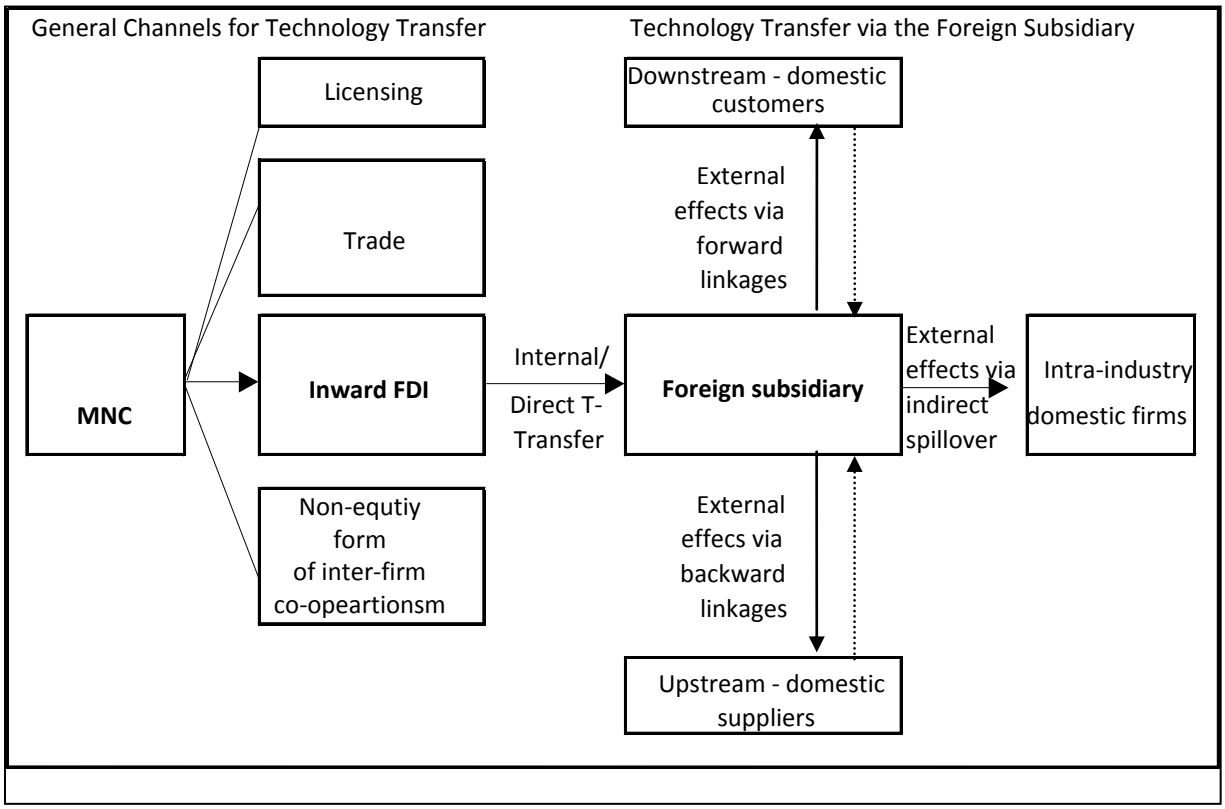
4.3.2. Indirect effects of FDI on productivity and performance

The unintended indirect impact of FDI on host countries has been already studied from many points of view, including economic growth and development, employment and technology transfer.

The assumption underlying recent policy initiatives to attract FDI is that FDI inflows upgrade the technological capabilities, skills and competitiveness of local firms in the host countries. How does FDI contribute to this when MNEs try to protect their knowledge? What is the empirical evidence that FDI upgrades the capabilities and competitiveness of host countries?

It has been suggested that spillovers from MNEs to local firms (or other MNEs) represent an important channel for the dissemination of technology and knowledge. Unintended knowledge and technology transfers from MNEs to local economies are usually referred to as the indirect effect of FDI. Figure 4.5 highlights the main channels through which a multinational corporation can engage in activities that affect a host country. Inward FDI is only one of the possible business strategies undertaken by MNEs: licensing, trade and non-equity forms of inter-firm cooperation (e.g. joint ventures) are also available options. The impact can be direct (on the foreign subsidiary) or indirect (on domestic firms). In the latter case, the indirect effect is divided horizontally (intra-industry effect) and vertically (inter-industry). Finally, the vertical effect can be divided into forward linkages (downstream domestic customers) and backward linkages (upstream domestic suppliers).

Figure 4.5 - Channels for technology transfer



Source: WIFO illustration.

At least four ways can be identified in which knowledge may spill over from foreign affiliates to other firms in a given host economy.[28]

1. *Imitation and demonstration effects*

   These can be implemented by reverse engineering – efforts in which a firm takes a foreign product apart, analyses it and learns about the technologies. Domestic companies do not need FDI for this; imports can be sufficient for the purpose. However, it is easier to imitate and copy – also in terms of managerial and organisational innovations – if MNEs are located in the country.

2. *Foreign linkage effects*

   The foreign linkage effect is a related demonstration effect: through imitation (or sometimes through collaboration), domestic firms can learn how to export and reach foreign markets.

3. *Movement of labour and skills acquisition (i.e. mobility)*

   When an MNE transfers practices or technology to affiliates, it has to train its employees in the host country in question. This new managerial and technical knowledge can spill over to host country firms when employees with these new skills move to other firms or set up their own businesses. A number of empirical studies

[28] Kokko (1992) and Blomström and Kokko (1998).

suggest that the movement of workers between firms is the most important mechanism for technology and knowledge spillovers[29].

4. *Competition – Market interactions*

   It is argued that the entry of an MNE (with better technology and managerial practices) into a host country will force that country's firms to use existing technology and resources more efficiently and/or upgrade to more efficient technologies. However, competitive pressure can force domestic firms to exit (crowding-out or business-stealing effects) (Dunning, 1993).

Do these spillovers take place in all countries and industries? According to the "absorptive capacity" literature (Cohen and Levinthal, 1989 and 1990)[30] and the recent "distance to the frontier" literature[31] the wider a given development gap is, the less likely it is that the host country or host country firms will have the human capital, physical infrastructure and distribution networks – therefore more generally the absorptive capacity – to attract advanced FDI.

Absorptive capacity can be defined as the ability to recognise the value of new external information, assimilate it, and apply it to commercial ends – a factor critical to firms' innovative capabilities. This definition has also become a key concept in the FDI literature, which has extended the notion of absorptive capacity by relating it to a firms' prior knowledge: the more a local firm already knows when an MNE enters the market, the more likely it is to be able to learn from and imitate the MNE's knowledge (positive FDI spillovers). In the context of a given local enterprise, it is the enterprise's absorptive capacity that enables it to appropriate some of this knowledge.[32]

4.3.2.1. New empirical evidence on the indirect effects of FDI on productivity in the EU-27

The results shown in section 4.5.1 have addressed the direct impacts of foreign affiliates on productivity growth. However, they do not allow us to infer whether foreign firms raise overall growth. The aim of this section is to investigate whether domestic firms benefit from the presence of foreign MNEs in both the same and customer industries. Knowledge about the magnitude of FDI spillovers is important because it can help policy makers to maximise the benefits of FDI for local enterprises and minimises its adverse effects.

In order to gain a first idea of the relationship between foreign presence and the performance of the domestic sector a simple scatter plot using aggregate country-level data is provided. The results show that in EU countries where foreign-controlled enterprises in the

29 See Barry, Görg and Strobl, 2004, for Ireland; Pesola, 2011, for Finland; and Martins, 2011, for Portugal.

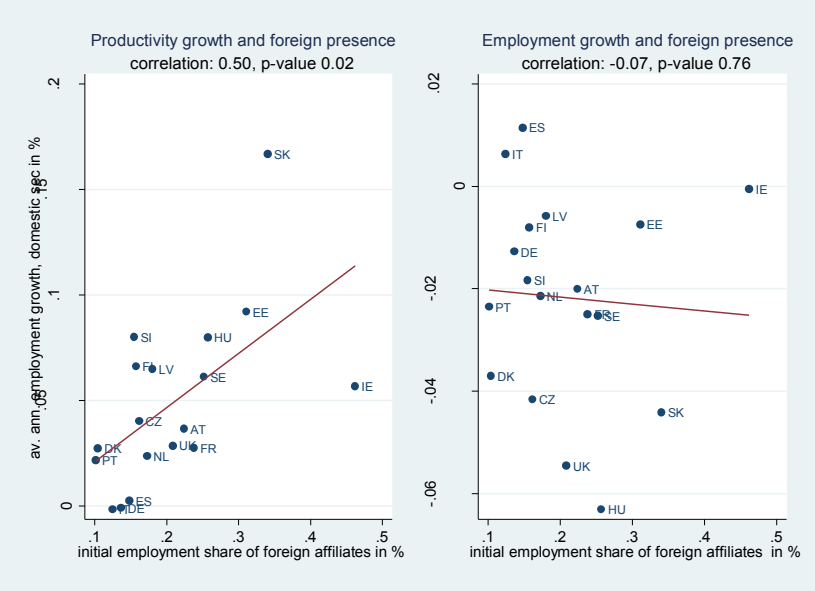
30 See also Alfaro et al. (2004): Noorbakhsh and Paloni (2001); Borensztein, De Gregorio and Lee (1998).

31 Sabirianova, Svejnar, and Terrell (2009); Rodriguez-Clare (1996); Acemoglu, Aghion and Zilibotti (2006).

32 The background study, Falk et al. (2012) summarises the results of more than 70 studies investigating the effects of FDI published after 2000. The absorptive capacity hypothesis is confirmed in 12 out of 20 studies, with the relative productivity level between domestic and foreign firms the most widely used measure of absorptive capacity.

manufacturing sector initially have a large share of employment (starting in 1999 for most EU-15 countries and 2003 for EU-12 countries) the growth in the labour productivity of domestically controlled firms in the manufacturing sector is significantly higher over the period 1999-2007 (alternatively 2003-2007 for the EU-12 countries; Figure 4.6, left-hand panel). However, employment growth in manufacturing is not significantly correlated with foreign presence (Figure 4.6, right-hand panel).

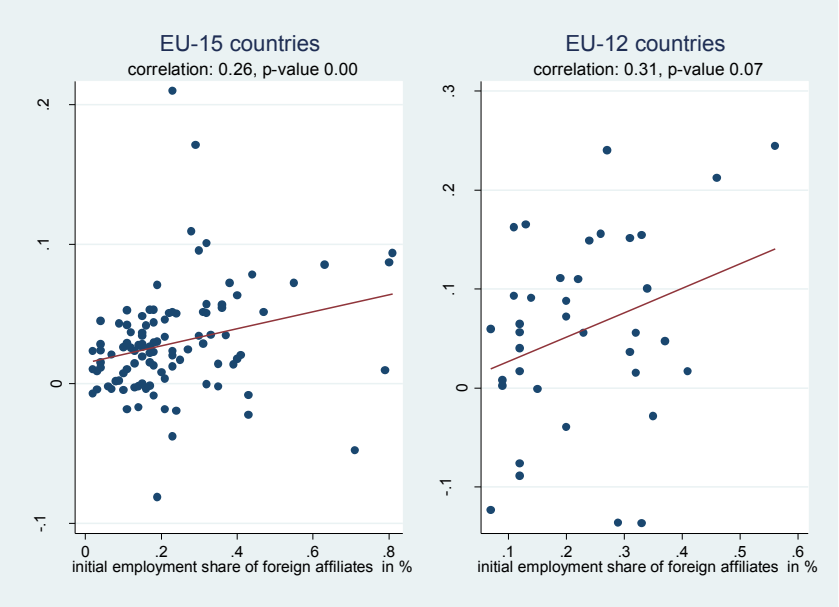
Figure 4.6 - Productivity and employment dynamics in the domestic sector and initial employment share of foreign-controlled enterprises in manufacturing (EU-27)



Source: WIFO calculations using Eurostat, Foreign-controlled enterprises data, National accounts database (Eurobase) and the EUKLEMS database.

When disaggregated data at the one/two-digit level for the manufacturing sector are used a significant correlation between foreign presence and labour productivity growth can be observed. This holds true for both the EU-15 and EU-12 countries for which data are available (see Figure 4.7).

Figure 4.7 - Employment growth and initial employment share of foreign-controlled enterprises in manufacturing at the one-digit level in EU-15 and EU-12 countries



Source: WIFO calculations using Eurostat Foreign-controlled enterprises data, National accounts database (Eurobase) and the EUKLEMS database.

The inward FATS database has been combined with national accounts data,[33] which makes it possible to estimate the impact of foreign presence within the same industry and in customer industries on the performance of domestically owned firms. For the manufacturing sector in the EU-15 and EU-12, OLS estimates at the industry level show that the impact of foreign presence in the same and in customer (buying) industries in the initial year has a positive impact on the average annual growth rate of real labour productivity of the domestic sector. In summary, the presence of both horizontal and vertical backward spillovers from FDI can be observed.

The next step is to investigate the impact of the presence of foreign affiliates on the productivity growth of domestic companies. Since the activity of foreign firms is unlikely to affect all firms equally, it is interesting to examine, whether firms characterized by low productivity growth rates benefit from the presence of MNEs. The interaction term between the backward production linkage variable and the productivity gap between the domestic and foreign sector is significant, indicating that the FDI effect through backward linkages increases with the labour productivity level of the domestic firms to that of foreign firms. For the EU-15 countries in the manufacturing sector, the magnitude of the FDI effect is twice as large as in the industries characterised by a small relative labour productivity gap as compared to those with a large relative productivity gap (coefficient of 1.17 for a relative productivity level of 1.9 (=90%) as compared to 1.9 for a productivity of 1.5 (=50%; see Table A.6 in the Appendix).

[33] Background study, Falk et al. 2012.

In addition, the results based on firm level data for seven EU-12 countries (including manufacturing and service firms) show strong evidence of productivity spillovers from backward linkages. However, the FDI effect is highly uneven across the different types of firms, with insignificant effects for laggards (e.g. shrinking firms) and newly founded firms. Companies with lower than average labour productivity growth are unlikely to benefit from the presence of MNEs, while spillover effects of FDI on highly productive firms in the customer industries proved to be significant. In particular, the spillover effects through backward linkages are higher for fast-growing firms when compared with the total sample. A negative relationship has been found between productivity growth of domestically owned firms and the presence of foreign firms in the same industry, indicating negative horizontal spillovers probably due to a market stealing effect (see Table A.7 in the Appendix). However, the above results should be interpreted with caution, because limited data may lead to an aggregation bias. To overcome the limitations, the Community Innovation Survey (CIS) is used in the next section to investigate the impact of foreign MNEs on local firms.

4.3.2.2. New empirical evidence on the indirect effects of FDI on employment growth and technological innovations in the EU-10

The findings of the empirical analysis in this chapter so far have strongly supported the view that backward spillovers are more important than horizontal spillovers with regard to productivity growth. However, an open question remains as to what extent the magnitude of FDI spillovers depends on local firm characteristics and absorptive capacity. The entry of multinational enterprises may not only have an impact on productivity and employment growth but may also induce local firms to introduce new products and/or services or new production processes. This part of the analysis investigates the impact of FDI on the employment performance and innovation activities of domestically owned companies based on CIS 2006 data for eight EU-10 countries.[34] Particular attention is paid to the role of spillovers from downstream multinational enterprises on upstream local suppliers (backward linkages).

Special emphasis is put on the question of the absorptive capacity of local firms and firm characteristics (e.g. firm size). The analysis is based on a large firm sample, namely the CIS 2006 for eight EU-10 countries with about 36000 observations. This analysis focuses on the EU-10 countries.[35] The reason is that the productivity differences between domestically and foreign-owned firms are much more pronounced in the EU-10 countries than in the EU-15 countries.

The major contribution of this analysis is that it investigates the relationship between the employment performance of local firms and FDI along with the impact of FDI on the innovativeness of local companies. Few studies have investigated the impact of foreign

[34] This section is based on yet unpublished results from the EU funded project INNO Grips ENTR-09-11-LOT2.

[35] The eight EU-10 countries considered are: Bulgaria, the Czech Republic, Estonia, Poland, Romania, Slovenia and the Slovak Republic.

presence on technological innovation in domestically-owned firms[36]. Using data for 27 countries in Central and Eastern Europe (including the EU-10 countries), Gorodnichenko et al. (2010) find that domestic firms innovation activities increase through backward linkages by supplying multinational enterprises.

OLS estimates (see Table A.8 in the Appendix) based on eight EU-10 countries show that foreign presence has a positive impact on employment growth of firms located in local supply industries. In particular, local firms with backward linkages in industries with a large initial foreign employment share have a significantly higher average employment growth rate in the next two years. In other words, local firms with a larger supply of inputs to industries where foreign firms are present tend to create more jobs than industries with no such linkages. The magnitude of the spillover effect through backward linkages increases with the absorptive capacity of local firms measured as the initial productivity level of domestic firms to that of foreign firms. However, the additional effect of the increased absorptive capacity is relatively modest.

Furthermore, foreign competition leads to a higher probability that local firms will introduce new product innovations where foreign competition is measured as a subjective qualitative indicator as perceived by local firms. A new empirical finding is that the magnitude of the impact of FDI through backward linkages increases for innovative local firms (i.e. firms that introduce new products and/or new services) in the manufacturing sector. Overall, the results show strong evidence in support of vertical spillovers through backward linkages from foreign buyers to local suppliers. Local firm characteristics also influence the strength of FDI spillovers. Spillovers through backward linkages to local firms are present for local firms in the manufacturing sector and generally for firms with 25 or more employees but do not exist for small firms with less than 25 employees and for domestically owned firms in the service sector. Moreover and somewhat unexpectedly, the results show that spillovers through backward linkages to local firms are much larger for non-exporting firms than for exporting firms. There is also evidence that firms in the same industry benefit from industry-level FDI that increases with absorptive capacity. However, the magnitude of the effects is much smaller than that of spillovers through backward linkages.

The relationship between foreign presence and the innovation performance of local firms is also investigated (Table A.9 in the Appendix). The results show a positive association between innovation performance of domestically owned firms and foreign presence in customer industries. This suggests that local firms in industries that supply a larger share of their output to industries with a larger share of multinational enterprises are more likely to introduce product innovations or new market products. However, the positive effect only occurs when the productivity gap is not too wide and increases with the relative labour productivity level between local and foreign-owned firms. Furthermore, the positive impact of FDI can be observed in all kinds of innovation activities (i.e. new market products, product

[36] Exceptions are Vahter (2011) for Estonia or Bertschek (1995) and Blind and Jungmittag (2004) for German firm level data.

and process innovations[37]) but it is the largest for product innovations. Hence, FDI favours technology adoption (i.e. goods and services that are new to the firm) rather than radical innovations (i.e. market novelties).

Overall, the results suggest that foreign firms act as catalysts for domestic suppliers to introduce technological innovations in the case of EU-10 countries. In addition, foreign firms do not crowd out domestic innovation in the same industry and there are positive effects with increased absorptive capacity. An important result is that not only do domestic suppliers benefit in their innovation performance from the presence of multinational enterprises, but technological innovations of local firms and that of foreign firms are also significantly positively correlated. In other words, the introduction of technological innovations by domestic and foreign firms goes hand in hand (holding everything else constant and accounting for industry effects). [38]

4.3.2.3. Evidence for technology transfer through backward linkages and the use of technology licences

The aim of this section is to analyse the characteristics of local firms that supply goods and services to multinational enterprises. It also examines to what extent foreign affiliates contribute to technology transfers in the form of technology licences.

There are a number of reasons why multinationals prefer local procurement rather than suppliers from abroad. Geographical proximity can lower production costs and makes face-to-face contacts easier, and close relationships with local suppliers make it easier to tailor products and services to local market conditions. However, in some industries local sourcing is less frequent because multinational companies prefer to work with their established suppliers (UNCTAD, 2001, 2003). The factor determining the supply status of supplies MNEs is estimated using a probit model. Information on the level of use of local suppliers by foreign firms also makes it possible to estimate an ordered probit model.[39]

In the EU-10 in 2004, 17% of local firms supplied goods or services to foreign affiliates located in the same country (not including the parent company) (see Table 4.6). This share is higher than the average in the case of transport services (24%), mining (23%), manufacturing firms (19%), and business services (19%). Most of the local firms have a low share of goods and services supplied to MNEs. Furthermore, the supplier status and the share of sales increase with firm size. Overall, the incidence of supplier linkages between local and multinational firms is quite significant given the practice of multinational enterprises of purchasing from established suppliers.

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37 Process innovation refers to new or significantly improved production process, distribution method or supporting activity.

38 This important result has also been found when analysing specifically R&D investments of firms abroad (European Commission, 2012). R&D intensities of domestic and foreign firms are positively correlated. Furthermore, no evidence has been found that inward R&D crowds out R&D activites of domestic firms. On the contrary both are found complementary. Reciprocically, there is no evidence that R&D activities performed abroad are substitutions for similar domestic actitivites.

39 The data used here are based on the Business Environment and Enterprise Performance Survey (BEEPS) 2005 and 2009 provided by the World Bank. The data contains information for the years 2004 with about 3500 observations for the business enterprise sector. Information on technology licences obtained from foreign-owned firms in the manufacturing sector is taken from the BEEPS 2009 survey.

Table 4.6 – Share of domestic sales to multinational enterprises and their foreign affiliates by local firms in 2004 by industries, EU-10

Share of domestic sales to multinational enterprises in host country of local firms							
	0	1-24	25-49	50-74	75-100	total	1-100
				by industry			
mining	77	9	5	9	0	100	23
construction	86	7	4	1	1	100	14
manufacturing	81	9	4	3	3	100	19
transport	76	11	7	4	2	100	24
trade	87	9	2	1	1	100	13
real estate, renting, business serv.	81	11	2	3	2	100	19
hotel and restaurants	87	8	4	0	0	100	13
other services	90	7	1	1	1	100	10
total	83	9	3	2	2	100	17
				by size			
firm size							
>5	93	4	1	2	1	100	7
5 - 24.9	85	9	3	2	1	100	15
25-49.9	78	12	5	3	2	100	22
>=50	79	11	5	3	2	100	21
total	85	8	3	2	1	100	15

Note: Figures are based on the question "What percentage of your domestic sales are to multinationals located in your country (not including your parent company, if applicable)?" using 3500 firm observations.

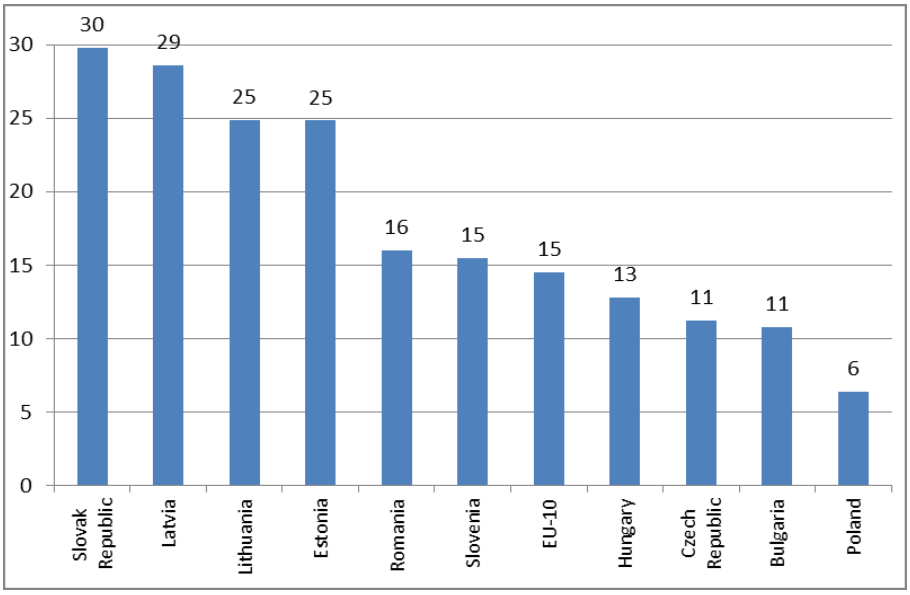
Source: BEEPS 2005.

Unreported results show that firms with new products are more likely to become a supplier to multinational enterprises in the same country. Innovative firms have a 7 percentage points higher probability of being a supplier than non-innovative firms. Local firms in construction, wholesale and retail trade, and hotels and restaurants have a lower likelihood of being a supplier to multinational enterprises. As expected, firm size has a positive impact on being a supplier to MNEs, with the probability decreasing slightly with increased firm size. Furthermore, the skill structure is of great importance in being a supplier to foreign affiliates: firms with a larger share of workers with some or completed university education have a significantly higher probability of being a supplier to MNEs.

The next step is to investigate the extent of technology transfers from foreign-owned firms to local firms in the form of technology licences. In particular, it is examined to what extent foreign affiliates contribute to technology transfer and help to upgrade local suppliers in the host economy with respect to innovation performance and innovation input. The focus is on externalised technology transfer, i.e. linkages and transfers outside direct transfers such as licences, franchises or subcontracting (Ivarsson and Alvstam, 2005). These types of technology transfers have the potential to contribute to technology upgrading (UNCTAD, 1999).

Figure 4.8 shows the share of firms that use technology licensed from foreign-owned enterprises in the manufacturing sector in the EU-10. About 15% of the firms use licences from foreign-owned firms with large differences across the EU-10 countries.

Figure 4.8 - Use of technology licensed from a foreign-owned company, excluding office software, manufacturing in 2008, in %



Note: Weighted using sample weights.
Source: BEEPS 2009 based on 1100 observations.

As expected, firms that use technology licences are more likely to introduce new products and product innovations and to undertake R&D. In the manufacturing sector 63% of local firms having licences with foreign MNEs engaged in product innovation in 2008. At the same time only 51% of local companies without technology licences proved to be innovative. The percentage of firms with R&D activities is 40% for firms with licences and 21% for those with no licences. This may indicate that the use of licences from foreign-owned companies leads to technological upgrading of local firms but may also indicate that innovative firms and R&D-intensive firms are more likely to use technology licences.

4.4 Trends and structures of EU-27 outward FDI

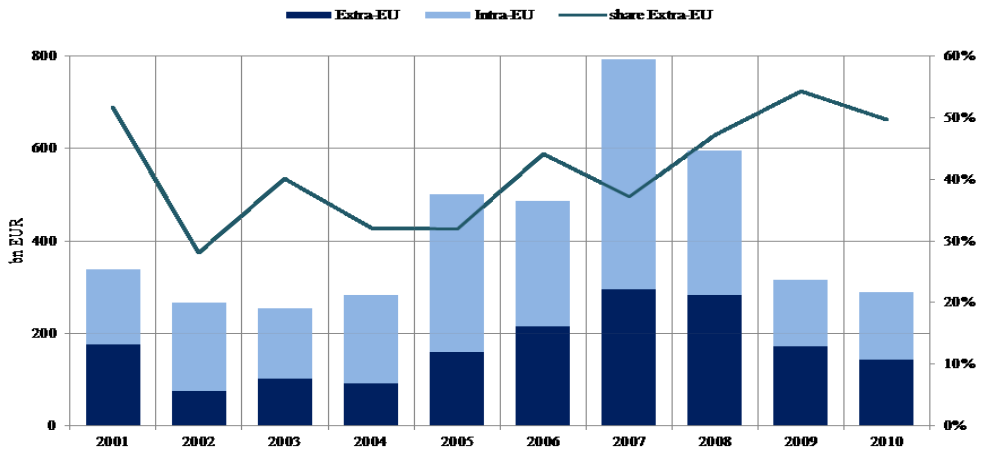
At global level, the EU is the largest direct investor, typically accounting for more than half of global FDI outflows (intra-EU flows included). In line with the global trend, the investment activity of EU MNEs decreased substantially and resulted in the EU□s share of global outflows dropping to a third in the years 2009 and 2010.

Both extra-EU and intra-EU outflows contracted in absolute terms after 2007 and did not return to the peak levels of 2006 and 2007 until 2010. EU MNEs curtailed FDI activities particularly within the EU, which is reflected in a marked decline in intra-EU flows since the peak in 2007 (Figure 4.9). Intra-EU outflows dropped by almost 40% in 2008 and again by 50% in 2009 to around EUR 140 bn and stabilised at that level in 2010.

Outward FDI flows to countries outside the EU also contracted and were down for the third consecutive year in 2010 shrinking to EUR 143 bn, less than half of their peak value in 2007. Despite their severe 40% decline in 2009 extra-EU flows have gained relative importance since the crisis. Between 2008 and 2010 the share of extra-EU outflows hovered around 50%.

The number and value of EU greenfield investments went down and the average size of projects was typically smaller in the period 2009-2011.

Figure 4.9 - EU FDI outflows, 2001-2010 (EUR bn)



Note: EU is EU-25 for 2001-2003 and EU-27 for 2004-2010. EU flows calculated as the sum of EU Member States. Intra-EU flows to Luxembourg are adjusted downwards by 90% in order to exclude activities of Special Purpose Enterprises (SPEs). Extra-EU flows exclude offshore centres (Guernsey, Jersey, Isle of Man, Gibraltar, Bahamas, Bermuda, British Virgin Islands, Cayman Islands, Netherlands Antilles).

Source: Eurostat, wiiw calculations.

The shift in outward FDI from intra-EU to extra-EU flows might indicate that EU MNEs have perceived the EU as a less attractive location for FDI since 2008, inducing several European MNEs to seek investment opportunities in fast-growing emerging markets outside the EU. Another factor contributing to the shift in the destinations of FDI is that until mid-2008 the EU-10 countries provided excellent investment opportunities for EU MNEs, but the convergence process was interrupted by the economic crises of 2008/2009 and these countries stopped being a focus destination for EU MNEs.

4.4.1. EU outward FDI by destinations: a shift towards emerging markets

Like the main sources of the EU□s inward FDI from the rest of the world, the main recipients of EU outward FDI are the US and the EFTA countries. These two regions accounted for more than half of the total extra-EU outflows in the period 2008-2010. This supports the view that the dominant share of EU FDI is market-seeking FDI targeted at high-income economies. However, as a result of the crisis, investment by EU MNEs in developed destinations – with the exception of Switzerland - declined significantly. This is partly linked to the recession in developed countries and the dominant role of M&As between developed countries, which are more sensitive to business fluctuations than greenfield investments.

At the same time emerging economies, mainly in Asia and South America have clearly become more important destinations for EU FDI. This trend had started well in advance of the economic crisis of 2008/2009 but the European recession intensified it. In 2008-2010, 11 out of the 15 largest FDI destinations were emerging and transition economies, including Russia,

Brazil, Mexico, China, Turkey and India. Developing regions bordering the EU benefited to a lesser extent from EU FDI, with the notable exception of North Africa (see more about this in Chapter 6). In general, flows to emerging countries were much more resilient to the crisis. This is due to the fact that these markets have higher growth performance and prospects and are thus ideal targets for greenfield investments.

EU MNEs account for a significant share of overall FDI stocks in major destination countries. The overwhelming majority of the EU FDI stock in non-EU countries is owned by companies from the EU-15 (97%) while the EU-12 accounted for about 3% in 2010.[40] EU multinationals are particularly well positioned in the US, Switzerland, Russia and Argentina[41] accounting for 64%, 71%, 83% and 55%, respectively, of the total FDI stock in the country. EU companies represent a much larger share of inward FDI stocks in many countries than US or Japanese competitors, indicating a good competitive position in foreign markets. For instance, in both India and Argentina, the EU□s share of the FDI stock is two and three times larger than that of the US. Only in China, EU firms seem to be on a par with the US in terms of accumulated FDI stocks. China seems to be a particularly competitive market for foreign direct investors as there is strong competition there also from South Korea and Singapore.

4.4.2. Industry structure of the EU outward FDI: the EU possesses comparative advantages for FDI in manufacturing industries

Like FDI in general, EU outward FDI by broad economic sectors takes place predominantly in services. Services emerge as the main sector accounting for 72% of the total outward FDI of the EU, while manufacturing represents 20%. These figures are biased towards the services sector due to the massive FDI stocks of the financial sector. However, excluding the financial sector and the activities of holding companies (other business services), the services industries account for 29% of total EU outward stocks. Most investments in this sector target the trade and repair industry (10%) and the post and telecommunications industry (7.4%). Manufacturing industries account for half of the total (adjusted) EU outward stocks in non-EU countries amounting to EUR 645 bn. The chemical industry (14%) is the leading industry in terms of EU outward FDI stocks owned in the rest of the world, followed by the metal industry (6%) and the food industry (6%). Generally speaking, the magnitude of the EU outward stocks in the individual industries reflects the strong competitive positions of the EU companies in the respective industries. The variation across destinations markets shows that host country factors, including resource endowments and the importance of the industry in the host economy, also play a role in investment decisions of EU firms. For instance, the EU and Switzerland both have large multinationals in the chemical industry, and a large share (43%) of EU total outward FDI stock in the chemical sector is located in Switzerland. Another

[40] The share of the EU-12 in intra-EU-27 stocks is even lower, at around 2% in 2010; it is, however considerably higher within the EU-12 amounting to 8.7%. More details about the FDI activities of MNEs from the EU-12 are provided in the next section.

[41] In the case of Russia, EU investments may to some extent be overstated because a third of the EU□s FDI stock in Russia is owned by Cyprus (which makes it the largest investor) but these flows are understood to mainly constitute □round-tripping□ capital. □Round-tripping□ FDI refers to Russian investment channelled back via Cyprus for tax purposes (Hunya and Stöllinger, 2009). Moreover, these figures also include FDI stocks owned by Luxembourg which to a very large extent represents financial intermediation activity. The main results from this analysis are not affected by these □anomalies□.

example is the low presence of EU (and other) multinationals in the Indian market in the trade and repair industry, which is a clear consequence of the prohibition of the FDI in multibrand retailing.

In the analysis of trade flows it has become common to investigate the relative position of a country in a specific industry by looking at revealed comparative advantages (RCAs). Basically, RCAs signal the industries in which a given country exports relatively more than it imports in comparison to the export and import ratio in the total economy. EU outward FDI stocks by industries are used to apply the concept of RCAs to FDI stocks by comparing inward with outward stocks. Calculating RCAs based on inward and outward EU FDI stocks suggests that EU MNEs are competitive in manufacturing industries, including the EU□s traditional industry strongholds (i.e. chemicals, machinery, vehicles) see Figure A.1.in the Appendix. The EU□s RCAs in both manufacturing industries and the mining and quarrying sector are based on technological capacities. In manufacturing, this conclusion is derived from the fact that the EU enjoys RCAs mainly in relatively more technology-intensive industries. In mining and quarrying EU MNEs seem to have developed technologies that allow them to exploit natural resources abroad despite the EU□s relative resource scarcity. In contrast in services industries, including knowledge-intensive industries such as R&D and computer activities, revealed comparative disadvantages have been found. This suggests that EU MNEs in these sectors are less competitive than foreign MNEs.

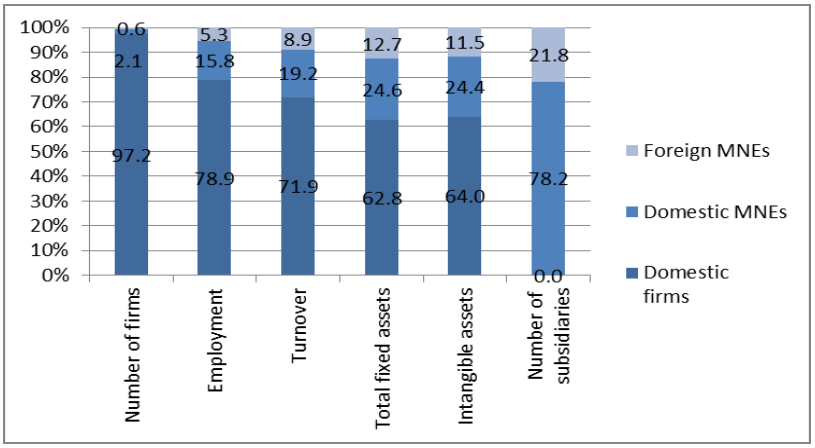
4.4.3. The importance of EU MNEs in the EU-15 countries

Looking beyond the major developments in FDI outflows at the aggregate and sector level, the analysis at the firm level provides additional insights into the number of multinational firms and their importance for the EU. Due to data limitations the sample is restricted to EU-15 firms.[42] The empirical literature suggests that foreign MNEs are more productive, more capital-intensive, larger and pay higher wages than firms operating exclusively in the domestic market. Furthermore, only a very small fraction of EU-15 firms own foreign affiliates, but they account for a disproportionately large share of domestic activity. The share of MNEs is typically larger in small countries. The share of domestic MNEs is larger than that of foreign MNEs in all EU-15 countries except for Luxembourg.

Despite their small share in total number of firms (2.8%), MNEs (domestic and foreign MNEs together) account for 21.1% of employment, 28.1% of turnover, 37.2% of total fixed assets and 36% of intangible assets in the EU-15. Domestic multinational enterprises – domestic to each individual country in the EU-15 – account for the largest share of these activities, while foreign multinational enterprises account for a much smaller proportion (Figure 4.10.).

[42] Firm level data stem from the AMADEUS database.

Figure 4.10 - Contribution of EU-15 multinational enterprises to domestic activities



Source: AMADEUS database (2011 release), WIFO calculations.

Multinational firms that own subsidiaries in more than one foreign country account for a mere 1% of the total number of firms in the sample, but generate 15% of employment, 20% of turnover and 27% of total fixed assets and intangible assets. Roughly the same picture emerges for multinationals that own more than four foreign subsidiaries. This is an indication that these MNEs are on average larger firms.

The international activity of multinational firms is quite concentrated. The largest 25% of MNEs account for almost 30% of the total number of foreign subsidiaries, 76% of total turnover and intangible assets and generate 90% of employment. However, they represent only 15% of the total number of MNEs in the sample.

Activities of EU-15 MNEs are highly concentrated in the EU. The firm-level data reveal that 70% of EU MNEs choose the EU-15 and 45% choose locations within the EU-15 exclusively. The top three destinations in the EU-15 are Germany, the UK and France. Regarding non-EU countries most European firms prefer to operate in the US market. MNEs in the service sector tend to invest more outside the EU than manufacturing firms. First-time investors prefer closer locations in Western and Eastern Europe. Furthermore, almost half of the new investors place their initial investment in the EU-15 and 15% in the EU-12 and only a very few first-time investors operate affiliates outside Europe.

Most MNEs own only a small number of foreign subsidiaries, and are active in a small number of different host countries. More than half of MNEs hold only one subsidiary, and nearly 60% of the MNEs are active in only one foreign market.

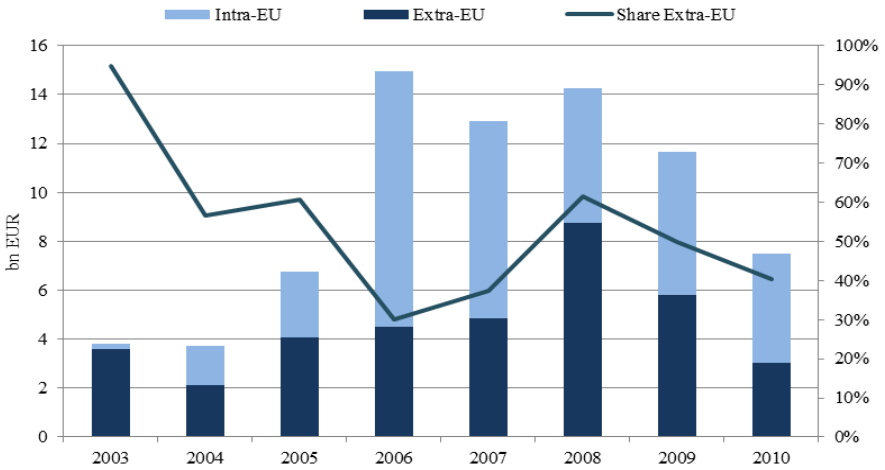
In terms of location choice, the analysis reveals weak evidence of a sequence of markets, in the sense that on average MNEs tend to set up affiliates in less popular markets only if they already have a subsidiary in one of the more popular markets.

4.4.4. Emerging outward FDI from the new EU Member States (EU-12)

The trends in overall EU outward FDI reflect mostly the pattern of EU-15 countries. Linked to their high GDP per capita level, as expected, most of these countries are net capital

exporters, with outward FDI stocks exceeding inward FDI stocks. The new EU Member States (EU-12) in turn have been clearly the focus of inward FDI over the past decade. Foreign MNEs made a significant contribution to structural change and development. While EU-12 countries were the source of very low levels of outward FDI, there are several signs that FDI outflows and outward FDI positions are gradually catching up. In line with the theoretical notion of the "investment development path"[43] (Dunning, 1981, 1986), there has been a growing number of "emerging multinationals" operating from the EU-12. FDI outflows from these countries increased from around EUR 4 bn in 2003 to EUR 7.5 bn in 2010 and peaked at levels of up to EUR 14 bn in some of the pre-crisis years (Figure 4.11).

Figure 4.11 - EU-12 FDI outflows, 2003-2010



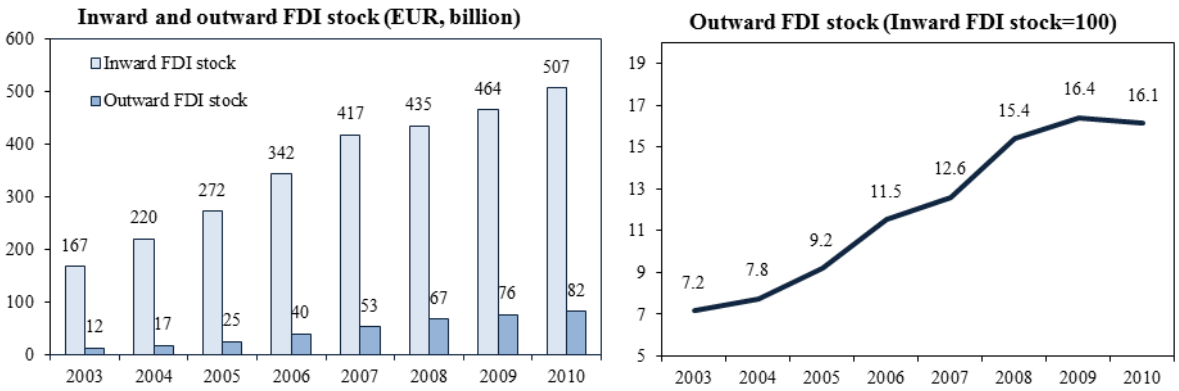
Source: Eurostat.

The total stock of capital invested abroad by EU-12 countries reached EUR 81.8 bn in 2010, having increased nearly sevenfold from its 2003 value. As a result, these countries almost tripled their share in total EU outward FDI, from 1.3% in 2003 to about 1.8 % in 2010. Moreover, the EU-12 outward FDI stock grew also in relation to the inward FDI stock in these countries: from 7.2% in 2003 to over 16% in 2010 (Figure 4.12). This growth occurred despite a more than threefold increase in the value of inward FDI stock in these countries: from EUR 167 bn in 2003 to EUR 507 bn in 2010.[44]

[43] This assumes a systematic relationship between the development level of a country and the net outward investment position.

[44] This phenomenon was initially described by Svetlicic and Jaklic (2006), Boudier-Bensebaa (2008), Gorynia, Nowak and Wolniak (2010), Sass, Éltető and Antalóczy (2012), Radło and Sass (2012) Ferencikova and Ferencikova (2012), Radło (2012) and Zemplinerová (2012).

Figure 4.12 - Inward and outward FDI stock (EU-12, 2003-2010)

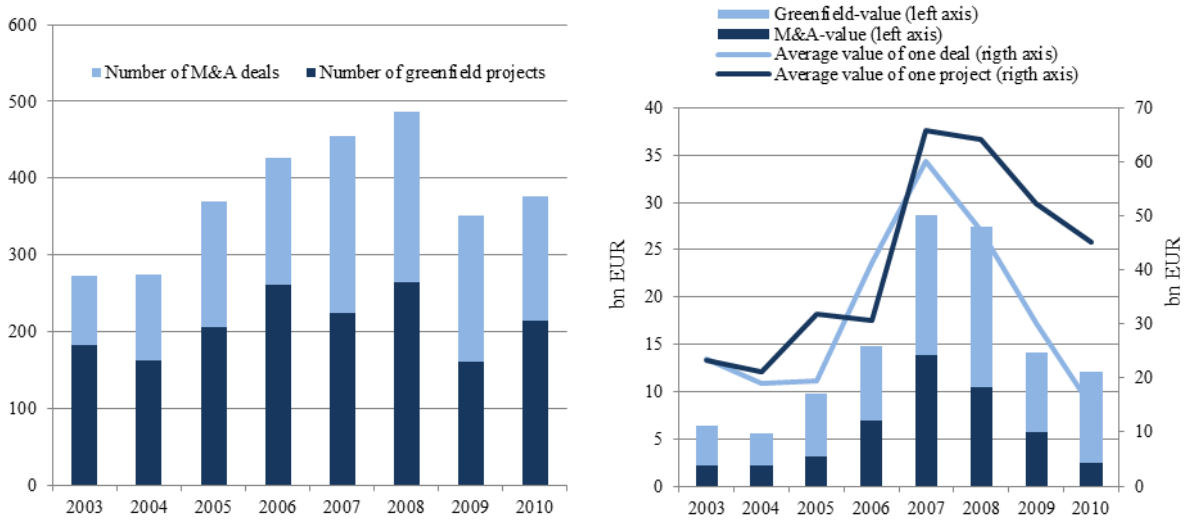


Source: WERI calculations based on Eurostat.

In line with the general downturn in outward FDI activities during the crisis, activities in the EU-12 also slowed down. However, this does not indicate a change in the overall trend of an increasing outward flows from the region. The decline was not steep and the value of outflow investments from the region in 2009-2010 was still significantly higher than in 2003-2005.

In most years greenfield FDI projects outweigh M&A deals in numbers (Figure 4.13). The crisis-related fall in M&A was steeper than that in greenfield investments and the average size of investment projects has declined since the crisis, for both types of investment projects, but much more so for M&A deals than for greenfield investments. While greenfield investments recovered in 2010, the number and the value of M&A continued to decline.

Figure 4.13 - Greenfield FDI projects and M&A deals by MNEs from EU-12 (number of deals and value in EUR bn)



Source: WERI calculations based on the fDi markets database.

Regarding individual countries, Poland, the biggest economy in the EU-12, held a 35.7% share of the value of the total outward FDI stock from the region. Hungary was the second largest investor from the EU-12 region (18.0%), followed by the Czech Republic (13.3%). However, relative to GDP, smaller countries such as Estonia, Slovenia and Hungary are the best performers in terms of internationalisation through outward FDI.

While in the pre-accession period FDI outflows from the EU-12 were strongly concentrated in regions outside the EU-27, this changed to a much stronger focus on intra-EU flows after accession. In 2010 well over 50% of the total EU-12 stock of outward FDI constituted intra-EU-27 investments (see Figure 4.11). Note that this is a different trend to the one that has been found inherently for the EU-15 in the analysis of overall EU foreign direct investment trends.

Distinguishing between the types of outward FDI projects, the geography of M&A is highly influenced by □round-tripping□ FDI deals, referring to investments that are channelled back to the original investing country by Special Purpose Entities (holding companies) located in financial centres or tax havens. This trend is mostly reflected in foreign direct investments in Cyprus, the Netherlands, the UK, Switzerland and Luxembourg. Another clean dominant trend is for M&A deals in proximate, neighbouring countries within the Central-East European region. The largest EU-15 locations for EU-12 M&A activities are Germany, Austria and Italy, while Romania, Lithuania, the Czech Republic, Bulgaria and Slovenia are the main destinations within the EU-12. Extra-EU M&As are most intensively undertaken in neighbouring Croatia, the Ukraine, Serbia and Russia.

The geography of greenfield FDI is less influenced by factors related to financial flows resulting from tax optimisation. The main focus is on countries within the EU-12 region itself – foremost Romania, the Slovak Republic and Bulgaria – and neighbouring countries in Eastern Europe (Russia and Ukraine) along with markets of the former Yugoslavia in South-Eastern Europe. The most important target countries for greenfield investments from the EU-12 are Germany, Italy, the UK and Austria. It is worth noting that some outward investment is oriented toward emerging regions in Asia.

The main feature of the sector structure in the EU-12 is a very strong focus on construction and engineering and on the coke and refined petroleum products. Comparable to the overall EU sector pattern of outward FDI, the investment activity of EU-12 MNEs is dominated by the service sector. The total value of manufacturing projects is greater than that of greenfield projects. Apart from finance and insurance which leads in M&A projects, the focus of FDI from the EU-12 is on transportation and wholesale and retail trade.

4.5 Home country effects of outward FDI on EU industry

A debate is ongoing in most developed countries about the possible adverse effects of outward FDI on domestic industries. In particular, the fear of job-exporting has sparked widespread concerns due to the increasing attractiveness of emerging and fast-growing and low-wage countries. This is a highly controversial issue in the EU-15 Member States, which

see themselves as affected by such concerns, especially since the eastern EU enlargements in 2004 and 2007 and the intra-EU reallocation. A related issue is the increase in the internationalisation of corporate R&D and fears that the offshoring of R&D activities of multinational enterprises is hollowing out the innovation base in the home country. On the other hand, outward FDI is seen as a means to gain market access and secure market shares, to reduce production costs and gain access to technologies and know-how of foreign countries, with positive feedback to the growth and the international competitiveness of home-based parent companies. Moreover, as reviewed in section 4.3.4 multinational firms are found to be more productive, larger and more capital- and technology-intensive, to pay higher wages and to employ a more highly skilled labour force. For all these reasons, countries with an increasing share of multinational firms should experience an increase in aggregate productivity and aggregate competitiveness on international markets.

The theoretical predictions on the home-market effects of outward FDI are far from clear-cut and depend on the type of motive for outward foreign direct investments and the very specific relationships between the parent company and its foreign affiliates. The main questions that are raised in terms of direct effects typically treat FDI as an exogenous event and then seek to examine the impact on performance or employment. This is highly dependent on the motivation of the firm, home country characteristics and the industry in which FDI takes place.

The motivation of the firm to undertake FDI influences both the scale and scope and also the level and destination of FDI. In turn, these factors will also lead to very different impacts at home (Buckley and Casson, 2009; Driffield et al., 2009; Driffield and Love, 2007). Table 4.7 provides a synopsis of the impacts of the different types of FDI, based on the existing literature, in terms of the effects on employment, skill structures, technology transfer, productivity and profitability.

Table 4.7 – Home-market effects of outward FDI depend on the motive for going abroad

Typology	Motivation	Employment	Technology transfer	Productivity	Skills	Profitability
market seeking	the desire to exploit existing firm-specific assets in new markets	little reallocation, some expansion at home, may also replace exports	technology is exported	neutral	potential increase for skilled labour at home to coordinate new activity	positive
resource seeking	the desire to access (natural) resources abroad	positive	neutral	neutral	neutral	positive
efficiency seeking	(re)location of activity to low-cost locations	negative for low-skilled workers and positive for high-skilled workers	neutral	potentially positive on average as more productive activities are retained at home	home-country activities become more skill-intensive, as demand for low-skilled workers is reduced at home	positive
technology sourcing	the desire to access new technology abroad	may be positive in the long run	positive	positive	increased demand for skilled workers at home	positive, but only in long run

Source: WIFO illustration.

The background study provides an overview of the empirical literature reviewed. While it is possible to draw feasible conclusions on the impact of FDI from this review with respect to productivity, profitability and technology transfers, there remain some areas where the home - country effects remain uncertain. These mostly relate to employment effects, where the literature presents a very heterogeneous picture.

4.5.1. Employment effects

The most pressing question in terms of the employment effects of outward FDI is the extent to which it leads to a reduction in employment at home. A glance at the literature on home country employment effects in the background study (Falk et al. 2012) shows that European firms that have engaged in FDI in low-cost locations are more likely to decrease the demand for low skill worker and increase the demand for high skill workers with an overall ambiguous effect. However, this represents only about a third of the total FDI by EU firms, with FDI in general producing more positive impacts on employment. Even where outward FDI does lead to a reduction in employment, the employment substitution is much less than 100%.

When it is possible to differentiate between motivations and locations, it has been typically found that a doubling of FDI to low-cost locations reduces the demand for unskilled workers by some 4%, while it leads to a similar increase in the demand for skilled workers, (Driffield

et al., 2009). The findings of Copenhagen Economics (2010) suggest that EU outward FDI has had no measurable impact on employment at the aggregate level. However, bearing in mind the very different data sets and estimation techniques that are used, and the different measures of FDI (from employment abroad to capital flows, and even assets held abroad), it is impossible to draw strong conclusions about the employment effects of outward FDI.

4.5.2. Skill structure

In recent years both academics and policy makers have expressed concern that increasing globalisation, in the form of both foreign direct investment (FDI) and international trade, is causing dramatic changes in labour demand in the developed world. Specifically, that demand for unskilled workers in the US and Western Europe has been declining and will continue to decline as unskilled workers face significant competition from the newly industrialised countries and other parts of the developing world.

One of the biggest problems when seeking to examine the impact of FDI on skill structures in Europe, and to arrive at any clear conclusions, is that labour market flexibility differs greatly even within the EU-15 countries, and has changed over time. In general, labour market flexibility rewards more skilled workers, who not only have higher earnings but more secure employment. Outward FDI enhances this, rewarding more skilled workers while relocating low-skill activities elsewhere.

Empirical work on the impact of outward FDI on relative employment of different skill levels is limited in scope. A central aspect of the relevant literature is the difficulty of separating the effects of outward FDI from that of skill-biased technological change. The introduction of new technologies and the decision to offshore production activities or services often occurs simultaneously, making it difficult to isolate the effects. This literature can be summarised by two key points. The first is that where the home country has a technological advantage and where this is reinforced by lower unit labour costs then outward FDI increases the demand for skilled labour. Secondly, the higher level of skills an individual has, the better placed they are to gain from FDI in either direction.

4.5.3. Technology transfer

Benefits from knowledge flows between MNE parent companies and their affiliates abroad are most likely in cases where strategic knowledge and technology sourcing are the key motive for FDI, especially between advanced economies. Recent evidence suggests that corporations are increasingly moving their R&D facilities abroad. This is being done as part of a strategic move away from merely adapting □core□ technology to a foreign market towards a much more central role in product innovation and development. Companies which previously exerted rather tight control over their R&D sites are now granting more autonomy and empowerment to R&D laboratories situated abroad. Since the 1990s organisations have begun to take a more decentralised approach to R&D (Pearce, 1999; Niosi, 1999). In addition, the literature suggests that there is a growing willingness to locate such facilities close to leading centres of research and innovation specifically with a view to absorbing learning

spillovers from geographical proximity to such sites (Serapio and Dalton, 1999; Ito and Wakasugi, 2007).

The existing empirical studies also provide evidence on extensive □reverse□ knowledge flows from affiliates to parents. This indicates that knowledge-sourcing is indeed an important determinant of outward FDI. However, these flows might not always spill over to the home economy. On the other hand, outward FDI, without any intra-firm knowledge transfers, creates spillovers of knowledge back to the home country. Thus, intra-firm knowledge transfers are neither necessary nor sufficient for subsequent spillovers to the home economy. However, the fact remains that spillovers are overwhelmingly more likely to occur where there exists parent-affiliate knowledge transfer exists.

4.5.4. Productivity

In line with the evidence reported on the characteristics of EU-15 MNEs, the bulk of the empirical literature on FDI and productivity finds that firms self-select into foreign markets, via either exports or FDI. This self-selection means that they are already performing better than the rest of the population of firms. These companies are more productive than average, sometimes as much as 25% more productive than the rest of the firms. However, there is additional evidence suggesting that there is a positive productivity gain associated with increased outward FDI, which in turn depends on the type of investment undertaken.

Typically, the main theoretical rationale for the home country to expect benefits from outward FDI is based on the likely indirect effects (Driffield et al., 2009). As firms locate abroad, they may improve their overall performance and efficiency by relocating only low value-added production abroad and keeping and even expanding high value-added activities at home. The standard analysis suggests that such FDI flows merely reflect the desire to locate in the lowest possible cost locations. FDI of this type may well generate productivity growth at home, through what Blomström and Kokko (1998) highlight as the 'batting average' effect of outward FDI that can occur as a result of the reallocation of resources that may accompany FDI, especially to low-cost locations.

Positive feedbacks from FDI to productivity at home are also associated with successful technology and knowledge sourcing and benefits from agglomeration effects in specific sectors (Barba Navaretti and Venables, 2004), or effects related to the general notion of □learning by exporting□ due to exposure to international competition, best practice and the technology frontier as well as demonstration effects (Clerides et al., 1998).

4.5.5. Profitability

Much of the literature concerning the relationship between outward FDI and profitability centres on what has become known as the multinationality-performance debate. Overall, the literature finds that multinationals are more profitable than others, but with some evidence that this is because the more successful firms become multinational. However, overall multinationality is associated with long-run profitability. One weakness in this literature is that it typically fails to distinguish between either the location of the FDI or its type. For

example, Driffield and Yong (2012) find that FDI from EU firms to developing countries is more profitable (though less productive) than FDI between EU countries.

The importance of mergers and acquisition (M&A) activity also has to be considered in this regard. Gugler et al. (2003) analyse the effects of M&A activity around the world for a 15-year period. They separate the effects of domestic and cross-border M&A on firms' profits and market shares and show that mergers on average do result in significant increases in profits, but reduce the sales of the merging firms. Differences between mergers in the manufacturing and the service sectors, and between domestic and cross-border mergers are also found to be minimal.

4.6 Conclusions and policy implications

Impacts and motivation for FDI policies. Investment in its various forms is generally acknowledged to be the main driver of economic growth, without ever giving rise to much controversy about its desirability. In contrast, due to its transnational character, FDI conducted by multinational enterprises demands additional attention. It is important to continue designing smart policies to encourage more and responsive FDI, while applying the principle of Policy Coherence for Development. On the one hand, economies aim to attract inward FDI, counting on its direct contribution to the job creation and productivity growth and anticipating of positive indirect effects through knowledge spillovers and user-supplier linkages. This applies in particular to greenfield investments, whereas M&As are sometimes viewed with reservations in the host country. On the other hand, outward FDI is often considered a sign of economic strength, e.g. by securing competitive assets or opening markets abroad. Again, the positive attitude towards internationalisation does not always predominate, for example when there is a fear that domestic jobs will be offshored to lower-cost locations.

This chapter has reviewed the literature and provided new empirical evidence on the trends, determinants and impacts of FDI. Overall, the evidence confirms the general view that FDI inflows into the EU have a direct and significant effect on economic growth and productivity growth in the host country. And the marginal contribution of foreign investment appears to be greater than the growth stimulus of an equivalent amount of domestic investment. Greenfield investment especially not only brings new capital, but often creates employment both directly in the affiliate and indirectly through supplier linkages to local firms.

The review of the home country effects of outward FDI also shows the effects on productivity in the home economy are predominantly positive. The evidence in the literature on the impact on employment is less clear. When employment substitution takes place, it is mostly to the detriment of low-skilled workers, but it is difficult to disentangle the impact of skill-biased technical change from that of internationalisation. Researchers therefore agree that there is a substantial need for labour market policies which facilitate the process of adjustment towards a higher proportion of high-skilled employees.

In short, from a policy perspective the internationalisation of firms is a major driver of competitiveness, exerting positive impacts on growth, technological capabilities, labour productivity and wages and also the aggregate international performance of an economy.

The firm□s decision to invest abroad. Two findings of the firm-level analysis of internationalisation are especially relevant. First, self-selection of firms into FDI seems to prevail over learning effects from internationalisation. Thus, the causality runs from superior performance to the FDI decision and then (possibly) to some growth effects from learning, while the observed performance premia are not the result of internationalisation. Consequently, inducing low-performing to engage in foreign activities does not turn them into high-performing firms. Second, aggregate performance (growth, competitiveness) is to a large extent driven by reallocation effects between well-performing and poorly performing firms. That is, aggregate competitiveness (productivity) increases because of an increase in the number of high-performing firms and not so much because of an increase in the productivity growth of these firms.

Both the evidence of self-selection of high-performing firms into FDI and the importance of reallocation effects for aggregate performance lead to the conclusion that the best policy measures to promote outward FDI are not subsidies and targeted support, but the promotion of a competitive business environment in general (Greenaway, 2004). This would ensure an intra-industry reallocation of resources from the worst-performing to the best-performing firms with the effect of increasing the MNE base of countries and increasing aggregate productivity, growth and wages. The policy question, thus, is not so much which firms to support, but what policy environment ensures reallocations and leads more firms to reach the threshold levels of performance indicators to self-select into internationalization.

It is also crucial to provide conditions which allow small firms and small MNEs to grow. The analysis has shown a strong relationship between firm size and multinational activity, both in terms of starting foreign operations and in terms of the number of affiliates. While the findings do not imply that firms need to be very large - and a lot of medium-sized firms actually undertake both intra-EU and extra-EU FDI - the firm size must reach critical levels to cover the fixed and variable costs of global operations. The growth of SMEs seems to be especially important in efforts to promote multi-country strategies of MNEs and FDI into dynamic emerging economies. The firm growth literature finds that US firms enjoy more dynamic growth than European firms and suggests that there are still sizeable barriers to firm growth in Europe which need to be identified properly (Scarpetta et al., 2002; Bartelsman et al., 2004; Bartelsman et al., 2005; and Navaretti et al., 2011).

From a policy perspective it will be important to ascertain why firms with similar size and performance characteristics to MNEs fail to self-select into FDI. Entry costs could vary across firms due to information asymmetries and uncertainties (Eaton et al., 2008; Todo, 2011). If the choice to not operate internationally via FDI is due to firms□s different abilities to gather information about foreign markets, there is room for policy to set up an infrastructure to alleviate these factors of uncertainty. If the failure to embark on FDI activities or to broaden the country base of FDI activities is due to management failures within firms, any policy

action in terms of subsidies □will simply be a waste of resources□ (Greenaway, 2004). Thus, policy should focus on curing market failures (information and knowledge problems, missing insurance markets, etc.), while any targeted support and promotion of particular firms with high internationalisation potential will always run into problems of ex-ante selection.

Determinants of FDI flows – how to attract FDI. The empirical evidence shows that factor cost advantages, the introduction of the euro and EU membership are driving forces behind FDI in the EU-27. Skills also play a positive role in attracting FDI in supporting the importance of improving education and training systems to develop higher levels and better quality skills in the workforce. While the effects of unit labour costs are larger in the EU-15 than in the EU-12, tax effects are larger and only significant in the latter group of countries. Only for greenfield FDI do corporate taxes have a strong impact in both the EU-12 and EU-15 countries.

Furthermore, changes in employment protection and the cost of starting a business cannot explain the change in FDI activity over time but are significant at the cross-sectional level. Moreover, some determinants (e.g. ICT infrastructure, intellectual property rights and labour market protection) fail to have a significant impact on FDI activity when other effects are controlled for. All these determinants are only significant at the cross-sectional level.

Although the empirical analysis in this study indicates that in the EU-15 countries, differences in the corporate tax rate have little impact in attracting FDI to a country, these differences have generated much debate on corporate tax consolidation (see Bettendorf et al. 2010), tax competition (Genschel and Schwarz, 2011) and transfer pricing (Gresik, 2001).

Differences in tax rates can have negative impacts on productivity growth and in other areas of the European market. Transfer pricing may have negative consequences when multinational enterprises reduce their overall tax burden by moving earnings from subsidiaries in high-tax to low-tax countries through the prices they set on internal transactions (Gresik, 2001). Estimates of the mean semi-elasticity of FDI with respect to the tax rate provided in this chapter are higher for the EU-12 than the EU-15, suggesting that some profit shifting happens between Eastern and Western Europe. In the EU-12 greenfield FDI accounts for the majority of FDI, which is more sensitive to taxes than M&As, which account for the bulk of FDI in the EU-15. As a solution all EU Member States have in place transfer pricing rules following OECD arm□s length principle. According to this principle transfer pricing for transactions within multinationals is considered arm□s length, if it is within a range of market prices for comparable transactions. However, it may not be easy to identify the correct arm□s length price for a transaction, as comparable market prices are not available for some transactions and it is difficult to monitor all transactions.[45]

A second solution would be to implement some kind of tax harmonisation, either partially through the tax base, or fully through both the tax rate and the tax base (Bettendorf et al.,

[45] Barba Navaretti and Venables (2004).

2010). Harmonised tax systems also provide an attractive solution to the tax competition problem. Tax competition encourages a steady decline in the corporate tax rate when countries maintain relatively lower tax rates or offer tax incentives on a unilateral basis. This trend has the potential to create certain perverse incentives through greater differentials, especially if the corporate income tax rate is below the individual income tax rate (European Commission, 2011). However, the idea of tax harmonisation remains very controversial, mainly because Member States generally want to retain sovereignty over their tax systems.

Furthermore, greenfield FDI is much more sensitive to changes in host- and home country GDP than total FDI. Since distance may be related to transport costs, improving transportation infrastructure can help to increase greenfield FDI.

Finally, a sizable share of the slow growth of FDI stocks in some EU-15 countries can be attributed to rising unit labour costs. Hence, Member States should attempt to improve their cost competitiveness by ensuring that rates of real wage growth do not exceed the rate of labour productivity growth.

Policies to maximise the benefits of inward FDI. Multinational enterprises can be an important conduit of international technology transfer and spillovers. Linkages are relevant and the effects are sizable. Hence, fears that FDI may create an □economic enclave□ or □cathedrals in the desert□ are not justified. The size of spillovers and technology transfers is clearly shown to depend on firm-specific characteristics of local enterprises, especially their absorptive capacity.

Both technology transfer and knowledge spillovers are strongly dependent on how much multinationals are embedded in the host country, or the extent to which multinationals include local enterprises in their global production and innovation networks. Estimates based on CIS data suggest that local suppliers to multinational enterprises introduce new products more often than non-collaborators. This indicates that technology transferred to local firms may also lead to spillovers often associated with competitive behaviour. An implication of these findings is that neither inward FDI nor spillovers should be targeted as policy variables, but instead industrial policy should focus on encouraging the formation of networks between local enterprises and multinational enterprises (see more about this in Chapter 5). Targeted incentives to promote the strengthening of linkages can be important but the use of such incentives should be compatible with the EU regulations on subsidies and countervailing measures.

Estimates based on firm-level data for the EU-12 suggest that labour productivity growth in local firms is significantly positively correlated with the extent of backward linkages from foreign-owned industries to local firms, but not with the presence of foreign-owned firms in the same industry. Estimates based on CIS data for the EU-12 also show that local firms with backward linkages from multinational enterprises have a significantly higher average employment growth rate (except for small firms). Furthermore, the magnitude of the employment effect through backward linkages increases with the absorptive capacity of local

firms. These estimates confirm the need to introduce policies that facilitate the transfer of technology between local firms and multinationals and assist firms in building capabilities.

Investment promotion in practice. There is considerable controversy over what kind of investment promotion measures the EU and/or individual Member States should adopt. Many national and regional investment promotion agencies offer services to reduce transaction cost and information asymmetries for foreign firms. These can ease the burden of bureaucratic procedures and help to better assess the costs and opportunities in a particular business environment. Harding and Javorcik (2011) suggest that investment promotion does not work in countries where information asymmetries are relatively low and bureaucratic procedures less complex, but that it could work in less developed countries, including the EU-12 countries. The above statistical analysis reveals, however, that information asymmetries and other regulations did not discourage investors in the EU-12. Furthermore, the trend toward consistency of external relations and the internal market will likely further reduce these barriers over the next few years. In any case, policy can benefit from the mutual learning about good practices among the variety of approaches and agencies currently operating in the different Member States.

Free movement of capital is one of the four freedoms of the internal market which means that there should not be any barriers to or restrictions on capital movements within the European Union. While this policy is resolutely part of EU law, harmonisation of corporate taxation remains highly controversial.

Expanding the common commercial policy. The common commercial policy, enshrined in the Treaty of Rome in 1957, is central to the European Union□s external relations. Article 206 of *the Treaty on the Functioning of the European Union* (Lisbon Treaty), which entered into force in 2009, requires external relations to be harmonised by progressive abolishing of restrictions on international trade and FDI, and the lowering customs and other barriers. The Lisbon Treaty expands the scope of the common commercial policy by providing the EU with exclusive competence to negotiate international agreements concerning FDI.

The EU pays particular attention to develop a common international investment policy: the Communication □*Towards a comprehensive European international investment policy*□ COM(2010) 343 explores how the EU may develop an international investment policy that increases the EU□s competitiveness and thus contribute to smart, sustainable and inclusive growth, as set out in the Europe 2020 Strategy.[46] In July 2010, the European Commission released another communication on establishing transitional arrangements for bilateral investment agreements between Member States and third countries (COM(2010)344). By improving investment protection and reducing the investor□s risk of entering a foreign market these agreements reduce the costs of investments. Furthermore, from the host country perspective clear and enforceable rules add to their attractiveness as a destination for FDI.

[46] COM(2010) 2020.

On the one hand, the EU should ensure "an open, properly and fairly regulated business environment" for investors throughout Europe. Article 173 *of the Treaty on the Functioning of the European Union* specifies a number of objectives to ensure all necessary conditions for the competitiveness of the EU industry. As such FDI can play an important role in delivering these objectives, such as "speeding up the adjustment of industry to structural changes and better exploitation of industrial potential of policies of innovation, research and technological development". At the same time *Article 173* highlights the importance of a favourable business environment, a crucial factor for attracting foreign investors. More recently, on 3 July 2012, the European Parliament adopted a non-legislative resolution on *Attractiveness of investing in Europe (2011/2288(INI)*. The basic approach of the resolution is that Europe needs more investment from both EU and non-EU investors. It covers a range of recommendations, such as exploiting the EU's position, maximising cohesion policy, improving access to finance and education, combating tax evasion in order to provide better framework conditions for attracting FDI.

On the other hand the Communication COM(2010) 343 points out that "the EU should ensure that EU investors abroad enjoy a level playing field". The Communication on "*An Integrated Industrial Policy for the Globalisation Era*"[47] among others highlights the role of internationalisation of enterprises (especially that of SMEs") both within and outside the EU and the enterprises ability to "access international markets and exploit global value chains".

[47] COM(2010) 614.

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Appendix

Table A.1: Panel data estimates of the determinants of bilateral FDI stocks in the EU-27 countries

	Fixed effects estimates				HT-estimates			HT-estimates			HT-estimates		
	coef		t	t clust adj. a)	coef		T	coef		t	coef		T
host ln GDP in EUR host country, t-1	0.83	***	6.67	2.77	1.00	***	15.10	1.01	***	15.19	1.05	***	13.69
parent ln GDP in EUR parent country, t-1	0.85	***	11.03	5.35	0.81	***	11.35	0.80	***	11.08	0.80	***	11.23
host effective average corporate tax rate t-1	-1.80	***	-4.42	-1.61	-1.56	***	-4.03				-1.52	***	-3.96
host statutory corporate tax rate, t-1								-0.64	*	-1.85			
parent statutory corporate tax rate, t-1								-0.41	**	-0.94			
host unit labour costs, t-1	-0.83	***	-2.74	-1.55	-1.02	***	-3.73	-1.05	***	-3.80	-0.91	***	-3.30
parent ln tertiary graduates share, t-1	0.56	***	3.81	2.49	0.59	***	4.12	0.55	***	3.79	0.65	***	4.56
parent ln R&D/GDP ratio, t-1	0.50	***	4.22	1.93	0.49	***	4.26	0.50	***	4.31	0.45	***	3.91
ln distance					-1.64	***	-18.93	-1.63	***	-19.0	-1.65	***	-19.4
common language					0.85	**	2.51	0.83	**	2.49	0.78	**	2.31
former colony					1.25	***	3.27	1.27	***	3.34	1.28	***	3.39
contiguity					-0.88	***	-2.68	-0.90	***	-2.77	-0.93	***	-2.88
year 2001 (base year 2000)	-0.17	***	-3.07	-2.96	-0.17	***	-3.22	-0.15	***	-2.81	-0.17	***	-3.19
year 2002	-0.11	**	-2.01	-1.45	-0.13	**	-2.38	-0.11	**	-2.08	-0.13	**	-2.47
year 2003	-0.06		-0.97	-0.68	-0.07		-1.37	-0.06		-1.10	-0.08		-1.58
year 2004	0.07		1.08	0.75	0.05		0.91	0.06		1.03	0.05		0.97
year 2005	0.06		0.93	0.65	0.04		0.69	0.06		0.92	0.06		1.08
year 2006	0.08		1.15	0.78	0.06		0.93	0.09		1.31	0.07		1.08
year 2007	0.10		1.26	0.67	0.07		0.96	0.10		1.33	0.07		1.08
year 2008	0.00		0.03	0.02	-0.03		-0.41	0.00		0.06	-0.01		-0.18
year 2009	0.00		0.04	0.02	-0.03		-0.33	0.01		0.16	-0.04		-0.43
year 2010	0.12		1.33	0.69	0.10		1.21	0.13		1.43	0.11		1.25
year 2004*EU-12	0.08		0.95	1.14	0.07		0.87	0.10		1.23			
year 2005*EU-12	0.17	**	2.09	1.97	0.16	**	2.00	0.19	**	2.47			
year 2006*EU-12	0.14	*	1.79	1.69	0.12		1.58	0.15	*	1.94			
year 2007*EU-12	0.27	***	3.50	2.51	0.24	***	3.35	0.27	***	3.75			
year 2008*EU-12	0.32	***	4.11	2.68	0.29	***	3.91	0.31	***	4.23			
year 2009*EU-12	0.25	***	2.93	1.79	0.20	***	2.58	0.22	***	2.77			
year 2010*EU-12	0.39	***	3.96	2.23	0.35	***	3.77	0.38	***	4.06			
year 2007*(dBG | dRO)											0.65	***	4.59
year 2008*(dBG | dRO)											0.63	***	4.43
year 2009*(dBG | dRO)											0.47	**	2.35
year 2010*(dBG | dRO)											0.75	***	3.72
year 2007*newEURO											0.19		0.83
year 2008*newEURO											-0.04		-0.23
year 2009*newEURO											0.19		1.38
year 2010*newEURO											0.31	*	1.93
constant	-34.5	***	-9.26	-3.91	-25.3	***	-11.2	-25.5	***	-11.2	-26.1	***	-10.9
host country effects (p-value)	0.00				0.00			0.00			0.00		
home country effects (p-value)	0.00				0.00			0.00			0.00		
R^2 within	0.34				0.68			0.67			0.67		
number of observations	5116				5116			5116			5116		
number of country-pairs	626				626			626			626		

Note: The dependent variable is the log of bilateral inward FDI stock held by EU country i from country j; a)t-values are based on cluster-adjusted standard errors accounting for common host country effects. ***, ** and * denote statistical significance at 1 percent, 5 percent and 10 percent levels, respectively. The within transformation is used to wipe out country-pair fixed effects. In the HT-estimator all time varying variables except time dummies and their interaction terms are assumed to be endogenous. The sample includes 26 home countries: Australia, Austria, Belgium, Brazil, Canada, China, Denmark, Finland, France, Germany, Hong Kong, India, Ireland, Italy, Japan, Luxembourg, the Netherlands, Norway, Portugal, Russia, South Korea, Spain, Sweden, Switzerland, the United Kingdom and the United States. The host countries are the EU-27 countries.

Source: European Commission, World Bank, OECD, Eurostat Eurobase.

The empirical specification is based on a standard gravity equation augmented by several host and home country factors:

$$\ln(FDI)_{ijt} = \beta_0 \ln GDPHOME_{it-} + \beta_1 \ln GDPHOST_{jt-} + \beta_2 \ln DIST_{ij} + \beta_3 CORPTAXHOME_{it-} +$$
$$+ \beta_4 CORPTAXHOST_{jt-} + \beta_5 ULCHOME_{it-} + \beta_6 ULCHOST_{jt-} + \beta_7 \ln TERTIARYHOME_{it-} +$$
$$\beta_8 TERTIARYHOST_{jt-} + \beta_9 \ln RELGDPCAP_{ijt-} + \beta_{10} EURO_{ijt} \cdot NEWEURO_{ijt}$$
$$+ \beta_{11} EU_{ijt} \cdot EUNEW_{ijt} + \gamma X_{ijt-} + \delta Z_{ij} + \varepsilon_{ij} + \lambda_t + u_{ijt} \quad ,$$

where i is the home country and j is the host country and Ln is the natural logarithm. The variables are defined as follows:

FDI_{ijt} is the inward FDI stock (book value of foreign assets) in current million EURO held by a EU country j from parent country i in a given year (or alternatively FDI_{ijt} plus EUR 1); in addition Greenfield FDI flows from country i to country j is used;

$GDPHOME_{it-}$, $GDPHOME_{ij-}$ are home and host country GDP in current EUR;

$DIST_{ij}$ is the distance between capital cities of the investing and host country;

$CORPTAXHOME_{it-}$, $CORPTAXHOST_{jt-}$ are the effective average tax rate for the nonfinancial sector of the home and host country respectively;

$ULCHOME_{jt-}$, $ULCHOST_{jt-}$ are unit labour costs of the home and host country respectively;

$TERTIARYHOME_{it-}$, $TERTIARYHOST_{jt-}$, are the share of labour force aged 15 to 74 with tertiary education (levels 5 and 6) of the home and host country respectively;

$RELGDPCAP_{ijt} = \left| \frac{GDPHOSTpp_{jt}}{POP_{jt}} - \frac{GDPHOMEpp_{it}}{POP_{jt}} \right|$ is the absolute value of the difference in GDP per capita in purchasing power parities between the source and the host country respectively;

$EURO_{ijt} \cdot NEWEURO_{ijt}$ is a time-varying dummy variable which takes the value of one if the parent country belongs to the Euro area, $EURO_{ijt}$, and the host country introduced the EURO, $\cdot NEWEURO_{ijt}$ (Slovenia in 2007, Cyprus and Malta 2008 and Slovakia starting from 2009) and zero otherwise respectively;

$EU_{ijt} \cdot EUNEW_{ijt}$ takes the value one if the parent country is a EU member state, EU_{ijt} and the host country is joining the EU, $EUNEW_{ijt}$ (2004 for EU-10 countries and 2007 for Bulgaria and Romania) respectively;

X_{ijt-} represents a set of time varying host and parent country factor variables (i.e., R&D/GDP ratio, FDI regulatory restrictiveness index, strength of legal rights index for getting credits, strength of investor protection index, cost of starting a business as a percentage of income per capita, employment protection legislation; top marginal tax rate, protection of intellectual property, hiring and firing practices, labor force share with wages set by centralized collective bargaining, fixed broadband internet subscribers, internet users per 100 people, total tax rate of businesses in percent of commercial profits);

Z_{ij} represents time invariant control variables (i.e. contiguity, sharing the same language and when they share a (former) colonial link);

t are time dummies (TD); λ_t are time effects; α_{ij} are country-pair specific effects and ε_{ijt} is the error term.

The gravity equation contains bilateral country-pair fixed effects, α_{ij} to control for unobserved time-invariant heterogeneity includes common time effects, λ_t . In addition, a large number of policy factors of the home and host country are included.

Table A.2.: Means and correlations coefficients between the ratio of the FDI stock to (home and host country) GDP and the explanatory variables

	means unweighted	means unweighted	correlation with the ratio of inward FDI stock to host country GDP		
host country factors:	2000	2010	coef.	p-value	# of observations
adjusted top statutory tax rate on corporate income in %	31.9	23.3	-0.01	0.46	6228
effective average corporate tax rate in %	27.5	21.8	-0.02	0.12	6228
bilateral effective average corporate tax rate (host) in %	31.3	25.2	-0.13	0.00	3238
total tax rate (% of commercial profits)	50.3	45.4	-0.10	0.00	2909
top marginal tax rate in %	55.4	50.3	-0.04	0.00	5648
unit labour costs (ratio)	0.54	0.72	-0.01	0.33	5845
hourly wage compensation in EUR	13.8	18.8	0.08	0.00	6204
tertiary graduates share in %	16.5	22.0	0.08	0.00	6228
R&D/GDP ratio in %	1.2	1.6	0.02	0.07	6083
fixed broadband internet subscribers (per 100 people)	0.8	24.2	0.10	0.00	5947
internet users per 100 people	19.6	69.7	0.10	0.00	6228
strength of investor protection index (0-10) (10=highest investor protection)	5.5	5.6	0.04	0.03	2909
protection of intellectual property (0-10) (10=highest protection)	6.6	6.9	0.09	0.00	5624
getting credit - strength of legal rights index (0-10) (10=best)	6.7	7.0	0.05	0.00	4032
FDI regulatory restrictiveness index (0-1) (0=open; 1=closed)	0.07	0.05	-0.09	0.00	5516
cost of starting a Business (% of income per capita)	11.4	5.6	-0.06	0.00	4564
hiring and firing practices (1-10) (1=least regulated, 10=most regulated)	3.6	4.1	0.04	0.01	5604
employment protection legislation, (0-6) (0= least and 6 most restrictive	2.13	2.09	-0.07	0.00	3477
labour force share with wages set by centralized collective bargaining (1-10) (=1 highly centralized, 10=least centralized, i.e. best)	5.7	5.7	0.00	0.79	5604
GDP per capita in int. $ US ppp	23025	26711	0.20	0.00	6228
distance in kilometres	3969.3		-0.23	0.00	0.00
former colony	7.0		0.20	0.00	0.00
common language	7.1		0.26	0.00	0.04
contiguity	3.6		0.27	0.00	0.00
			correlation with the ratio of outward FDI stock to home country GDP		
home country factors:	2000	2010	correlation	p-value	# of observations
adjusted top statutory tax rate on corporate income in %	34.3	28.2	-0.01	0.28	6237
effective average corporate tax rate in %	n.a.	n.a.			
bilateral effective average corporate tax rate (host) in %	31.3	25.2	-0.01	0.48	3238
total tax rate (% of commercial profits)	51.1	46.5	-0.19	0.00	3081
top marginal tax rate in %	52.5	49.1	-0.03	0.02	5511
unit labour costs (ratio)	0.59	0.72	-0.11	0.00	4864
hourly wage compensation in EUR	19.2	24.4	0.09	0.00	6206
tertiary graduates share in %	20.6	26.6	-0.01	0.35	6237
R&D/GDP ratio in %	1.8	2.4	-0.03	0.01	5974
fixed broadband internet subscribers (per 100 people)	1.7	26.2	0.05	0.00	6137
internet users per 100 people	27.6	71.3	0.08	0.00	6172
strength of investor protection index (0-10) (10=highest investor protection)	5.9	6.0	0.04	0.05	2907
protection of intellectual property (0-10) (10=highest protection)	7.2	7.5	0.06	0.00	5676
getting credit - strength of legal rights index (0-10) (10=best)	6.6	6.9	0.00	0.79	4268
FDI regulatory restrictiveness index (0-1) (0=open; 1=closed)	0.15	0.10	-0.12	0.00	6237
cost of starting a Business (% of income per capita)	9.9	6.5	-0.03	0.07	4809
hiring and firing practices (1-10) (1=least regulated, 10=most regulated)	3.8	4.5	-0.04	0.00	5676
employment protection legislation, (0-6) (0= least and 6 most restrictive	1.88	1.96	0.07	0.00	4068
labour force share with wages set by centralized collective bargaining (1-10) (=1 highly centralized, 10=least centralized, i.e. best)	5.4	5.7	-0.04	0.00	5676
GDP per capita in int. $ US ppp	27638	31103	0.29	0.00	6237
distance in kilometres					
former colony					
common language					
contiguity					

Note: Data refer to unweighted means for the year 2000 and 2010 or the latest available year. In some cases data refer to 2003 and 2004.

Source: European Commission, World Bank, OECD, Eurostat Eurobase.

Table A.3: Pseudo Poisson maximum likelihood (PPML) estimates of the determinants of bilateral greenfield FDI flows in the EU-27 countries (marginal effects)

	Host-countries: EU-27, home-countries: 26 OECD and BRICs								
	(i)			(ii)			(iii)		
	marg eff		t	marg eff		t	marg eff		t
host ln GDP in EUR host country, t-1	5.53	***	3.21	3.36		1.25	5.11	**	2.03
parent ln GDP in EUR parent country, t-1	2.96	***	3.06	3.17	***	3.17	3.13	***	3.14
host effective average corporate tax rate, t-1	-11.98	***	-2.93	-10.90	***	-2.58	-12.70	***	-3.16
host ln hourly wages costs, t-1	-6.05	***	-2.76	-6.17	***	-2.58	-7.18	***	-2.99
host ln share of tertiary education, t-1	2.32		1.53						
parent ln share of tertiary education, t-1	2.68	*	1.87						
parent ln R&D/GDP ratio, t-1	3.98	***	3.44						
GDP per capita dissimilarity, t-1	3.90	***	4.66						
new EMU members 2007, 2008, 2009							1.76	**	2.31
new EU members 2007				2.07	***	3.92			
ln distance	-2.07	***	-3.84	-1.84	***	-3.14	-1.79	***	-3.01
Contiguity	-0.66		-0.93	-0.60		-0.79	-0.60		-0.79
common language	1.23		1.77	1.01		1.44	1.05		1.50
former colony	1.19		1.26	1.22		1.26	1.22		1.27
time dummy variables	yes			yes			yes		
host country effects	yes			yes			yes		
home country effects	yes			yes			yes		
R^2	0.44			0.426			0.42		
number of observations	5348			5348			5348		
number of country-pairs	688			688			688		

Note: The dependent variable is the log of bilateral greenfield FDI flows from country i to country j in current euros. t-values are based on cluster-adjusted standard errors accounting for common host country effects. ***, ** and * denote statistical significance at 1 percent, 5 percent and 10 percent levels, respectively. The marginal effects can be interpreted as elasticities and semi-elasticities.

Source: European Commission, World Bank, OECD, Eurostat Eurobase, fDi Intelligence database.

Table A. 4: ZINB estimates of the number of subsidiaries and market coverage of EU-15 multinational firms

	Manufacturing						Non-Manufacturing					
	Number of subsidiaries			Market coverage			Number of subsidiaries			Market coverage		
	Coef.		z-value	Coef.		z-value	Coef.		z-value	Coef.		z-value
	(1)			(2)			(3)			(4)		
	Logit model component explaining zero subsidiaries											
log age in years	-0.39	***	-5.6	-0.39	***	-5.2	-0.04		-0.8	0.00		-0.1
log number of shareholders	0.31	***	6.4	0.34	***	6.5	0.19	***	5.8	0.21	***	5.6
log employment	-1.33	***	-28.8	-1.37	***	-28.1	-0.97	***	-27.7	-1.05	***	-25.6
log turnover per employee	-0.28	***	-4.3	-0.30	***	-4.2	-0.09	***	-2.7	-0.09	**	-2.4
log total fixed assets per employee	-0.80	***	-12.8	-0.86	***	-12.9	-0.74	***	-25.0	-0.80	***	-24.1
log intangible assets to fixed assets	-0.07	***	-3.1	-0.07	***	-2.8	-0.06	***	-4.0	-0.03	**	-2.0
Industry dummy	yes			yes			yes			yes		
Constant	12.40	***	27.5	12.86	***	26.8	9.26	***	34.8	9.49	***	31.6
lnalpha	1.08	***	32.8	0.88	***	26.2	1.63	***	46.0	1.42	***	36.5
alpha	2.93			2.42			5.08			4.15		
	Marginal effects of the count data component of the model											
log age in years	0.022	***	13.2	0.020	***	12.1	0.004	***	7.0	0.003	***	5.3
log number of shareholders	-0.005	***	-3.6	-0.006	***	-4.3	0.002	***	2.9	0.000		0.1
log employment	0.071	***	37.1	0.066	***	36.7	0.030	***	43.1	0.027	***	39.5
log turnover per employee	-0.003		-1.8	-0.001		-0.5	0.0002		0.4	0.001		1.3
log total fixed assets per employee	0.062	***	30.6	0.056	***	29.3	0.028	***	43.4	0.024	***	43.6
log intangible assets to fixed assets	0.003	***	5.8	0.003	***	5.5	0.000	***	3.3	0.001	***	3.4
Industry dummy	yes			yes			yes			yes		
number of observations	88,690			88,690			248,783			248,783		
number of nonzero observations	7,321			7,321			10,481			10,481		

Note: ***, **, * indicates significance at the 1-, 5- and 10-percent-level, respectively. Model specification is not shown.

Source: AMADEUS database (2011 release), WIFO calculations.

Table A.5 - Estimates of the Barro-type growth model (pooled OLS)

	Total sample			EU-15+NO and CH			EU-12 + TR		
	Impact of FDI inflows as a percentage of GDP								
	coef		t	coef		t	coef		t
log GDP per capita, PPP (const. 2005 intern. $) lagged one period	-0.004		-0.77	-0.021	***	-2.73	-0.01		-0.87
Investment % GDP	0.203	***	2.57	0.08	*	1.93	0.333	**	2.36
Average years of schooling	0.001		1.05	0.002	*	1.77	0		0.04
Foreign direct investment inflows % GDP	0.104	***	2.69	0.106	**	2.34	0.203	*	1.9
Constant	0.001		0.02	0.194	***	2.81	0.035		0.33
R^2	0.166			0.232			0.227		
number of observations	128			82			46		
number of countries	29			17			12		
	Impact of FDI inflows as a percentage of GDP adjusted for double counting								
	coef		t	coef		t	coef		t
log GDP per capita, PPP (const. 2005 intern. $) lagged one period	-0.004		-0.77	0.008		0.01	-0.01		-0.87
investment % GDP adjusted by FDI inflows	0.203	**	2.57	0.08	*	1.93	0.333	**	2.36
average years of schooling	0.001		1.05	0.002	*	1.77	0		0.04
foreign direct investment inflows % GDP	0.307	***	3.68	0.186	***	2.65	0.536	***	3.75
Constant	0.001		0.02	0.194	***	2.81	0.035		0.33
R^2	0.166			0.232			0.226		
number of observations	128			82			46		
number of countries	29			17			12		
	Impact of FDI inward stock GDP ratio								
	coef		t	coef		t	coef		t
log GDP per capita, PPP (const. 2005 intern. $) lagged one period	-0.006	*	-1.47	-0.018	***	-2.37	-0.026	*	-1.95
Investment % GDP	0.215	**	2.92	0.076		1.82	0.336	***	3.11
Average years of schooling	0		0.05	0.001		1.16	-0.002		-1.06
Foreign direct investment stock % GDP	0.024	**	3.91	0.013	***	2.21	0.08	**	3.43
Constant	0.031		0.62	0.171	**	2.44	0.191		1.57
R^2	0.227			0.225			0.421		
number of observations	129			82			47		
number of countries	29			17			12		

Note: Dependent variable is real GDP per capita growth. ***, ** and * denote significance at the 1 percent, 5 percent and 10 percent level. t-values are based on robust standard errors. The sample for EU-12 + Turkey includes the following countries and years: MT and TR all for the five year periods 1985-1990, 1990-1995, 1995-2000, 2000-2005 and 2005-2010; , BG, EE, HU. LV, RO and SK all for the five year periods 1990-1995, 1995-2000, 2000-2005 and 2005-2010; CZ, PL, LT and SI all for the five-year periods 1995-2000, 2000-2005 and 2005-2010. The sample for EU-15 + NO and CH includes following countries and years: AT, BE, CH, DE, DK, ES, FI, FR, EL, IE, IT, NL, NO, PT, SE and UK all for the five year periods 1985-1990, 1990-1995, 1995-2000, 2000-2005 and 2005-2010; and LU for the five-year periods 2000-2005 and 2005-2010.

Source: World Development Indicators database, Barro-Lee database, UNCTAD.

Table A.6 - Productivity effects of foreign presence in the same industry and in customer industries (backward production linkages)

(Manufacturing, EU-15 countries)	**Robust regression method**								
	(i)			**(ii)**			**(iii)**		
	coef		**t**	**coef**		**t**	**coef**		**t**
Initial employment share of foreign affiliates	0.10	***	4.01	0.11	***	4.14	0.09	***	3.56
Initial employment share of foreign affiliates among customers (FORCUST)	0.11	***	2.77	0.08	*	1.77	-0.01		-0.25
Relative labour productivity domestic/foreign sector	0.01		1.32	0.01		0.95	-0.02		-1.47
Av. annual labour productivity growth foreign sector				0.28	***	4.70	0.33	***	5.80
Interaction term rel. labour productivity X FORCUST							0.20	**	2.28
Industry and country dummies	yes			yes			yes		
Constant	0.00	0.01	-0.09	-0.02		-2.08	0.02		1.07
number of observations	94			94			94		
number of co	11			11			11		
number of industries	11			11			11		
Interaction term (p-valued							0.025		
Impact of initial foreign employment share among customers with varying levels of the relative labour productivity									
Relative labour productivity domestic/foreign sector:									
0.50							0.09		
0.60							0.11		
0.70							0.13		
0.80							0.15		
0.90							0.17		
1.00							0.19		

(Manufacturing EU-12 countries)	**Robust regression method**					
	(i)			(ii)		
	coef		t	coef		t
Initial employment share of foreign affiliates	0.48	***	2.85	0.57	**	3.57
Initial employment share of foreign affiliates among customers	0.88	**	2.30	0.04		0.05
Relative labour productivity domestic/foreign sector	-0.06		-1.18	-0.24		-1.30
Av. annual labour productivity growth foreign sector						
Interaction term				1.25		1.14
Industry and country dummies	yes			yes		
Constant	-0.12		-1.11	-0.04		-0.31
number of observations	45			45		
number of co	6			6		
number of industries	11			11		
Interaction term (p-value)				0.10		
Impact of initial employment share of foreign affiliates among customers with varying levels of the relative labour productivity level						
Relative labour productivity domestic/foreign sector:				coef.		
0.50				0.66		
0.60				0.79		
0.70				0.91		
0.80				1.04		
0.90				1.16		
1.00				1.29		

Note: ***, ** and * denote significance at the 1 percent, 5 percent and 10 percent level. Sector and country dummy variables are included but not reported. t-values of the OLS estimates are based on heteroskedasticity consistent standard errors. FORCUST measures the backward linkage from foreign owned firms to domestically owned firms. This table is based on yet unpublished results from the EU funded project INNO Grips ENTR-09-11-LOT2.

Source: Inward FATS and National Accounts, Eurostat.

Table A.7 - Productivity effects of foreign presence in the same and customer industries at the firm level (EU-12 countries)

	Total sample			Firms with 25 and more employee			Firms with 24 and less employees		
	coef		**t**	**coef**		**t**	**coef**		**T**
foreign employment share in the same industry, '03	-0.76	***	-2.82	-0.55	**	-2.32	-1.01	***	-3.68
foreign employment share in the customer industries, '03	0.83	***	2.85	0.62	**	2.54	1.13	***	3.49
relative productivity level, 2003	-0.13	***	-4.77	-0.11	***	-5.37	-0.14	***	-3.98
growth rate of fixed assets in const. Prices	0.06	***	9.81	0.10	***	7.46	0.03	***	3.39
country and industry dummies	yes			yes			yes		
Constant	-0.02	.	.	0.26	***	2.50	0.66	***	4.77
R^2	0.31			0.25			0.33		
number of observations	32959			18035			14924		
	Newly founded firms (2001 & older)			**Mature firms (2000 & younger)**					
	coef		**t**	**coef**		**t**			
foreign employment share in the same industry, '03	-0.50	**	-2.22	-0.88	*	-1.80			
foreign employment share in the customer industries, '03	0.26		1.41	4.90	***	4.29			
relative productivity level, 2003	-0.08	***	-6.33	-0.16	***	-3.84			
growth rate of fixed assets in const. Prices	0.06	***	7.74	0.06	***	6.25			
country and industry dummies	yes			yes					
Constant	0.07		1.29	0.59	***	5.27			
R^2	0.17			0.38					
number of observations	12854			21303					
	low productivity growth (Q1)			**low medium prod. Growth (Q2)**					
	coef		**t**	**coef**		**t**			
foreign employment share in the same industry, '03	0.03		1.37	0.00		0.53			
foreign employment share in the customer industries, '03	0.02		0.93	0.01		1.59			
relative productivity level, 2003	-0.01	***	-2.92	0.00		-0.86			
growth rate of fixed assets in const. Prices	-0.02	***	-5.69	0.00	***	4.07			
country and industry dummies	yes			yes					
Constant	-0.13	***	-12.96	0.06	***	14.66			
R^2	0.14			.0.03					
number of observations	8227			7963					
	med-high productivity growth (Q3)			**very high productivity growth (Q4)**					
	coef		**t**	**coef**		**t**			
foreign employment share in the same industry, 2003	-0.03		-1.60	-0.51	***	-3.07			
foreign employment share in the customer industries,'03	0.06	***	2.81	0.70	***	2.76			
relative productivity level, 2003	0.00		-1.15	-0.22	***	-2.92			
growth rate of fixed assets in const. Prices	0.01	***	3.74	0.03	**	2.15			
country and industry dummies	yes			yes					
Constant	0.17	***	20.22	0.66	***	4.63			
R^2	0.05			0.13					
number of observations	8474			8295					

Note: The dependent variable is average annual real labour productivity growth between 2004 and 2007. *** , ** and * denote significance at the 1 percent, 5 percent and 10 percent level. t-values are based on cluster-robust standard errors with 219 clusters (by industry and country). Sector and country dummy variables are included but not reported.

Source: AMADEUS firm-level database.

Table A.8: OLS estimates of the impact of FDI on average employment growth 2004-2006, 8 EU-10 countries

	Foreign presence based on inward FATS					
	Horizontal			Backward		
	coeff		t	coeff		t
foreign presence in the same industry in 2003 (FOR03)	0.08	***	2.68	0.04		1.62
foreign presence in customer industries in 2003 (FORCUST03)	0.03		0.90	0.10	**	2.41
employment growth of foreign affiliates 2004-2006	0.10	***	5.72	0.11	***	5.69
ln sales per employee of local firms to that of foreign firms, 2004	0.03	***	7.02	0.03	***	8.68
ln sales per employee of local firms to that of foreign firms, 2004 X (FOR03)	0.07	***	3.62			
ln sales per employee of local firms to that of foreign firms, 2004 X (FORCUST03)				0.09	**	2.40
ln employment in 2004	-0.46	***	-21.67	-0.46	***	-21.71
ln employment squared in 2004	0.04	***	16.61	0.04	***	16.58
country and industry dummies	yes			yes		
Constant	0.94		7.83	0.95	***	7.48
R^2	0.447			0.45		
number of observations	37,893			37,893		
average effect of FOR2004	0.12	***				
average effect of FORCUST2004				0.15	***	
	Foreign presence based on CIS 2006					
	coeff		**t**	**coeff**		**t**
	Horizontal			**backward**		
foreign presence in the same industry in 2004 (FOR04)	0.08	***	2.70	0.05	**	2.09
foreign presence in customer industries in 2004 (FORCUST04)	0.04		1.55	0.08	***	2.70
employment growth of foreign affiliates 2004-2006	0.11	**	5.85	0.11	***	6.02
ln employment in 2004	-0.46	**	-21.68	-0.46	***	-21.71
ln employment squared in 2004	0.04	***	16.59	0.04	***	16.59
ln sales per employee of local firms to that of foreign firms, 2004	0.03	***	8.38	0.03	***	7.00
ln sales per employee of local firms to that of foreign firms, 2004 X (FOR03)	0.04	**	2.37			
ln sales per employee of local firms to that of foreign firms, 2004 X (FORCUST03)				0.06	**	2.40
country and industry dummies	yes			yes		
Constant	0.93		8.27	0.94	***	8.28
R^2	0.446			0.45		
number of observations	37,896 6			37,896 6		
average effect of FOR2004	0.09	***				
average effect of FORCUST2004				0.11	***	

Note: ***, **, * denote statistical significance at the 1 percent, 5 percent, and 10 percent level. Standard errors are computed using robust standard errors clustered on industry-country pairs. FORCUST03 and FORCUST04 measure the backward linkage from foreign-owned firms to domestically owned firms.

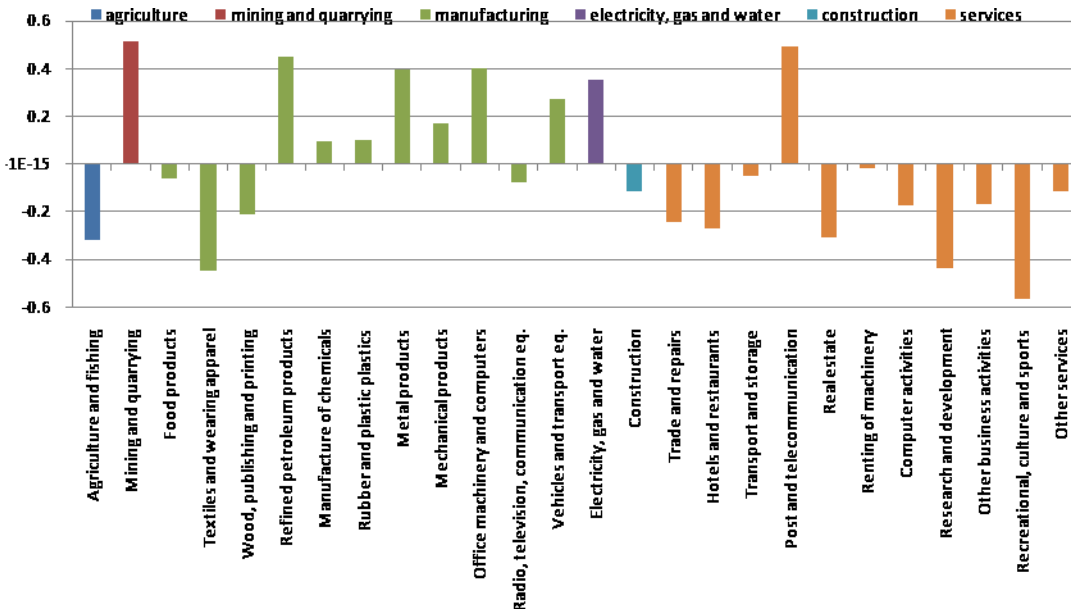
Source: Inward FATS, CIS (2006).

Table A.9: Probit estimates of the impact of FDI on technological innovations of local firms 2004-2006, 8 EU-10 countries (marginal effects)

	(i)			(ii)			(iii)		
	marg eff		**z**	**marg eff**		**z**	**marg eff**		**z**
	Dependent variable: probability of introduction of new market products of local firms								
introduction of new market products of foreign firms	0.04	**	3.13	0.04	***	3.37	0.04	***	3.11
foreign presence in the same industry 2004 (FOR04)	-0.01		-0.80	-0.02		-0.95	0.00		-0.06
foreign presence in customers industries in 2004 (FORCUST04)	**0.04**		**1.53**	**0.06**	***	**2.56**	**0.04**		**1.52**
ln RELPROD04	0.01	***	4.99	0.00		0.47	0.01	**	2.34
ln RELPROD04 X (FOR04)							0.02	*	1.94
ln RELPROD04 X (FORCUST04)				0.04	**	2.34			
ln employment	0.00		-0.07	0.00		-0.07	0.00		-0.07
ln employment squared	0.00	**	4.92	0.00	***	4.91	0.00	***	4.93
country and industry dummies	yes			yes			yes		
number of observations	37866			37866			37866		
Pseudo R^2	0.12			0.12			0.12		
	Dependent variable: probability of introduction of new product innovations of local firms								
	marg eff			**marg eff**		**z**	**marg eff**		**Z**
introduction of product innovations of foreign firms	0.05	*	1.75	0.05	*	1.90	0.05	*	1.74
foreign presence in the same industry 2004 (FOR04)	-0.03		-1.00	-0.04		-1.12	0.00		0.04
foreign presence in customers industries in 2004 (FORCUST04)	0.08	*	1.73	0.13	***	2.68	0.08	*	1.71
ln RELPROD04	0.02	***	5.49	0.00		0.06	0.01	*	1.83
ln RELPROD04 X (FOR04)							0.05	***	3.47
ln RELPROD04 X (FORCUST04)				0.08	***	3.08			
ln employment	-0.01		-1.13	-0.01		-1.16	-0.01		-1.15
ln employment squared	0.01	**	7.70	0.01	***	7.74	0.01	***	7.75
number of observations	37866			37866			37866		
Pseudo R^2	0.10			0.10			0.10		
	Dependent variable: probability of introduction of new production processes of local firms								
	marg eff		**z**	**marg eff**		**z**	**marg eff**		**Z**
introduction of new production process of foreign firms	0.05	**	2.26	0.05	**	2.37	0.05	**	2.25
foreign presence in the same industry 2004 (FOR04)	-0.02		-0.91	-0.03		-1.05	0.01		0.24
foreign presence in customers industries in 2004 (FORCUST04)	0.05		1.26	0.11	**	2.49	0.05		1.24
ln RELPROD04	0.02	***	6.61	0.00		0.23	0.01	***	2.72
ln RELPROD04 X (FOR04)							0.05	***	2.69
ln RELPROD04 X (FORCUST04)				0.10	***	4.10			
ln employment	-0.02	**	-2.32	-0.02	**	-2.33	-0.02	**	-2.32
ln employment squared	0.01	***	9.13	0.01	***	9.07	0.01	***	9.11
country and industry dummies	yes			yes			yes		
number of observations	37866			37866			37866		
Pseudo R^2	0.09			0.10			0.10		

Note: ***, **, * denote statistical significance at the 1 percent, 5 percent, and 10 percent level. Standard errors are computed using robust standard errors clustered on industry country pairs. FORCUST04 measures the backward linkage from foreign owned firms to domestically owned firms. *Source:* Inward FATS, CIS (2006).

Figure A.1 - Revealed comparative advantages in EU-27 FDI relations with the rest of the world



EU stocks are stocks of the EU-27 Aggregate. Total inward stocks exclude the inward stocks of the finance industry (EU nomenclature: 6895, financial intermediation). RCAs in industry *i* is calculated as $RCA_i = \frac{\left(\frac{OFDI_i}{IFDI_i}\right)^{-1}}{\left(\frac{\sum_{i=1}^{N} OFDI_i}{\sum_{i=1}^{N} IFDI_i}\right)^{-1}} \Big/ \frac{\left(\frac{OFDI_i}{IFDI_i}\right)^{+1}}{\left(\frac{\sum_{i=1}^{N} OFDI_i}{\sum_{i=1}^{N} IFDI_i}\right)^{+1}}$.

OFDI are EU outward stocks and IFDI are EU inward stocks.

Source: Eurostat, wiiw-calculations.

5. CLUSTERS AND NETWORKS

5.1. Introduction

Academics and policy makers have been interested for a long time in linkages between companies that go beyond market interactions, but that fall short of vertical. Thus, the issue of clusters and networks of firms is not recent. What has changed, however, is that globalisation and new types of innovation processes have over the last few decades reshaped in new ways the organisation of value chains. Activities that were traditionally provided within a firm are now provided in a different type of institutional setting, somewhere between hierarchy and market.

In the global economy, there is a growing interest in new organisational structures, which are flexible enough to respond to market changes and at the same time solid enough to take on cooperative projects. In this sense, the increasing amount of statistical evidence indicating a positive relationship between the presence of clusters and the prosperity of regional economies[48] has brought to the fore the positive role that clusters and networks could play. Clusters and networks are increasingly seen as catalysts for accelerating industrial transformation and for developing new regional competitive advantages, speeding up the creation of firms and jobs and thereby contributing to growth and prosperity.

Because of these characteristics, clusters and networks have been identified as crucial instruments for implementing the EU's Europe 2020 strategy. The EU 2020 flagship initiatives 'Innovation Union' and 'An integrated industrial policy for the globalisation era' specifically refer to clusters and networks as critical tools.

Over the last few years, the European Commission has supported a range of research and joint learning efforts. It has also set up specific advisory bodies that have analysed in detail the presence of clusters across Europe and the potential for policy, especially policy at EU level, to leverage them and strengthen their growth. Many of these activities, including the European Cluster Observatory, the European Cluster Alliance, the European Cluster Excellence initiative, the TACTICS group and the European Cluster Policy Group, have been organised under the Competitiveness and Innovation Programme (CIP). These activities have informed a number of Commission communications, policy documents, and action agendas on clusters.

While it is relatively easy to detect and assess the presence of clusters and their economic impact, networks are more elusive. On the one hand, the theoretical literature on networks is less developed than in the case of clusters, leading to many conceptual misunderstandings. On the other hand, there is a relative scarcity of empirical evidence, since a company that decides

[48] See, for example, Delgado/Porter/Stern (2011), DG Enterprise and Industry (2007), and the overview in Ketels (forthcoming 2012).

to participate in a network may be extremely reluctant to disclose any information for fear of exposing its competitive advantage to its rivals.

This chapter is specifically focused on the presence and role of firm networks and their potential as a tool or platform for EU programmes to enhance competitiveness. It aims to inform the debate as to whether network-oriented policies are a substitute, a complement or an instrument in relation to cluster-based economic policies and to clarify the role of the European Commission in this this.

To this end, the chapter is structured as follows. The first section contains operational definitions to distinguish clusters from networks. The next section discusses the presence of networks in the EU, as well as the public programmes and tools, which support networks. Then, the following section deals with the rationale, objectives and design of network-support programmes. Finally, the last section sums up the policy implications.

5.2 Concepts of Clusters, Cluster organizations and Networks

The term 'cluster' has a long tradition in economics. At the end of the nineteenth century Alfred Marshall had already observed the 'concentration of specialised industries in particular localities'. For policy-makers, too, the phenomenon of industries moving into the same geographical area has not gone unnoticed. In fact, a number of countries have viewed the investment of state aid into specific territories as a means of embedding an industry into a targeted region with a view to fostering growth and development.

Over the last decades, the literature on firm networks has grown alongside cluster studies, with a similar emphasis on linkages among companies. However, the networks literature is not so much concerned with the concentration of firms in particular areas, but rather with the process that leads individual firms to establish cooperative links with each other, even if they operate in different regions.[49]

Clusters and networks share some common features. Conceptually, both are located between the atomistic structure of an uncoordinated market and the organic structure of a vertical hierarchy. Firms within networks and clusters are linked by something more than the price mechanism of the market. However, they are not branches of a larger company, since they continue to be independent.

In spite of these similarities, it is very important to draw a line between them, all the more so since focusing on clusters or networks has very different policy implications. In the case of clusters, the rationale for state intervention is clearly derived from the presence of externalities. Regardless of managers´ intentions, externalities create knowledge spillovers, affect the dynamics of rivalry, and encourage the development of a more specialised labour market and supplier base. Hence, governments can help cluster organisations internalise some

[49] For a review on the literature on clusters and networks, see Frank Lerch and Gordon Müller-Seitz, 2012.

of the externalities in clusters by promoting joint decision-making and action and can also organise funding programmes around clusters to compensate for externalities.

On the other hand, the presence of externalities in networks that spread across different regions is not so obvious. The crucial point is the activity in which firms are engaged. If a group of firms is working on innovation projects or entering new fields or new markets, companies could be encouraged to join a network structure for the purpose of sharing information and creating synergies.

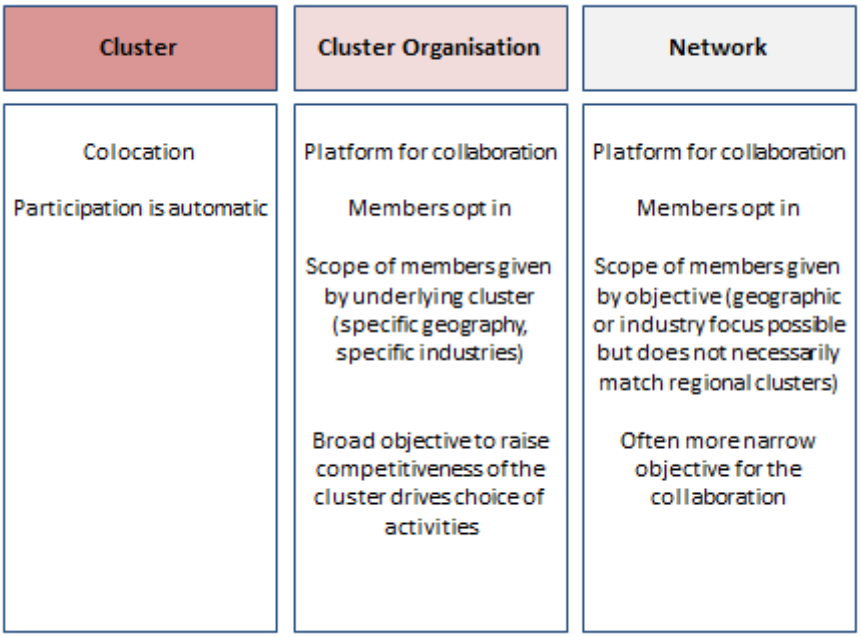
Therefore, conceptual categorisation is required. This chapter employs the following operational definitions in order to clarify the conceptual relations and differences between clusters, cluster organisations and networks.

Clusters are geographically co-located firms and other institutions engaged in economic activities in a set of related industries, connected through externalities and other types of linkages. Collaboration may or may not take place, and could focus either on broader competitiveness upgrading or on specific projects.

Cluster organisations are organisations focused on a specific geographical area, oriented towards a set of related industries (also called a 'cluster' category), and they provide a structure for actual collaboration.

Networks of firms are structures specifically created for active collaboration. This collaboration could be open-ended or focused on a specific project task. They may or may not be confined to a specific geographical location and set of industries. Cluster organisations are a specific type of network that is concentrated in a particular geographical area.

Figure 5.1: Key characteristics of clusters, cluster organisations, and networks



5.3. Presence and Policy of Networks

5.3.1. Types of Firm Networks

While the presence of clusters is quite easy to detect, the presence of networks is more problematic. As mentioned in the previous section, networks are created on a voluntary basis, because firms expect it to be more advantageous to stay in the network than to stay outside it. Thus, it is in firms' interests to be discreet about their participation in a network for fear of revealing sensitive information from which their rivals might benefit.

Nevertheless, useful information about networks can be found in the organizational database of the European Cluster Observatory (ECO), a site developed with financial support from the European Commission. This database covers more than 2000 organizations[50] in total with a focus on economic development through collaboration between firms and other entities and has been created partly through internet search and partly through self-registration by organisations.

Of all the organisations covered by the ECO database the percentage of organisations that could be defined as networks in the terms specified above is between 4-6%. If the analysis is restricted to particular categories of activities, it turns out that in areas such as 'general technology', 'design' or 'human resources', the network share is even higher and reaches 10-12% in life sciences (biotech/pharmaceuticals).

On the basis of these findings, two criteria (geographic scope and industry scope), can be put forward for the purpose of classifying networks.

Since networks are not constrained to a specific geographical area and can involve firms operating in regions which are quite far apart, **geographic scope** could be an instrument for classifying and systematising networks. Thus, in terms of their geographical extension, networks could be classified from the most locally concentrated to the most geographically scattered.

- The first type of networks takes place at regional level. They aim at favouring the exchanges of information and experiences. An example is the Romagna Creative District in Italy (see Annex Box 5.2) that aims at creating synergies between twelve different creative sectors.

- The second type of networks are those open to membership from a *broad set of regions within a country*. These networks tend to be set up to overcome a lack of critical mass at regional level. The networks of the German Kompetenznetze.de,[51] a federally funded network of clusters or networks, are a good example.

50 The organisations are clusters that have been identified in 32 countries.

51 For a profile of this and other networks specifically mentioned in this chapter, see Ketels (2012).

- The third type refers to networks operating in a set of similar industries and that organize themselves explicitly at the *national level*. In general, they are set up by government to compensate for a lack of critical mass at the regional level and create a cost-efficient central platform to provide services for firms in the same industrial activity. Such networks exist, for example, in Ireland (Irish Software Innovation Network), the Netherlands (Dutch Maritime Network), and Slovenia (Technology Network ICT).

- The fourth type of networks *extends beyond national boundaries* and connects firms that work in a set of related industries, in most cases through participation in cluster organisations. This happens either across smaller countries or in response to EU-funded projects driving the emergence of European networks. One such network is Scanbalt, which focuses on life sciences in the Baltic Sea Region, is such a network (see Annex Box 5.1).

- Finally, the last type of network is formed by firms which pursue one specific issue and find that it is in their interest to try to operate at *EU level*. This is the case of Social Firms Europe CEFEC (see Annex, Box 5.4), a network of social firms and cooperatives across Europe, whose goal is to create paid work for disabled and disadvantaged people and help individuals who face discrimination in their bid to overcome their social and economic exclusion through employment. CEFEC is open to all industries that can help people with disabilities or disadvantages find employment.

In addition to geographic coverage, **industry scope** could provide other useful criteria for classifying networks.

- The first type of network focuses on new *emerging patterns of relatedness across industries*. Networks in this category are often strongly driven by government action to explore the potential of new fields. One such effort is the Romagna Creative District in Italy (see Annex, Box 5.2) whose aim is to connect and share the creative resources of individuals and companies in the hope of sparking off creativity and boosting the economy of the Romagna region. The network covers creative sectors such as communications, art, design, architecture, theatre, music and photography.

- The second type of network covers a *broader set of industries*, often in wider traditional sectors such as manufacturing. Those networks have a broader industry-scope than one cluster category. An example is the Network Industry RuhrOst (NIRO), which aims to enhance the competitiveness of firms in mechanical engineering and industrial electronics located in the RuhrOst region around the cities of Dortmund and Unna. This type of network is in response to a lack of critical mass for firms working within similar industries within a region.

- The third type of network aims to enhance the competitiveness of the *entire regional economy*. The Cambridge Network in the UK falls into this category. Its purpose is to connect people from business and academia in the Cambridge region in order to share ideas, thereby encouraging collaboration and partnership that can contribute to the overall economic success of the region. Although some activities are often directed towards a cluster-orientation, others aim to improve the general business environment.

5.3.2. Public Policy Support to Networks

For several reasons, regional administrations, national governments and supra-national institutions have designed programmes aimed at strengthening clusters and networks. Although the scope, ambition and achievements of these programmes depend on their political, geographical and administrative context, public authorities have a common interest in fostering cooperative links between firms. These programmes do not target networks or clusters *per se,* but tend rather to focus on activities with a positive impact on a wider community. Since clusters are easier to identify and there is a longer policy tradition of working through them, in most cases network programmes are a part of **existing cluster programmes**. Policy makers who decide to give a special boost to networking, do so because regions lack critical mass or because there is a case for supporting collaborative projects, such as joint research or education.

In the previous subsections networks were classified according to their geographic or industrial focus and these two criteria continue to be relevant for the purpose of classifying public network programmes.

5.3.2.1. Geographic focus.

Programmes for networks that have a **different geographic focus** have been launched by some larger regions, national governments, and as part of cross-national collaboration.

A number of larger German states have organised *region-wide cluster efforts* ('Bayern Innovative', 'bwcon', 'bw-automotive', 'Landescluster NRW'). All clusters belonging to the same industry are served through one network organisation, either driven directly by government or through a company that drives it on behalf of government. This seems to be partly a reflection of limited critical mass in smaller regions and partly a matter of political and organisational expedience in aligning the organisation with the way the public sector is organised.

Countries like France ('Action Collective'), Germany ('ZIM-NEMO'), and the Netherlands ('Innovation Performance Contract') have launched *programmes at national level* that invite groups of companies to apply for funding to set up a network. All these programmes are focused on enhancing the performance of groups of small- and medium-sized enterprises (SMEs), mostly by encouraging joint innovation activities but sometimes also joint exporting

efforts. Co-location in one specific region is not a criterion for funding. Unlike traditional cluster programmes, the motivation for these networks is, at least initially, a specific task or objective that can best (or only) be achieved collectively. Over time, however, these programmes hope to encourage more stable patterns of collaboration that are then motivated by a broad common interest in upgrading the competitiveness of the firms in the network.

The Italian programme in support of contract-based business networks ('Contratto di Rete d'Impresa') is similar to this approach but is also open to large companies and seems to be less restrictive in terms of the type of joint activities that qualify for support. It provides tax incentives for collaboration, often among small groups of around five companies that frame some of their activities within a specific legal structure.

Countries like the UK ('Knowledge Transfer Networks'), Ireland ('Irish Software Innovation Network'), the Netherlands ('Dutch Maritime Network') and Slovenia ('Technology Network ICT') have set up *national platforms* serving specific cluster categories. In some ways, these platforms are natural extensions of traditional industry- or sector-oriented programmes in research and innovation policy. The platforms, largely financed by government, provide companies with information on how to access project funding from other parts of government. While this funding might be based on collaboration, the networks also provide information about more traditional firm-based programmes. In addition, the networks aim to encourage linkages between firms and research institutions carrying out a set of similar industrial activities to increase the effectiveness of the research funding. The networks also provide additional information on industry and technology trends to enhance companies' overall sophistication.

National networks in Denmark ('Innovation Networks Denmark') and Finland ('OSKE Centre of Expertise Programme') have been strengthened thanks to a base of regional cluster efforts. As these efforts proved to have insufficient critical mass, the national government consolidated them under a country-wide umbrella. Where robust regional clusters exist, they continue to play an important role. The national approach explicitly aims to connect firms which are active within these cluster categories but located in other regions within the country.

The EU and groups of EU neighbouring countries have also set up several programmes to encourage the emergence of *networks across larger geographical areas*. In almost all cases, these networks are facilitated through regional cluster organisations. The Knowledge and Innovation Communities (KICs) are one such example at EU level. The available funding combines networking and actual research activities. In the Baltic Sea Region, the StarDust programme has been launched as part of the EU Baltic Sea Region Strategy to connect regional clusters across the wider Region in five cluster categories. Funding is available for network management between the cluster organisations, while collaborative actions, including networking between firms in the regional clusters, have to be covered through the existing budgets of the cluster organisations.

5.3.2.2. Industry focus.

Support for network organisations that have a **different industry focus** from traditional cluster categories is to a large degree organised through the same type of network programmes discussed above. While the general toolkit is the same, in these cases government agencies decide to change the scope of the network.

A number of governments have set up specific network programmes in areas considered to be *emerging*, where activity boundaries are porous. In the UK, the Creative Industries Network, part of the Knowledge Transfer Networks, focuses on the broad range of industries designated as 'creative' in the academic literature and increasingly also in policy programmes. In Austria, the regional economic development agency supports networks in nanotechnology, nanosciences, and creative industries as part of its overall cluster and network programme. In Denmark, Environmental Network South (See Annex, Box 5.3) focuses on the collaboration between public authorities and companies in the area of the environment.

A number of governments at the local and regional level, especially in Germany, support SME networks that reach out to local companies in *broad sectors* such as manufacturing. In such cases the main motivation is to create cost-effective tools, to have large numbers of companies improve their operational sophistication and to establish platforms for communication between local government and the local business community.

When the goal is to support the *overall competitiveness of a region*, networks are usually not funded by government. This task tends to be undertaken by regional economic development agencies set up by regional authorities, working in dialogue with the business community they serve. In Germany, economic development organisations such as HannoverImpuls and the Dortmund-Project arose from specific projects that aimed to reframe the way local government pursued its economic development efforts.

5.3.3. Public Tools

Many programmes use financial incentives to encourage collaboration. Some pay only for network management activities. Others make funding for, say, joint innovation activities, conditional on the presence of a network. Compared to traditional cluster programmes, the funds in network programmes tend to be much smaller. There is more focus on networking activities, joint activities are often smaller in scale, and the number of participants also tends to be significantly lower than in cluster programmes. An interesting new effort currently being tested in France is 'Territoires et innovation', a programme that supports regional networks 'in kind', through consulting services and by providing access to bank credit, the aim being to support the export activities of SMEs. There is no direct financial support for the SMEs involved.

One group of programmes provides funding and then invites prospective networks to submit their proposals. This approach is used when there is no clear information or political target in terms of the type of networks to support, and when collaboration between firms is the prime

objective. A different group of programmes defines the network scope and then sets up an organisation to mobilise, serve, and manage the network of firms. This organisation can be part of government, or it can be run by another organisation on behalf of government. This second approach is more interventionist, with the focus areas selected by government. However, in setting up an intermediary linked to both firms and government, the available policy tools and programmes of government are also more likely to be linked to the needs of a set of companies.

An interesting development is the emergence of national support mechanisms for all clusters and networks within a country. In Denmark, RegX, RegLab, and netmatch provide different types of training and information services to the country's innovation networks. In Austria, the national cluster platform has been created to enable collaboration between the clusters and networks that have developed through the initiative of regional governments. In Germany, Kompetenznetze.de provides a national platform bringing networks together to collaborate and learn about best practices. In the German state of North Rhine –Westphalia, a central cluster secretariat supports all the clusters and networks in the state.

In terms of **impact**, the evidence relating to network programmes is limited. Available evidence does suggest that companies participating in collaborative research efforts, i.e. those facilitated by network programmes, record better results on a number of key indicators than peers that do not belong to such networks.[52] Evaluating the effect of these programmes raises difficult questions. Particularly difficult to disentangle is whether the superior performance of network-participating companies is due to the programme itself or to unobservable individual characteristics. While evaluations of such programmes tend to provide fairly positive assessments, there is hardly any hard impact data available.

5.4. The Role of Public Policy

Since economic resources are scarce, public policies must be carefully designed to avoid wasting time and money. Likewise, it is crucial that design programmes are not taken over by special interest groups to the detriment of the public good. Hence, every proposal relating to a public policy programme must address three issues: first, its rationale; second, its objectives; and third, its operational design.

5.4.1. Justification of network programmes.

The first question to ask is whether there is a good **case for public policy**. Public policy interventions should be based on a clear social welfare argument. In the case of cluster organisations, such an argument is founded in the existence of local externalities that give rise to the emergence of a cluster and drive cluster dynamics. There is a market failure that government intervention can address.

[52] See, for example, the Danish Agency for Science, Technology, and Innovation (2011).

One way of doing this is to internalise the externality by creating an organisational structure that allows members of the cluster to share information and coordinate action. Government can play a role in initiating and supporting this organisational structure, i.e. a cluster organisation. Interestingly, if the argument for government support is an externality, some government engagement is reasonable as long as the externality exists. In this case, there is no fundamental reason for governments to finance cluster organisations only in the start-up phase. Expanding the range of activities, however, should be driven by private sector contributions.

Another way of doing this is for government to compensate for the externalities by providing government funds to support the specific activities that create them. This can be done by organising public policies in areas such as innovation, workforce development, and investment attraction around clusters. This approach also has key operational advantages in comparison with programmes that target individual companies or, conversely, the entire economy. On the one hand, they are more effective because they reach a larger group of companies than firm-level support but are more targeted than economy-wide programmes. On the other hand, they create less distortion than firm-level support, because they include all industries that are active along a value chain and compete for the same specific inputs.

The welfare argument for public support to networks is more complex. There is no inherent externality, and thus no generic argument, for funding networks. There are, however, two arguments that can support public network programmes. First, the externalities might occur at the level of the activity that the network is engaged in. If, for example, networks work on collaborative innovation projects, collaborate in projects that explore the potential of emerging new fields, or collaborate on export efforts towards a new market, there could be knowledge spill-overs that justify public support. Second, the network might be a more efficient delivery tool for public investments in knowledge provision, largely because a large number of companies can be reached through a common platform. In both cases, then, the argument for networks rests on what they do, not on the network per se.

One example of a network activity that can provide significant positive externalities is that of exports towards a new market. The statistical evidence shows that entering a new market is a risky endeavour and that most such attempts fail.[53] As the information needed to evaluate the potential of a new market is often dispersed, this is where a network can help. Once an attempt has been made to enter a new market, the revealed evidence of success or failure provides valuable information to other companies considering a similar move. This is why public support to cover some of the risk can be justified. The same logic might apply to emerging industries, where new combinations of technologies and operational practices are used to meet (potentially new or changing) customer needs. Rather than just subsidising the search activity, that is the entry into a new market, public support for networks can lower the search costs and make the search activity more efficient.

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[53] See Hausmann/Rodrik (2002).

Network programmes that support collaboration between companies but impose little conditionality on the actual activities within the network are hard to justify. They provide public subsidies to a small group of companies to conduct activities that mainly generate private benefits for them.

5.4.2. Objectives of network programmes.

Thus, the second question to be addressed relates to which **objectives** network programmes should have, in other words, in which situations are network programmes useful additions to the public policy toolkit. This discussion will focus on network programmes that are separate from the networking activities supported as part of traditional cluster programmes.

In the light of experience there are four types of network programmes that seem to complement existing cluster programmes particularly well. First, networks with a broader geographic and industry scope than established regional clusters can play a useful role in the *early stages of cluster development*, including work with emerging industries. Networks can then be an important element in an integrated cluster policy that recognises the different needs of clusters throughout the cluster life cycle.[54] In existing cluster categories, new regional clusters might not have reached critical mass. Networks can then be a flexible tool to help companies collaborate and explore growth opportunities. They allow firms to tap more easily into complementary capabilities of companies located elsewhere. In emerging cluster categories, networks can be a tool for companies to explore opportunities for new markets to emerge by recombining technologies and capabilities from traditionally different cluster categories. They allow them to act more easily across cluster boundaries.

Second, networks can *provide shared services and connect individual firms from weaker regional clusters* across a larger region or nation. This amounts to a more efficient use of public support infrastructure in terms of knowledge provision and sharing. Moreover, it helps to overcome the challenges of limited critical mass in individual regions. However, this is always a second-best solution compared to allowing companies to agglomerate and regions to specialise more strongly. Given the considerable barriers to mobility that still exist in Europe, some of them policy-made but others related to culture and behaviour patterns, these national networks can play a useful role, even if cluster dynamics will inherently be more limited than in the case of a strong regional cluster.

Third, networks can be a useful tool for organising activities specifically directed towards SMEs. The importance of SMEs is increasing in both exports and innovation processes. Nevertheless, their needs for public support in these activities are different from those of large companies that have been the traditional focus of policy in these areas (and that continue to play a dominant role in them). Network programmes can be an efficient tool for reaching out to a larger number of SMEs without creating unmanageable process costs. In some cases these networks will be separate from clusters. Here the network is a mechanism to improve the

[54] This idea fits well into the structure of an integrated cluster programme with dedicated tools and services for immature clusters, mature clusters, and clusters in transition. See NGP Excellence (2012).

general sophistication of SMEs in activities that have significant fixed costs or create positive externalities. In other cases, the SME network will be part of a cluster.[55] Here the network can be connected to large companies that in turn provide connections to global value chains and distribution channels.

Fourth, networks can be a useful tool for more comprehensive efforts to enhance *regional competitiveness*. The focus on these networks might be on clusters, where there is sufficient critical mass. If this is not the case, networks can focus on cross-cutting framework conditions that are relevant across a broader range of industries and clusters. The network is then an efficient platform for information exchange and dialogue, providing a connection to local and regional authorities to companies that otherwise would not have access.

5.4.3. Operational design of network programmes.

The third question concerns the **operational design** of network programmes. Here the evidence is still limited but the analysis suggests a number of issues for consideration.

First, network programmes should set out *clear objectives* for the actual activities of the network. Collaboration does not happen automatically, even if some funding is provided. Without clear targets there is a danger that network programmes attract what have become known as 'hunting parties', i.e. small groups of companies, often facilitated by a consultant, that tap into available funding without creating any meaningful public value. Given the modest budgets required for network programmes, there is a danger of wasting money on numerous small efforts without any clear impact.

Second, network programmes should be managed on the basis of *clear milestones with a transparent exit strategy* for networks that do not meet expectations. For cluster organisations supporting established clusters there is a case for providing predictable long-term funding for connections to emerge. For networks operating in more fluid environments with a much higher likelihood of failure, it is more important to keep reviewing and pruning the portfolio of supported networks. It should be easier to obtain support but also easier to lose it.

Third, network programmes should make significant use of in-kind services rather than direct financial support. What is missing in networks is the structure to collaborate and the knowledge to provide through these structures, rather than capital (that in clusters is designed to compensate for externalities). Providing funds to buy these services rather than having the services provided directly by government may have a negative impact on incentives and can in some cases be less efficient. In this context the national support units for networks and clusters are an interesting recent innovation.

Fourth, network programmes designed for emerging clusters should be integrated into an *overall programme for cluster support*. There needs to be a clear transition to the next stage of

[55] One example is Hanse-Aerospace, a network of SMEs that is part of the larger Hamburg Aerospace Cluster. See http://www.hanse-aerospace.net/home.html.

the programme, reflecting the changing needs of clusters as they evolve and providing incentives to be assertive in pursuing the development from a network to a cluster organisation.

5.5. Policy implications

The analysis of existing public policy programmes to support or leverage firm networks reflects a wide range of approaches, driven to a large degree by the significant differences in size, government structure, and economic profile across European countries. Some network programmes are closely connected to clusters and cluster organisations, focusing on clusters that have only regional importance, or connecting regional clusters within a national structure. Others are less like clusters, especially those that support networks of SMEs in specific activities such as innovation or exports. In particular, they have a different geographic and industry scope.

Public support for network programmes can be motivated by the activities that the network organises and by the efficiency of the network as a policy delivery channel. Unlike clusters, the nature of the network itself is not a reason for intervention. There are three types of network programmes that have the highest potential to add useful instruments to the policy toolkit for economic development:

- support for networks in emerging industries and clusters;
- establishment of national cluster platforms to provide shared services and connect firms across regions;
- support for networks of SMEs active in areas with positive externalities, such as innovation and exporting to new markets.

Many networks are market driven and hardly require any policy intervention. Nonetheless, proper framework conditions are essential if private organisations are to have the incentives to invest in networks. Europe-wide network programmes are a useful complement to cluster-based programmes. Moreover, if intervention is to take place, in-kind services should be preferred to direct financial support. The objectives and operational design of network programmes are to be carefully thought through and implemented to reap the expected benefits. If clear milestones are identified early on, the network programmes can be monitored. It should be possible to discontinue unsuccessful programmes.

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ANNEXES

Box 5.1 Case-study on cross-national network based on regional clusters: Scanbalt, Baltic Sea Region

Scanbalt (http://www.scanbalt.org) promotes the development of ScanBalt BioRegion as a globally competitive macro-region and innovation market within health and life sciences. ScanBalt promotes projects, business and research, visibility and branding, policy issues, regional innovation and cluster development. The network is active in the Baltic Sea Region comprising Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, Poland, Sweden, the northern part of Germany and the north-western part of Russia. ScanBalt BioRegion also collaborates with neighbouring regions of particular interest, e.g. northern Netherlands. It includes the health and life science community and related industries.

Scanbalt has two co-opted founding members (Nordic Innovation Centre, Nordforsk), 26 founding members, 19 institutional members, and two affiliated members. Any public or private organisation involved in life sciences can apply for membership (if located in the ScanBalt BioRegion) or affiliated membership (if located outside the ScanBalt BioRegion). The cost of membership fees depends on the membership type (here 2011 prices). Founding members (FOU) pay EUR 5,500 per annum and have five votes in the General Assembly and one vote in the Executive Committee (ExCo). Institutional members (INS) pay 1,100 EUR per annum and have one vote in the General Assembly; if elected to ExCo, INS also have one vote there. Affiliated members (AFF) pay 1,100 EUR per annum and have similar voting rights as institutional members. Affiliated members may apply for founding membership if they receive a corresponding invitation from ExCo.

The Scanbalt secretariat is located in Copenhagen with liaison offices in Tartu, Gdansk, Groningen and Copenhagen. There is one person working full-time in the secretariat in Copenhagen, who is the only person financed directly by ScanBalt. Other secretariat members work in the liaison offices and are regionally financed. The General Assembly (GA) is the network's highest body; it decides upon the change of statutes or membership fees and advises ExCo on the association's strategy. The Executive Committee (ExCo) decides on all relevant matters that do not require GA's approval. ExCo comprises of Founding Members, up to 6 Institutional Members and up to 5 Co-Opted Members of strategic interest. Scanbalt's Chairmanship w is responsible for representing of the organisation and overseeing the management. The Chairmanship comprises a Chairman elected by ExCo and up to 4 Vice Chairmen proposed by the Chairman and approved by ExCo. The term of Chairmanship is 2 years with the possibility of being re-elected twice. Scanbalt's annual budget is about DKK 1,500,000 or EUR 200,000. However, this only covers the budget of the CPH secretariat; there is much more financing for regional liaison offices and actual activities. The budget is made up of 50 % fees and 50 % external resources (CPH secretariat only). Over the last decade about EUR 20 M of EU funds were used for specific activities in research and education.

The ScanBalt BioRegion project was piloted and then initiated in full in 2002 by the Nordic Innovation Centre and the Nordic Council of Ministers. In 2004 ScanBalt became an independent legal entity, a non-profit membership association (ScanBalt fma). The year 2005 saw the establishment of the ScanBalt Academy which started organising ScanBalt Summer Schools in 2008 and became an independent non-profit association in 2011. In 2006 ScanBalt became a strategic partner of the Council of the Baltic Sea States (CBSS). In 2009 the option of Affiliated Membership was introduced for organisations, institutions and regions outside the ScanBalt BioRegion. In 2009 ScanBalt published the Innovation Agenda "Smart Growth: Bridging Academia and SME's in the Baltic Sea Region" proposing an EU Baltic Sea Region strategy flagship project ScanBalt Health Region which was officially approved the same year. In 2012 ScanBalt was responsible for developing and promoting 'Submariner – Sustainable uses of Baltic Marine resources' to a new flagship in the EU Baltic Sea Region strategy. ScanBalt acts as a mediating, coordinating and communicating umbrella and platform for the Baltic and Nordic regions and the regional networks. ScanBalt attracts or helps its members attract funding to promote coordinated private-public cross-border project activities. These focus mainly on creating regional cross-border infrastructure or to develop private-public cross-border collaboration within specific thematic areas. Up to 2012 ScanBalt has attracted or helped to attract approximately EUR 20 M for the members in project funding. ScanBalt has been involved in many EU-funded projects, including ScanBalt Competence Region (EU FP 6), Boosting Baltic FP 6 (EU FP 6), Boost Biosystems (EU FP 6), Trayss Prime (EU FP 6), ScanBalt IPKN (EU FP 6), ScanBalt Campus (InterregIIIB), Bridge-BSR (EU FP 7 – Coordinator), BSHR HealthPort (Interreg IV – Coordinator), Eco4Life (South Baltic Programme), ScanBalt Health Region (EU BSR Flagship – Coordinator)

Box 5.2 Example of a regional network focused on a broad, emerging cluster: The Romagna Creative District, Italy

The Romagna Creative District (RCD; http://romagnacreativedistrict.com/) aims to connect and share the creative resources of individuals and companies to spark off creativity and boost the economy of the region. RCD is active in the Romagna region in Italy. The network covers twelve creative sectors as identified by the European Union, including communications, art, design, architecture, theatre, music and photography.

RCD has about 1200 members. Standard membership is free, but RCD is planning to create a sort of premium membership including access advantages and special services; the fee will probably be different for companies and individuals. RCD operates as an open platform where new members can always come and participate. The board consists of 6 members who at the moment, and until the next renewal, are the 6 founders of the RCD Association. The current president and vice-president of the Association also participate.

The RCD secretariat has two full-time and two part-time employees. The cumulative budget over the last four years has been close to EUR 450 000, i.e. about EUR 125 000 annually. Roughly 45 % of the necessary funds have been provided by private companies, 35 % by an

EU-funded regional project, 10% by foundations, and the remainder by the Chamber of Commerce and a local municipality.

The idea for RCD was developed in 2008 and the first formal event to launch the network took place in May 2009. Barbara Longiardi from Matite Giovanotte, a design and communication studio based in Forlì, played a central role in initiating the endeavour. RCD aims to foster creative networking and advertise the region's inherent talent and its local assets. The network organises events to foster networking, such as Ortofabbrica. It also organises international missions, such as a mission to China in May 2011 where 3 companies from RCD networks represented Italy at the Shenzen Festival of Creative Industries, and a joint presence at international conferences such as the 2011 London Design Festival. RCD is currently not involved in any EU-funded projects.

Box 5.3 An example of a regional network focused on a cross-cutting theme: Environment Network South (Miljønetværk Syd), Denmark

The Environment Network South (ENS - http://www.milsyd.dk/) aims to establish and support cooperation between public authorities and companies in the environmental field, increase knowledge of the environment, and promote sustainable environmental development for the benefit of citizens and businesses in the region. The ENS covers the former Ribe County in Denmark, which includes the municipalities of Fanø, Billund, Varde, Vejen and Esbjerg. It is open to all industries; the focus is on the environmental impact of the network members from a variety of industries.

The ENS has a total of 152 members, 76 of whom are V-members (businesses), 56 I-members (interested parties), 13 F-members (stores endorsing the Green Shop concept) and 7 O-members (public authorities). Members pay an annual fee depending on the type of membership. In 2011 Companies (V-members) pay DKK 4 300 per annum if they have less than 50 employees and DKK 6 000 per annum if they have 50 or more employees. V-members have the right to vote at the general meeting and they receive support in preparing their environmental reviews. Interested parties (I-members) pay DKK 4 300 per annum. They have the right to speak at the general meeting and they receive newsletters and invitations to events that are open to network members. Stores (F-members) pay a registration fee of up to DKK 3 000, depending on the municipality they are located in, and an annual fee of DKK 500. They may speak at the general meeting, and they receive the network's newsletter and the environmental diploma (the Green Shop concept). Public authorities (O-members) pay DKK 3 per inhabitant in corresponding municipalities and they have the right to vote at the network's annual general meeting.

The ENS secretariat employs three regular staff, one trainee and two student workers. Of the three employees in the secretariat, two are working full-time (37 hours/week) and the third is working only part-time (7 hours/week). The general assembly is the network's highest authority; it takes place every spring and all members have the right to attend and speak. The Board consists of 10 members: 4 members are chosen from among the enterprises undertaking

to prepare an environmental statement which at minimum fulfils the network's requirements (the Chairman also comes from among these 4 representatives), 5 mayors or committee chairmen from the public authorities and a representative of the Environmental Centre of Odense. The ENS has an annual budget of about DKK 1.8 million, covered largely by membership fees. For special events the ENS seeks project funding. For the moment the ENS does not have any source of funding apart from membership fees. However, 2 applications for funding along with partners are currently in progress. Additionally, for the last 4 years the network has had a joint programme with other environmental networks in the region. The ENS does not receive any EU funding at present, but it has previously participated in 2 projects, one of which ended in 2009 and another in 2011. The network also has several applications for further funding currently in progress.

The ENS was founded in June 1998 by a group of companies in the former Ribe county. Over the last 14 years, the profile of activities has remained more or less the same. The Network's activities aim to have individual members undertake their own environmental management tasks and attain tangible goals in the environmental sphere. The network offers practical support to ensure an overview of the company and provide guidance to the company in its environmental work. The ENS's environmental diploma is awarded for a two-year period and the diploma is renewed when a new environmental statement has been prepared. In addition, the network organises theme days, lectures and seminars on environmental topics and gives an annual Environmental Award to a company in the network that has shown extraordinary commitment to the environment. The network organises groups where members meet 4-5 times per year to talk about specified topics. Over time the ENS has increased its focus on education; it now offers a number of one-day courses on environmental topics. For the time being the ENS is not participating in any EU-funded projects but has taken part in one project in the past.

Box 5.4 Case-study of a European network with a topical focus: Social Firms Europe CEFEC

Social Firms Europe CEFEC (http://socialfirmseurope.org/) aims to create paid work for disabled and disadvantaged people and help individuals who face discrimination to overcome their social and economic exclusion through employment. Social Firms Network CEFEC wishes to raise awareness and enhance the profile of social firms and social cooperatives across Europe, to increase and serve the membership and to become more financially sustainable and influential as a European Network. CEFEC is active across Europe and organisations from outside Europe may also join. Recently the network has taken in an increasing number of members from Eastern Europe (such as Hungary, Romania). CEFEC is open to all industries that could help people with disabilities or disadvantages to find employment.

CEFEC has 43 members and its annual conference attracts around 150-200 participants. There are 3 types of members: full members (EUR 150 per year for organisations employing less

than 20 people and EUR 300 per year for organisations with 20 or more employees); supporting organisation members (EUR 150 per year regardless of size); and individual members (EUR 25 per year). The secretariat has one employee, working 20 %. The network is run by an Executive Committee, responsible for managing the association. It consists of member representatives, with a minimum of 3 members and a maximum equal to the number of countries represented in the network. Each member has to be from a different country. Currently, the Executive Committee has 15 members, including a treasurer, a secretary and a chairperson. A General Assembly brings together all the network's members and supporters, although only full and individual members have the right to vote. The Assembly decides on the following issues: changing the articles, appointing and letting go of members of the Executive Committee, dissolving the association and excluding members. CEFEC has an annual budget of approximately EUR 10 000. The bulk of the funding (EUR 8 500) comes from membership fees. About EUR 1 000 comes from projects, and around EUR 1 000 from conference donations. CEFEC has not used EU funding directly and nor is not planning to do so in the near term. However, they have had partnerships with other organisations that use EU funding for joint projects.

CEFEC was founded in 1987 by Mr Patrick Daunt, who was in charge of the EU office of Handicapped Affairs at the time._Initially the network focused on the mentally handicapped, but in 1989 the Social Firms' movement was widened in scope to include all disadvantaged people._In 1990 CEFEC became a legal body._In 2007 CEFEC issued the first LINZ-document, the 'LINZ APPEAL' which gives recommendations on Social Firms to the European Union and presents CEFEC's research in the area. The network collects data and evidence about the impact of Social Firms, facilitates networking and sharing of best practice among members, shares the skills and expertise of its members and encourages and explores opportunities for further research into the Social Firm model as it operates in various EU countries. Furthermore, where possible the network facilitates inter-trading opportunities between Social Firm businesses, organises annual conferences for its members and hands out the European Social Firm of the Year Award. The aims and activities are achieved mainly through annual conferences, but CEFEC's representatives have also attended other conferences to introduce the Social Firm model. So far CEFEC has not had direct participation because the network is very small and not very robust financially, as the majority of its income comes from membership fees. Although they cannot have EU-funded projects directly they partner with other organisations that can. For example, last year CEFEC partnered with ENSIE on their Progress Project,(funded by the EU) and hopes to continue the cooperation this year.

6. COMPETITIVENESS DEVELOPMENTS ALONG THE EXTERNAL BORDERS OF THE EUROPEAN UNION

Since the end of the Cold War, most countries sharing a border with the EU have gone through change on an unprecedented scale. In many ways the European Union has been an important factor behind this change: successive waves of EU enlargement have extended its external borders outwards from the borders of the founding Member States, turning former neighbours into current Member States while creating new neighbours along its new external borders. Enlargement has had an impact on the regional economy mainly via improved rule-of-law and business environment, new trade opportunities, foreign direct investment, cross-border purchases, commuter and migration flows, and through the acceleration of structural change (Smallbone et al. 2007). Moreover, the EU has acted as a driver of change outside its external borders by virtue of its economic and commercial importance for neighbouring states, as well as its insistence on respect for democratic principles and human rights.

Table 6.1 illustrates some of the changes over time, starting at a time when the EEC consisted of its six founding Member States, the combined population of which was around 200 million. Those six countries were surrounded by 15 countries with a combined population of some 170 million and a combined GDP of more than half the GDP of the EEC. Since then the number of Member States has more than quadrupled, the EU population has risen to half a billion citizens, and many of the 15 countries that surrounded the EEC in 1970 have themselves become Member States. With the expansion of its external borders at each stage of enlargement, the EU has gradually gained new neighbours and the number of countries surrounding the EU has increased from 15 to more than 20. In parallel with the increasing number of surrounding countries, their combined population has more than doubled, from 200 million in 1970 to 435 million today. In terms of output, however, the combined GDP of the countries surrounding the EU today is just a fraction of the latter's GDP. This is a reflection not only of the economic success of the EU, but mainly the fact that many of the countries surrounding it today are relatively poor and underdeveloped (whereas many of the countries surrounding it in 1970 were at an economic level comparable to that of the founding Member States).

Table 6.1. Member States and neighbouring states 1970–2010

Year	1970	1980	1990	2000	2010
Number of Member States	6	9	12	15	27
Number of neighbouring states	15	17	17	24	23
Member States' population in relation to population of neighbouring states	20% higher	70% higher	50% higher	15% lower	15% higher
Member States' total GDP in relation to total GDP of neighbouring states	60% higher	150% higher	330% higher	180% higher	340% higher

Source: Own calculations. Percentages are approximations.

The focus of this chapter is on the current and future economic and competitiveness situation in the countries surrounding the EU, with an eye to future-oriented implications. The following aspects will be specifically addressed:

- Description of the economic situation and competitiveness around the external borders of the EU.
- Existing agreements with the EU or with Member States; economic impact in terms of foreign direct investment (FDI) and trade of the agreements.
- Migration and remittances across the external borders of the EU; economic impact and impact on competitiveness.

On the basis of the analysis, conclusions will be drawn and policy implications formulated covering the challenges and opportunities arising for EU entrepreneurs and companies operating, or wishing to operate, on the other side of the external border.

6.1. The Rim

The countries covered in this chapter are (shorthand names in brackets, used in the remainder of the chapter): Republic of Albania (**Albania**); People's Democratic Republic of Algeria (**Algeria**); Republic of Armenia (**Armenia**); Republic of Azerbaijan (**Azerbaijan**); Bosnia and Herzegovina (**BiH**); Arab Republic of Egypt (**Egypt**); **Georgia**; State of Israel (**Israel**); Hashemite Kingdom of Jordan (**Jordan**); Kosovo under UN Security Council Resolution 1244 (**Kosovo**)[56]; Lebanese Republic (**Lebanon**); **Libya**; Principality of Liechtenstein (**Liechtenstein**); Republic of Moldova (**Moldova**); Kingdom of Morocco (**Morocco**); Kingdom of Norway (**Norway**); Occupied Palestinian Territory (**Palestine**); Russian

[56] Without prejudice to any positions on the status of Kosovo.

Federation (**Russia**); Republic of Serbia (**Serbia**); Swiss Confederation (**Switzerland**); Syrian Arab Republic (**Syria**); Republic of Tunisia (**Tunisia**); and **Ukraine**.[57]

In this chapter, these countries are referred to collectively as 'the Rim' – a concept borrowed from the European Rim Policy and Investment Council (ERPIC) but used here in a slightly different meaning. Within the Rim, the following four broad groupings of countries with similar characteristics can be identified:

- Advanced: Norway, Switzerland, Liechtenstein, Israel.
- Eastern Rim: Armenia, Azerbaijan, Georgia, Moldova, Russia, Ukraine.
- Western Balkans: Albania, BiH, Kosovo, Serbia.
- Southern Rim: Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, Tunisia.

The countries in the Advanced group are affluent, highly developed and competitive democracies. Through commercial links as well as agreements and programmes such as the European Economic Area (EEA)[58], the Schengen Agreement, and the Framework Programme for Research and Technological Development, these countries are linked to the EU and some can be considered Member States in all but name and institutions.

The Eastern Rim countries are all former Soviet republics and share the corresponding post-communist legacy. More than 20 years after gaining independence, most of them are still politically unstable and suffer from democratic deficits (to varying degrees). The majority of them are low-income to medium-income economies with a strong adverse legacy in their economic structures. Despite their relatively low per capita income level, they are highly industrialised and have an educated population and a relatively well-qualified labour force. Most Eastern Rim countries also have close ties with the EU in terms of culture, history and values. Russia (the EU's strategic partner) does not aspire to EU membership but is leading alternative integration processes in the region which, if based on WTO rules, could be compatible with and complementary to the work of the EU in the region, but which also give rise to speculation about geopolitical motives. Parts of the Eastern Rim are potentially competitive, in particular in selected high-technology niche sectors (related to space and military technology; metals, chemicals and food industries; tourism) and many of them are important for the supply and transit of energy to the EU. The negotiation of Deep and Comprehensive Free Trade Areas (DCFTAs) as part of (also currently negotiated) Association Agreements, has either started (Armenia, Georgia, Moldova) or has been completed but not signed for political reasons (Ukraine). Russian is a widely understood language in the Eastern Rim, an important asset for entrepreneurship and a factor facilitating regional integration. On the other hand, several 'frozen conflicts' (Armenia/Azerbaijan over Nagorno-Karabakh;

[57] Croatia and most candidate countries (Iceland, Turkey, Montenegro, the Former Yugoslav Republic of Macedonia) are excluded from the analysis. Belarus, Andorra, Monaco, San Marino, and the Vatican State are also not included in this chapter.

[58] Israel and Switzerland are not members of the EEA.

Georgia over South Ossetia and Abkhazia, Moldova/Transnistria) remain unresolved and represent serious obstacles to deeper economic integration in the region.

The Western Balkans share many of the characteristics of the Eastern Rim, but are already candidate countries or potential candidates for EU membership and therefore institutionally closer to the EU than the Eastern Rim. The region is fragmented and plagued by serious labour market problems (extremely high unemployment, migration). Despite persisting tensions and unresolved conflicts, the shared past has left a lasting positive legacy in the form of negligible language barriers (except for Albania and Kosovo). There is also a lasting commercial legacy in the form of the Central European Free Trade Agreement (CEFTA).

The Southern Rim economies enjoyed strong economic growth in the 1990s and early 2000s, following a series of economic reforms. Impressive though the reforms were, they proved unbalanced and unsustainable, giving rise to tensions and regional imbalances within countries that contributed to their current instability. The whole region is now in transition and has witnessed revolutions and outbreaks of violence (in Egypt, Tunisia, Libya, Syria, Palestine and Lebanon). Democratic processes, free and fair elections, and viable civil societies are key to sustainable and inclusive growth in the region and are welcomed by the EU. In the short term though, doing business remains a challenge in the Southern Rim and EU investment dropped sharply in 2011. The start of DCFTA negotiations with Egypt, Tunisia, Morocco and Jordan was approved by the Council in December 2011, marking a step forward in relations between the EU and those four countries as well as within the Agadir Agreement Free Trade Zone; the intraregional trade in the Southern Rim is among the smallest in the world.[59] Because of their demographic features, the majority of countries in the region face serious labour market challenges, even if official unemployment is lower than in the Western Balkans.

6.2. Economic situation and competitiveness of the Rim countries

Apart from Switzerland and Norway, the Rim is dominated by three large economies: Russia and Ukraine on the Eastern Rim; and Egypt in the South. The economic size of the Rim would be much smaller without these three big countries, which together account for more than half of the Rim's population and about half its GDP. In terms of the structure of the Rim economies, it is only in some energy-exporting countries – Algeria, Azerbaijan and Libya – that industry gross value added accounts for more than 50% of GDP.[60] Elsewhere, the majority of Rim countries are service-based economies (the share of services is very high in Albania, Armenia, Georgia, BiH, Moldova, Morocco and Syria), in many cases also with a relatively large agricultural sector.

In terms of their share of goods exports in relation to GDP, most Rim countries are not very open economies and, from that point of view, not very competitive. In the Southern Rim the

[59] The 2004 Agadir Agreement between Morocco, Tunisia, Egypt and Jordan aimed at establishing a free trade area (FTA).

[60] The share of industry in another energy-exporting country, Norway, is also fairly high – more than 40% of GDP. By way of comparison, on average in the EU industry accounts for less than 17% of GDP; and in the 2004/2007 accession states it accounts for 23% of GDP.

lack of openness is clearly linked to the political obstacles to trade with neighbours in the region (closed frontiers between Morocco and Algeria, for instance). Several Rim countries specialise in services exports, the share of which in relation to GDP is higher than for the EU. Services exports from Rim countries are a mix of transport, tourism and financial services. Financial services are important in Lebanon and Switzerland, while tourism plays a decisive role in a number of Southern Rim countries (Egypt, Morocco and Tunisia). Transport services are fairly important in Georgia and Ukraine (mainly oil and gas pipelines).

Historically, more rapid GDP growth or industrial growth has not necessarily been associated with high export openness. In a number of Rim countries, especially in the East, relatively rapid GDP or industrial growth from 2000 to 2010 occurred without particularly high openness. In contrast to most 2004/2007 accession states and other emerging economies, any economic catching-up in Rim countries has been the result not of export-led growth but of expanding domestic demand, frequently financed from remittances or other transfers (Armenia, Georgia and Kosovo). In the Southern Rim, already existing regional imbalances and exclusion have been exacerbated by the economic impact of free or special export zones. This has contributed to the recent revolutions.

Another common feature is the fairly high external imbalance of many Rim countries. Energy exporters (Azerbaijan, Russia, Algeria, Libya and Norway) run considerable trade and current account surpluses – close to 30 % of GDP in the case of Azerbaijan – whereas the majority of resource-poor Rim countries report high or even very high (and unsustainable) external deficits (Armenia, Georgia, Albania, Kosovo, Lebanon and Palestine). Countries that fail to build up a viable export sector are particularly vulnerable to the kind of effects felt during the current economic crisis and have to adjust their economic policies accordingly (Gligorov et al. 2012).[61]

[61] A more comprehensive discussion of the different ways in which the economic crisis affected neighbouring economies can be found in European Commission (2010d, 2011b).

Table 6.2. Rim countries: overview of economic fundamentals, 2010

Country	Alb	Alg	Arm	Aze	BiH	Egy	Geo	Isr	Jord	Kos	Leb	Liby	Liec	Mol	Mor	Nor	Pale	Rus	Serb	Swit	Syri	Tuni	Ukr	EU
GDP at exch. rates, EUR bn	8.85	119	7.06	39.2	12.5	165	8.79	164	19.9	4.26	29.6	53.8	3.58	4.46	68.7	312	5.57	1115	29	399	44.7	33.4	104	**12k**
GDP at PPP, EUR bn	21.7	194	12.8	69.3	24.9	385	17.1	170	27.2	9.31	45.9	70.1	2.57	8.40	118	214	n/a	1808	62	286	83.1	76.9	249	**12k**
GDP at PPP, EU=100	0.18	1.58	0.10	0.57	0.20	3.14	0.14	1.38	0.22	0.08	0.37	0.57	0.02	0.07	0.96	1.74	n/a	15	0.51	2.34	0.68	0.63	2.03	**100**
GDP at PPP per cap, EU=100	28	22	16	32	27	20	16	93	18	17	48	44	293	10	15	179	n/a	52	35	146	16	30	22	**100**
GDP volume, 1990=100	197	170	146	237	n/a	248	68.8	238	292	n/a	331	149	n/a	57.2	205	168	n/a	107	n/a	131	247	245	65.8	**143**
GDP volume, 2000=100	171	145	216	402	143	162	183	136	184	178	166	147	n/a	165	162	116	n/a	159	150	118	155	155	152	**116**
Industrial output, 2000=100	234	108	161	326	187	133	130	119	146	120	110	140	n/a	136	137	85	107	149	106	118	120	123	155	**103**
Share of industry in GDP %	8.9	54.5	14.8	52.6	17.8	37.3	12.1	27.0	34.3	20	17.7	78.2	36	13.2	37.3	40.1	24.3	26.7	18.4	26.8	33.7	30.0	24.4	**16.8**
Share of agriculture in GDP	16.8	11.7	17.4	5.4	7.1	19.9	7.3	3.0	2.8	12	4.8	1.9	6	11.9	19.9	1.2	21.6	3.5	8.0	1.2	21.0	7.8	7.2	**1.5**
Share of services in GDP %	74.3	33.7	67.8	42.0	75.1	52.8	80.6	70.0	62.9	68	77.6	19.9	58	74.8	52.8	58.7	54.1	69.8	73.6	72.0	45.3	62.3	68.4	**81.7**
Population (million)	3.21	36.1	3.25	9.05	3.84	77.8	4.45	7.43	6.11	2.21	3.91	6.56	0.04	3.56	31.9	4.89	4	143	7.30	7.79	21.0	10.5	45.9	**501**
Population, 1990=100	99.9	144	90.0	124	n/a	152	81	165	176	n/a	138	150	n/a	92	132	115	n/a	96.6	n/a	116	165	129	88.4	**n/a**
Population, 2000=100	105	119	101	113	102	123	100	122	126	n/a	110	123	n/a	98	112	108	n/a	97.5	97.1	108	127	110	93.3	**n/a**
Unemployment rate (LFS) %	15.0	10.0	7.0	5.6	27.2	9.0	16.3	6.7	12.5	45	6.4	n/a	3.2	7.4	9.1	3.6	24.0	7.5	19.2	4.6	8.4	13.0	8.1	**9.7**
Public debt, % of GDP	61.0	11.1	39.4	7.4	39.1	78	36.7	74.7	67	6.1	145	2.5	n/a	26.3	26.1	49.7	n/a	8.6	36.0	20.2	28.5	43.5	39.5	**80.2**
Price level, EU=100	41	61	55	57	50	43	51	97	73	46	64	77	n/a	53	58	146	n/a	62	47	139	54	43	42	**100**
Average wages, EU=100	8.9	n/a	7.9	11.0	22.4	n/a	9.3	n/a	n/a	n/a	n/a	n/a	151	7.0	n/a	210	n/a	18.9	16.6	182	n/a	n/a	7.7	**100**
Exports of goods, % of GDP	13.2	32.3	12.2	51.1	29.8	12.2	21.1	25.6	26.6	7.2	13.9	63.0	n/a	35.7	19.3	32.1	13.1	27.2	25.5	49.0	20.2	37.1	37.8	**30.4**
Imports of goods, % of GDP	36.8	26.8	33.7	13.0	55.7	21.2	43.2	26.7	51.7	47.6	45.2	37.4	n/a	85.4	35.8	18.0	65.4	16.9	42.0	46.6	25.8	47.4	44.2	**30.9**
Export of services, % of GDP	19.2	2.1	8.1	4.0	7.8	11.4	13.7	11.4	19.5	12.2	38.9	0.7	n/a	15.5	13.8	9.6	n/a	3.0	9.2	15.8	8.9	13.1	12.4	**9.7**
Import of services, % of GDP	17.2	8.4	10.7	7.3	3.6	7.4	9.2	8.3	16.1	11.1	33.2	8.6	n/a	17.3	8.2	10.4	n/a	5.0	9.2	7.5	5.3	7.6	8.8	**8.4**
Current account, % of GDP	–12	+7.9	–15	+29	–5.6	–2.0	–9.6	+2.9	–4.9	–15	–11	+14	+25	–12	–4.3	+12	–8.9	+4.8	–7.2	+16	–3.9	–4.8	–2.1	**–0.2**
Exports to EU, % of exports	70.1	52.0	49.6	47.6	54.5	35.5	18.7	26.0	4.2	44.7	15.3	75.7	62.4	51.9	59.3	80.9	2.1	52.6	57.3	58.7	35.6	72.1	25.4	**65.0**
Imports fr. EU, % of imports	64.6	52.9	23.0	25.3	45.9	27.1	28.3	35.0	20.9	38.3	36.5	48.3	89.0	43.4	51.8	63.3	8.1	41.6	56.0	77.5	25.0	57.3	31.4	**61.9**
Share of EU total exports, %	0.05	0.54	0.01	0.06	0.08	0.19	0.03	0.31	0.01	0.02	0.01	0.74	n/a	0.04	0.22	2.04	0.00	2.23	0.19	2.18	0.09	0.26	0.45	
Share of EU total imports, %	0.02	0.41	0.01	0.25	0.05	0.39	0.01	0.38	0.07	0.00	0.12	0.18	n/a	0.02	0.36	1.09	0.00	3.92	0.10	2.76	0.10	0.29	0.29	
Doing Business rank (2012)	82	148	55	66	125	110	16	34	95	117	104	n/a	n/a	81	94	6	131	120	92	26	134	46	152	**n/a**
Institutional arrangement	S	F	E	E	S	F	E	F	F	–	F	F	eea	E	F	eea	F	P	S	efta	F	F	E	**n/a**
FDI stock per capita, EUR	960	364	1000	400	1500	650	1300	8060	2341	n/a	6226	2138	n/a	600	967	27k	n/a	1750	2164	53k	272	2285	954	**10k**

PPP: purchasing power parity. LFS: labour force survey. S: stability and association agreement. F: free trade agreement. E: Eastern partnership. P: partnership and cooperation agreement. eea: European economic area. efta: European free trade association. k = thousand

Sources: Eurostat, national statistics, AMECO, IMF, UNCTAD, UN Comtrade, OECD, World Bank, Coface, European Commission and High Representative (2012c).

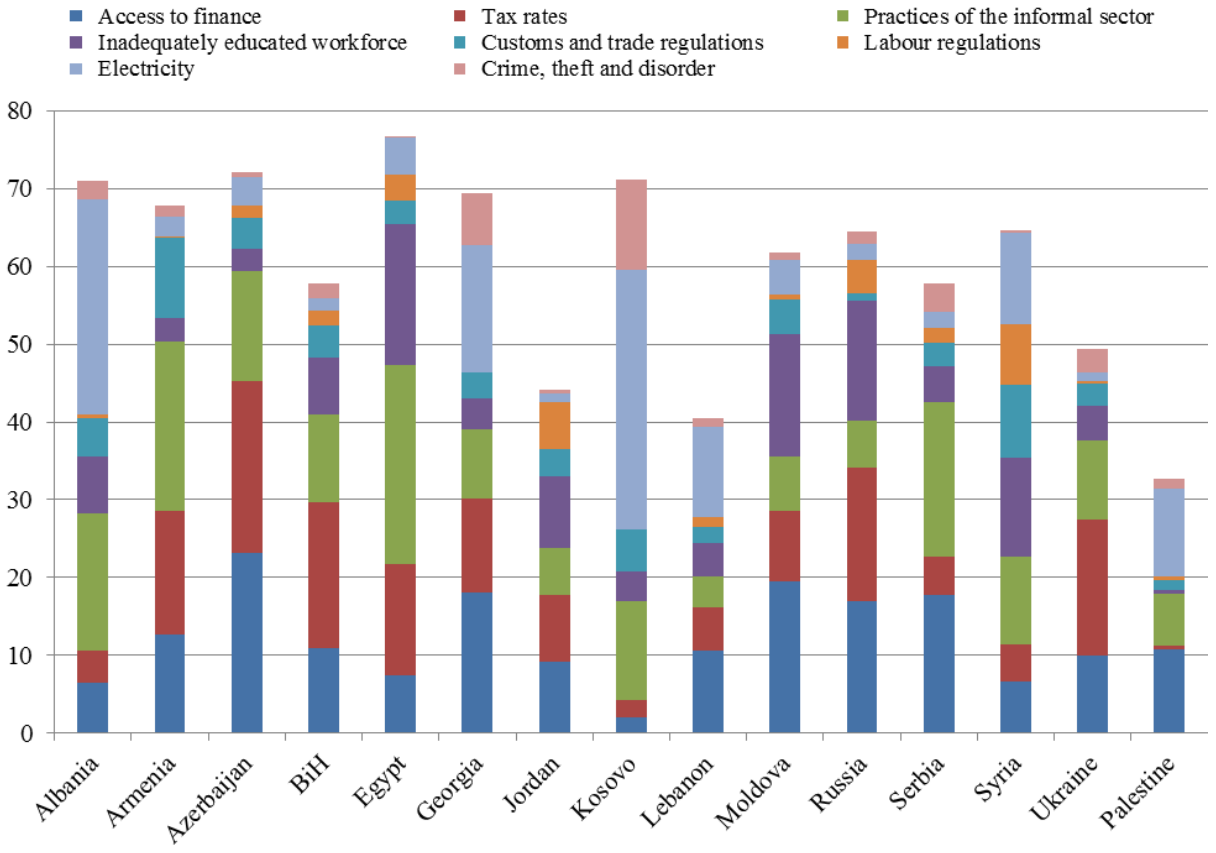
In absolute terms, the Rim countries are relatively minor EU trading partners. Less than 10% of total EU exports and less than 11% of total EU imports were accounted for by trade with the Rim countries in 2010. At the same time there is an asymmetry in the relative importance of EU-Rim trade. For most Rim countries, the EU is by far their most important export and import partner. This is especially true for the Eastern Rim (with the possible exception of Georgia). Distinct geographical trading patterns exist at the sub-regional level as well. Conversely, the competitiveness and trade balances of EU Member States such as France, Spain, Italy and Greece are significantly affected by their trade with Rim countries.

This trade asymmetry has important consequences for the competitiveness of the Rim. Any EU policy or measure that affects trade relations with the Rim countries, in particular a free trade agreement, has a disproportionately large impact on the latter countries. This also applies to individual EU Member States if they maintain particularly close trading links with certain Rim countries (cases in point include Poland and Ukraine, France and Tunisia, Spain and Morocco, and Romania and Moldova) or are trading in a particular sector.

Similarly, from an EU point of view the assessment of the competitiveness of Rim economies depends on the political situation, their investment climate and other conditions for doing business. Here again, the Rim countries differ widely (cf. Figure 6.1). Several Rim countries have improved the conditions for doing business in recent years, notably Morocco, Moldova and Armenia. According to the World Bank (2011a), SMEs that benefit most from these improvements are the key engines for job creation. In this context it is useful to note that SMEs employ 25% of the active work force in the Southern Mediterranean (European Parliament 2012).

Financial intermediation is generally underdeveloped in Rim countries, as demonstrated, for instance, by the relatively low percentage of firms that operate with a bank loan or a credit line. Lending practices thus pose a serious obstacle; a fact of particular relevance to the development of SMEs (Alvarez de la Campa 2011). The practices of the informal economy (crime and corruption) are frequently mentioned as important obstacles, especially in Eastern Rim countries. The Southern Rim has also long been faced with certain corrupt practices, for instance when obtaining an import licence, a construction permit, a mains electricity connection, or a government contract. It is too early to tell whether this will change in the wake of the Arab Spring and subsequent elections. Whereas only a small proportion of Rim firms possess an internationally recognised quality certificate, a relatively high proportion of firms use internet (slightly more in the East than in the South). By contrast, only a small percentage of firms use technologies licensed from abroad (again, more firms in the East than in the South).

Figure 6.1. Main obstacles to doing business (2009), shares (%) of firms surveyed



Source: Enterprise Surveys, World Bank

In addition to overall rankings, the World Bank Enterprise Surveys provide a number of additional results which are relevant for assessing the business environment and competitiveness, particularly of SMEs. These indicators assess several areas with an impact on entrepreneurship and firm competitiveness (such as regulations and taxes, access to finance, corruption, crime, infrastructure, various characteristics of firms and labour, innovation and technology). In each country covered by the survey, several hundred firms – usually domestically-owned SMEs operating in the non-agricultural, formal, private economy – are surveyed. Figure 6.1 illustrates the eight most important obstacles to doing business in the Rim, as identified by respondents (usually the owners or managers of SMEs) in the individual Rim countries. These eight obstacles account for 60% to 70% of all obstacles surveyed in most Rim countries covered (except for Jordan, Lebanon, Ukraine and Palestine, where other obstacles were more important). The Euro-Mediterranean Charter for Enterprise was adopted by ministers in 2004 to address some of the obstacles. Inspired by EU policies to promote SMEs, it includes guidelines for spurring entrepreneurship and improving the business climate. Since its adoption, it has been a key document for guiding reforms in Mediterranean neighbouring countries. It has also been used as a platform for exchanging good practice across the Euro-Mediterranean area.

Labour regulations are not perceived as a major constraint by the majority of firms, especially in the more market-oriented and liberal Eastern Rim. An inadequately educated workforce is seen as a constraint by a substantial percentage of firms in the Southern Rim, in particular in Algeria, Egypt, Lebanon and Syria. In Eastern Rim countries, lack of education is perceived to be much less of a constraint: firms in those countries also employ fewer unskilled workers and – crucially important for competitiveness – a higher proportion of Eastern Rim firms offer their workers formal training (46% of firms in Armenia, and about 50% in BiH, Moldova, Russia and Ukraine). The fairly high level of qualification of the labour force also represents one of the key competitive advantages of Eastern Rim firms, despite a decline in the quality of education since the fall of the Soviet Union (OECD 2011).

6.3. Trade relations between the EU and the Rim

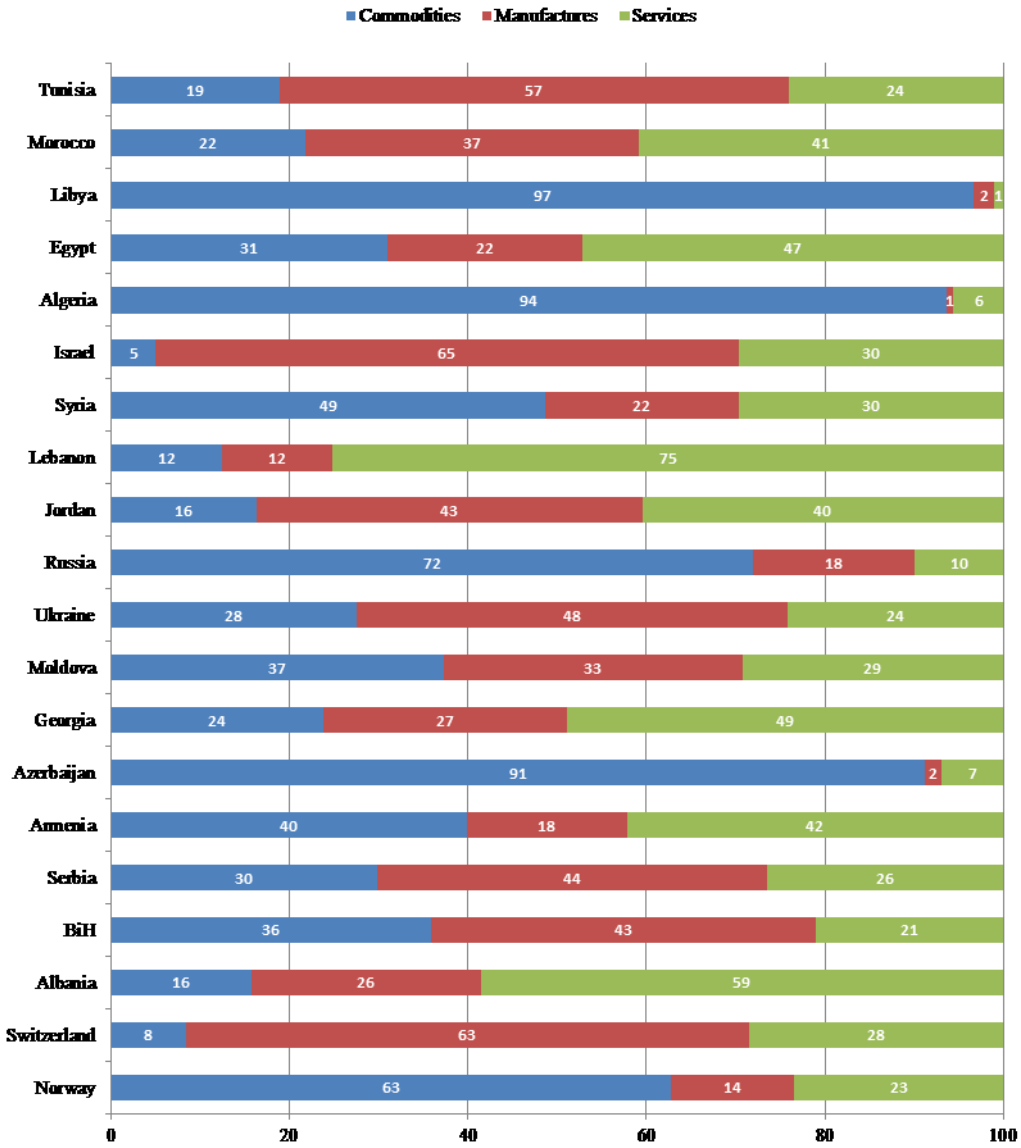
Most Rim economies are small and, with the exception of Russia, Norway, Switzerland and Israel, play a limited role in global trade. With the exception of Russia and Switzerland, none of these countries account for more than 1% of world import demand.

Grouping the Rim countries regionally, the Southern Rim and the Western Balkans each account for no more than 1.2% to 1.5% of global exports (WTO 2011). Were it not for the exports of Russia, the figure for the Eastern Rim would be of a similar magnitude.

Notwithstanding considerable liberalisation efforts in Eastern Rim and Southern Rim countries, overall Rim countries do not have successfully implemented the kind of extensive and export-led growth strategy that would diversify and upgrade their export base and integrate their economies into global trade networks. In terms of exports by broad economic sector, manufacturing is the least developed in Russia (where manufacturing accounts for 18% of total exports) and the Southern Rim. Switzerland is at the opposite end, as its export structure is geared towards manufactured goods (63% of total exports). Algeria, Libya, Azerbaijan and Russia, which depend mainly on commodity exports, are caught in a type of resource trap, where rents from natural resources turn out to be detrimental to export diversification and structural upgrading. The share of manufactured goods in total exports is also below the global average in Norway, due to its high share of energy exports.

Turning to services, in many countries the bulk of export revenues comes from ‘traditional’ service sectors such as travel (tourism) and, to a lesser extent, logistics and transport services. A disproportionately high share of services in overall exports can be observed in Albania, Armenia, Georgia, Lebanon, Egypt, Morocco and Tunisia. The lack of any significant manufacturing export base makes tourism (travel services) the single most valuable export item in resource-scarce, less-developed countries. Most of the resource-poor Rim countries – which should be more inclined to develop manufacturing capacities because they cannot rely on rents from natural resources – have not managed to diversify their exports enough and move into manufacturing (see Masood 2010; Eurochambres 2011, López-Cálix et al. 2010).

Figure 6.2. Export structure of Rim countries by broad sector (2010), shares (%)



Note: Commodity exports are calculated as merchandise exports less manufacturing exports. Data for Kosovo, Liechtenstein and Palestine are not available. For Syria and Libya, data refer to 2009.

Source: WTO database; background study.

As a consequence of the lack of an export manufacturing base some Rim countries, particularly in the South and the East, are forced to compete mainly on price in areas with static comparative advantages from natural resource endowments. Hence, their competitiveness in international markets remains based on the abundance of resources and, with the possible exceptions of Tunisia and Morocco, these countries are still in transition from 'factor-driven' to 'efficiency-driven' economies (Porter et al. 2002). While in developed economies such as the EU, Norway, Switzerland, Liechtenstein and Israel, innovation and technological leadership in products and services are key to success in international markets (cf. European Commission (2010c) for a discussion of Swiss and EU competitiveness in key enabling technologies), such factors are so little developed in most Rim countries that they

offer no basis for export success. Hence the importance attached to the neighbourhood in the EU framework programme for RTD, and its support to science, technology and innovation through ENP programmes.

On aggregate, Rim countries account for some 27% of extra-EU merchandise exports and 29% of extra-EU merchandise imports. Of the 27% of extra-EU exports, more than a third (11%) are exported to EEA/EFTA countries, followed by Russia (6%) and North Africa (5%). The 29% of extra-EU imports come mainly from EEA/EFTA countries (11%) and Russia (also 11%), the latter largely due to energy imports.

Table 6.3. EU merchandise exports to Rim countries/groups of Rim countries (2010)

		Destination region							
Exporter		**EEA-EFTA**	**Potential candidate countries**	**Eastern Partnership countries**	**Russia**	**North Africa**	**Mediterra-nean Middle East (excl. Israel)**	**Israel**	**Extra-EU total**
EU27	value, million €	148198 (100%)	13253 (100%)	22936 (100%)	86131 (100%)	61882 (100%)	11236 (100%)	14405 (100%)	1349610 (100%)
	share of exports	10.98%	0.98%	1.70%	6.38%	4.59%	0.83%	1.07%	100%
	export growth	4.03%	8.97%	12.48%	14.25%	6.68%	5.44%	–1.22%	4.74%
DE, AT, Benelux	value, million €	70976 (47.9%)	3790 (28.6%)	8595 (37.5%)	38705 (44.9%)	15084 (24.4%)	3782 (33.7%)	6559 (45.5%)	596105 (44.2%)
	share of exports	11.91%	0.64%	1.44%	6.49%	2.53%	0.63%	1.10%	100%
	export growth	4.61%	9.40%	12.31%	14.34%	7.33%	5.64%	–1.85%	6.25%
Northern EU	value, million €	20038 (13.5%)	158 (1.2%)	934 (4.1%)	8179 (9.5%)	2677 (4.3%)	547 (4.9%)	636 (4.4%)	100352 (7.4%)
	share of exports	19.97%	0.16%	0.93%	8.15%	2.67%	0.54%	0.63%	100%
	export growth	3.66%	–0.48%	9.1%	9.45%	5.09%	3.60%	–1.95%	3.34%
Western EU	value, million €	13918 (9.4%)	216 (1.6%)	1154 (5.0%)	3960 (4.6%)	3171 (5.1%)	1008 (9.0%)	1692 (11.7%)	178043 (13.2%)
	share of exports	7.82%	0.12%	0.65%	2.22%	1.78%	0.57%	0.95%	100%
	export growth	1.98%	7.79%	11.78%	12.27%	2.40%	4.51%	–5.10%	1.39%
Southern EU	value, million €	34884 (23.5%)	3759 (28.4%)	3304 (14.4%)	16639 (19.3%)	38151 (61.7%)	4961 (44.2%)	4190 (29.1%)	375763 (27.8%)
	share of exports	9.28%	1%	0.88%	4.43%	10.15%	1.32%	1.11%	100%
	export growth	2.68%	6.80%	9.65%	12.27%	6.68%	5.00%	–0.31%	3.35%
Eastern EU	value, million €	8382 (5.7%)	5330 (40.2%)	8949 (39.0%)	18649 (21.7%)	2800 (4.5%)	938 (8.4%)	1328 (9.2%)	99347 (7.4%)
	share of exports	8.44%	5.36%	9.01%	18.77%	2.82%	0.94%	1.34%	100%
	export growth	18.84%	11.82%	22.68%	26.65%	16.94%	11.75%	17.38%	17.81%

Source: Eurostat Comext; background study.

Table 6.4. EU merchandise imports to Rim countries/groups of Rim countries (2010)

		Source region							
Importer		**EEA-EFTA**	**Potential candidate countries**	**Eastern Partnership countries**	**Russia**	**North Africa**	**Mediterra-nean Middle East (excl. Israel)**	**Israel**	**Extra-EU total**
EU27	value, million €	163687 (100%)	7152 (100%)	22587 (100%)	160058 (100.0)	74801 (100%)	4213 (100%)	11087 (100%)	1509090 (100%)
	share of imports	10.85%	0.47%	1.50	10.61	4.96%	0.28%	0.73%	100%
	import growth	3.99%	13.77%	13.37	9.64	5.22%	0.46%	0.45%	4.28%
DE, AT, Benelux	value, million €	76196 (46.5%)	2038 (28.5%)	4411 (19.5%)	60028 (37.5)	14324 (19.1%)	1998 (47.4%)	4969 (44.8%)	622667 (41.3%)
	share of imports	12.24%	0.33%	0.71	9.64	2.3%	0.32%	0.80%	100%
	import growth	5.73%	14.81%	8.82	11.11	3.06%	0.99%	–0.56%	5%
Northern EU	value, million €	16467 (10.1%)	53 (0.7%)	219 (1.0%)	15247 (9.5)	400 (0.5%)	23 (0.5%)	232 (2.1%)	74488 (4.9%)
	share of imports	22.11%	0.07%	0.29	20.47	0.54%	0.03%	0.31%	100%
	import growth	2.24%	2.00%	13.56	12.14	9.46%	2.86%	–3.17%	3.86%
Western EU	value, million €	30688 (18.7%)	118 (1.7%)	524 (2.3%)	5888 (3.7)	4327 (5.8%)	91 (2.2%)	1661 (15.0%)	220122 (14.6%)
	share of imports	13.94%	0.05%	0.24	2.67	1.97%	0.04%	0.75%	100%
	import growth	4.96%	12.51%	10.41	6.07	4.79%	–5.66%	–1.38%	0.87%
Southern EU	value, million €	35056 (21.4%)	2586 (36.2%)	11016 (48.8%)	37630 (23.5)	54833 (73.3%)	2002 (47.5%)	3338 (30.1%)	453528 (30.1%)
	share of imports	7.73%	0.57%	2.43	8.30	12.09%	0.44%	0.74%	100%
	import growth	1.13%	9.64%	16.59	8.36	5.86%	0.03%	2.52%	4.18%
Eastern EU	value, million €	5280 (3.2%)	2357 (33.0%)	6417 (28.4%)	41265 (25.8)	916 (1.2%)	99 (2.3%)	887 (8.0%)	138288 (9.2%)
	share of imports	3.82%	1.70%	4.64	29.84	0.66%	0.07%	0.64%	100%
	import growth	9.08%	22.82%	18.43	14.65	9.95%	11.82%	10.39%	14.39%

Source: Eurostat Comext; background study.

Tables 6.3 and 6.4 show bilateral trade relations between parts of the EU and individual Rim countries or groups of countries and provide a clear illustration of the heterogeneity of EU

Member States in this respect. It is clear that the Rim is not necessarily a focus area for core EU Member States such as Germany, Austria and the Benelux countries. The same is true for Northern EU, albeit with the qualification that it is clearly overrepresented in trade with the EEA/EFTA (because of Norway) and strongly underrepresented in trade with Israel. Western EU is underrepresented in exports to all Rim regions, as its trade is more concentrated on the USA and Japan. By contrast, parts of the Rim are important export destinations for Southern EU countries and also for Eastern EU – Southern EU accounts for 62 % of total EU exports to North Africa. Two obvious reasons for this are their geographical proximity and colonial heritage. Another clearly discernible pattern is the export orientation of Eastern EU towards the Eastern Rim, a legacy of previous economic relations within Central and Eastern Europe. The share of Eastern EU exports to total EU exports to the potential candidates in the Western Balkans is also high (40 %), again explained by their geographical proximity and the close trade relations that used to exist within Yugoslavia and now prevail in the Central European Free Trade Agreement (CEFTA).

Primary commodity exports (apart from oil) account for a significant share of exports to the EU from a number of Rim countries, including Armenia, Georgia and Ukraine (Table 6.5). Countries such as Tunisia and Morocco, Moldova, Ukraine, Georgia and the Mediterranean Middle East tend to export a proportionally higher share of agricultural sector output to the EU. However, agricultural exports from these countries to the EU are sometimes hampered by non-conformity with EU legislation on food safety and animal feed (Eurochambres 2011). Turning to manufacturing, bilateral trade relations between the EU and resource-rich Rim countries mirror the general export structure of the latter, characterised by a lack of manufactured goods (with the notable exception of Switzerland and Israel). Rim countries generally have industrial export capacities in 'early stages' manufacturing industries with low technology intensity, such as agricultural products and textiles. The textile industry, for example, constitutes 45 % of Albania's total exports to the EU; the share is similar for Moldova and somewhat lower, around 34 %, for Morocco and Tunisia. The food industry is a strong export sector in Serbia (13 % of total exports) and Lebanon (11 %); it is also important for Ukraine and Kosovo.

Table 6.5. EU exports to and imports from EaP countries by product category

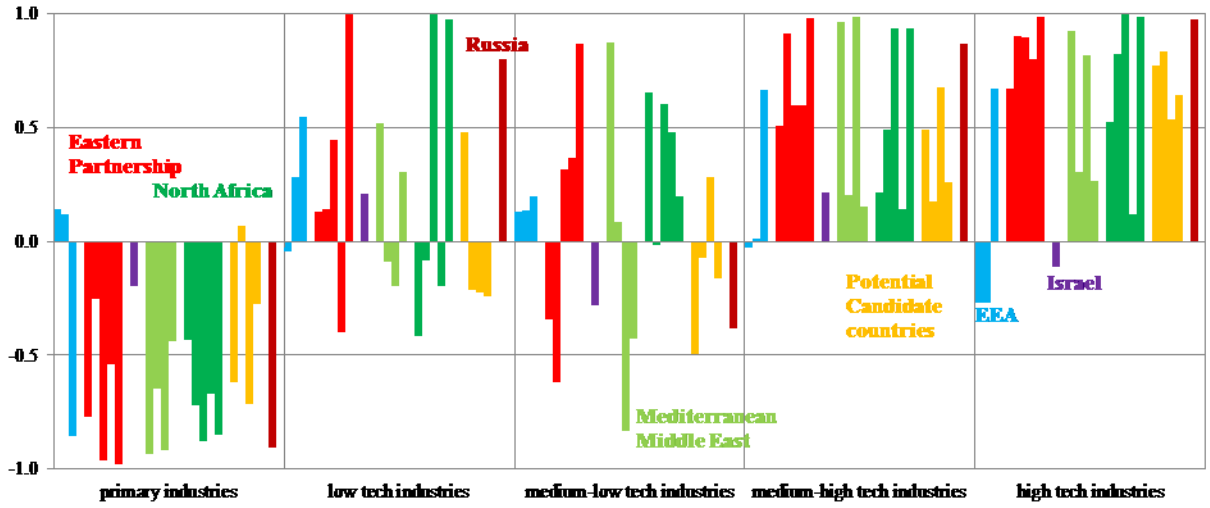
	Exports to EaP countries		Imports from EaP countries	
(EUR million)	January-June 2010	January-June 2011	January-June 2010	January-June 2011
Manufactured goods	**10625**	**13672**	**3784**	**5733**
– chemicals	2360	2807	413	776
– machinery and vehicles	4757	6781	676	842
– other manufactures	3509	4083	2695	4114
Primary goods	**1983**	**2543**	**7662**	**11732**
– food and drink	1058	1287	285	720
– raw materials	288	385	1525	2025
– energy	638	871	5852	8988
Other	198	274	207	284
Total	**12807**	**16489**	**11652**	**17749**

Source: Eurostat.

Countries wishing to build up manufacturing often start by developing their export capacities in the textile, leather and first processing food industries, as these sectors depend more on cheap labour than on technology. However, increasingly globalised supply chains and greater opportunities for multinational firms to relocate production processes to other countries have made it possible for countries to attract the foreign direct investment associated with such offshoring activities and move straight into more technology-intensive industries. This has happened, for example, in some 2004/2007 accession states now integrated in the European automotive industry network. Outside Europe it has taken place in China, Malaysia and Thailand, which have become part of the Asian electronics cluster originally formed around Japan and South Korea. However, in the current economic climate such developments can be observed only on a small scale and in a small group of Rim countries such as Serbia and BiH among the Western Balkan countries, and Tunisia and Morocco in the South.

While imports from the Rim countries tend to be concentrated to certain goods, mainly primary commodities, EU exports to the Rim are well diversified and reflect the overall export structure of the EU, with a focus on manufactured goods related to transport equipment, chemicals and machinery, as well as electronics. Taking the revealed comparative advantages (RCAs) of the trade of the EU as a proxy for sectoral competitiveness, the EU has a pronounced comparative disadvantage in primary industries, including agriculture, fishing, mining and quarrying (cf. Figure 6.3). By contrast, the EU has a strong revealed comparative advantage in high-technology and medium-high-technology industries such as chemicals (except pharmaceuticals), machinery and automotives. Its revealed comparative disadvantage in low-technology industries is mainly due to the fact that several Rim countries (Albania, BiH, Moldova, Morocco, Tunisia and Egypt) have substantial textile industries. In the medium-low-technology industries, the metals and mineral industries explain the positive RCAs of Armenia and Ukraine. In the case of Russia, it is mainly the petroleum-refining industry that explains the revealed comparative disadvantage of the EU. As regards the EEA/EFTA countries as well as Israel, the EU is in almost the opposite position – at least in its trade with Switzerland, Liechtenstein and Israel – since it has positive RCAs in low-technology and medium-low-technology industries, but a comparative disadvantage in high-technology industries.

Figure 6.3. Revealed comparative advantages (RCAs) in EU trade with the Rim; industries classified by technology content (2010)



Note: Industry groupings according to OECD technology classification (OECD 2003).
Source: Eurostat Comext; background study.

Box 6.1. Effects of EU trade liberalisation

Almost all Rim countries have signed free trade agreements (FTAs) with the EU; where such agreements do not exist there tend to be EU autonomous trade measures (ATMs) or a generalised system of preferences (GSP) in their place. As a consequence, the average EU tariff rate vis-à-vis the Rim was no more than 1.4% in 2010. By contrast, EU exporters face an average weighted tariff rate of 5% when exporting to the Rim countries, with some rates reaching as high as 19%. As a core component of the Europe 2020 strategy for growth, EU trade policy pursues 'deep and comprehensive FTAs' (DCFTAs) as part of future Association Agreements within the framework of the Eastern Partnership and the Euro-Mediterranean Partnership. The aim is to bring all its neighbours gradually closer to the single market through regulatory convergence. As a result, the average tariff faced by EU exports of industrial products is expected to fall from 5% to about 1.7%. The combined growth effects of its different FTAs would be to add up to 1.5% to EU GDP in the long term (European Commission 2010a; European Commission 2011b).

6.4. Foreign direct investment effects

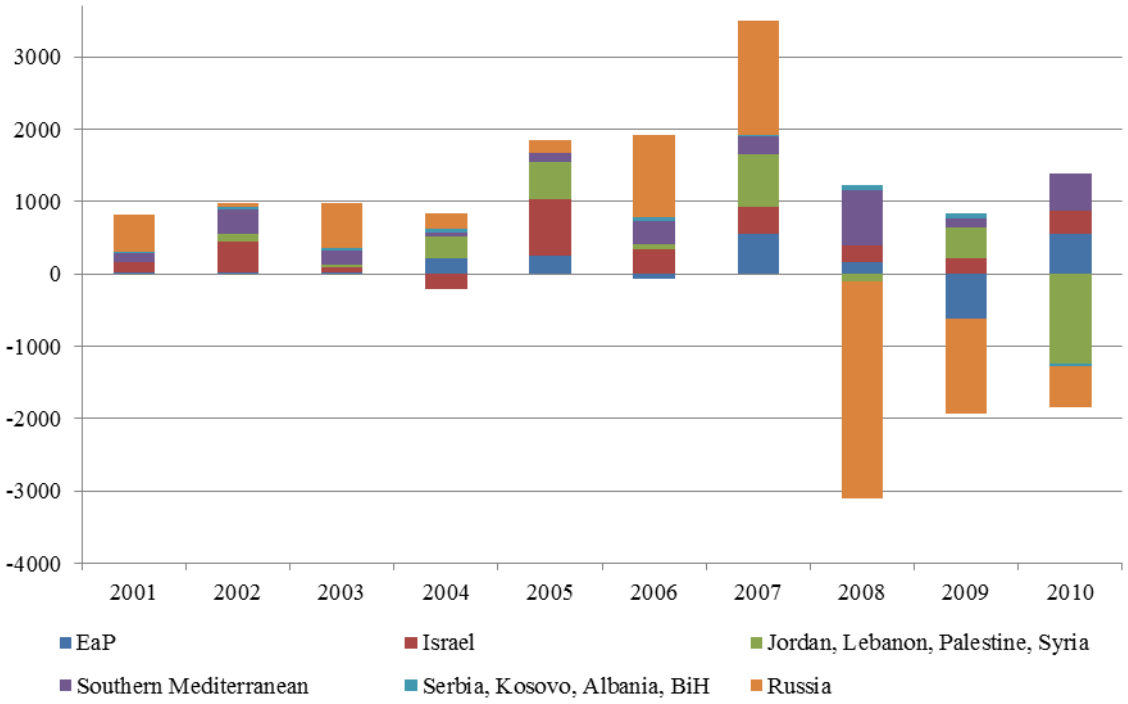
Foreign direct investment (FDI) – discussed in a previous chapter of this report – illustrates the intensity at firm level of integration between countries. The ability to attract inward FDI flows confirms the competitiveness of a host country location for production and services. The intensity of outward FDI flows, on the other hand, indicates the competitiveness of home country multinational corporations (MNCs) in capturing foreign markets. Companies expand abroad either to capture new markets (horizontal or market-seeking FDI) or in order to

optimise their production by allocating stages of production to the most efficient location (vertical or efficiency-seeking FDI). Both types of FDI have important growth effects at firm level by increasing production, expanding into new markets and reducing production costs. FDI also has productivity effects as a result of economies of scale and lower production costs. In addition, FDI may provide access to scarce natural, human and R&D resources (resource-seeking FDI). Globally, outsourcing activity has declined during the current crisis, and in future 'near-shoring' may be preferred to 'far-shoring' FDI. This provides an opportunity for the Rim countries to benefit from EU offshoring. The aims of analysing the size of FDI flows between the EU and the Rim countries are to determine the existing intensity of direct investment links, explore the impact of these links on the competitive position of Member States, and look for location advantages in the region that could be exploited by EU firms in years to come.

In recent years, the EU has intensified its FDI exchanges with countries outside the EU. Inward FDI flows from the Rim have fluctuated around their average of EUR 16.9 billion over the last ten years (24.4 % of total extra-EU inward flows). In 2007, inward FDI from the Rim peaked at EUR 38.4 billion, followed however by almost no inward flow in the subsequent year. In 2010, firms in Rim countries invested EUR 14.5 billion in the EU. The last three years point to lower-than-average inward flows from the Rim, indicating a possible loss of competitiveness of this region on EU markets.

In terms of outward FDI flows from the EU, the share of the Rim was 42 % (EUR 84.6 billion) in 2009 and 28 % (EUR 55.2 billion) of total extra-EU FDI in 2010, far above the ten-year average of 17 %. The Rim countries have thus benefited from the shift of FDI to extra-EU countries (cf. Chapter 4.3). Among the Rim countries, Norway and in particular Switzerland naturally account for the bulk of outward FDI from the EU to the Rim and of inward FDI to the EU from the Rim. Inward FDI flows from the rest of the Rim are on a much smaller scale and have been characterised by divestment in 2008–2010 (Figure 6.4), whereas the same countries have received significant FDI flows from the EU (Figure 6.5). Particularly large outward flows from the EU to the region were recorded in the run-up to the current economic crisis. This reflects the global trend towards a peak in international FDI in 2008, followed by much smaller FDI flows subsequently, as a result of the crisis.

Figure 6.4. Inward FDI flows to the EU from the Rim (excl. EEA/EFTA), EUR million



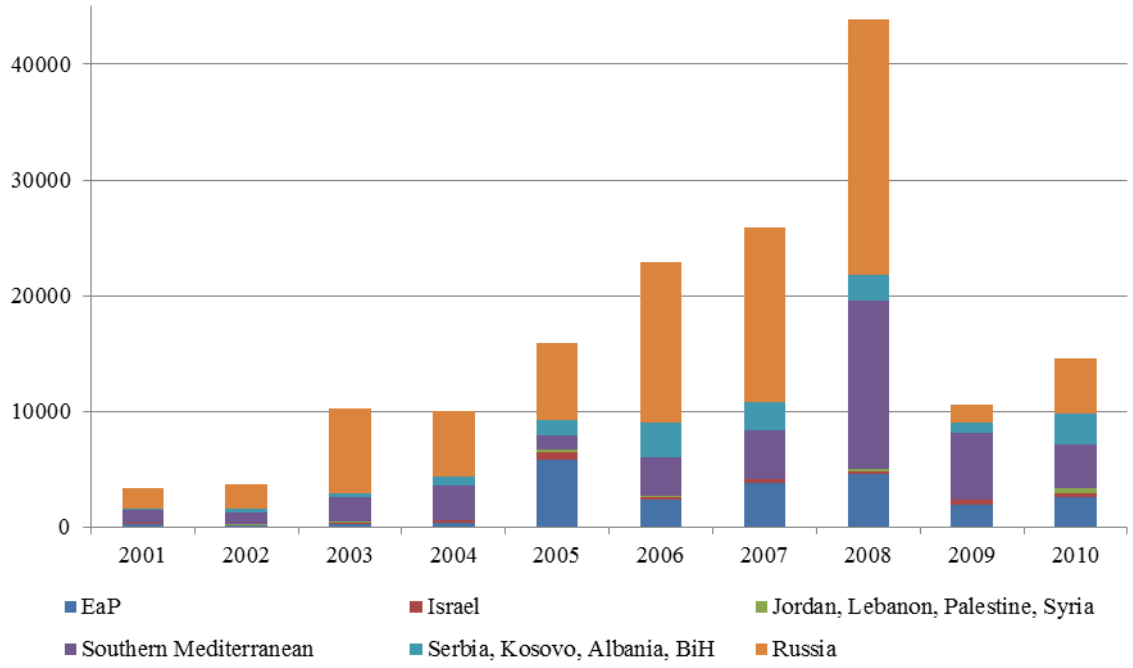
Note: EU is EU25 for 2001–2003, EU27 for 2004–2010. EU flows calculated as the sum of flows to Member States. Intra-EU flows to Luxembourg are adjusted downwards by 90 % in order to exclude activities of special purpose enterprises (SPEs). Extra-EU flows exclude offshore centres (Guernsey, Jersey, Isle of Man, Gibraltar, Bahamas, Bermuda, British Virgin Islands, Cayman Islands, Netherlands Antilles).

Source: Eurostat; background study.

A closer look at inward FDI to the EU from non-EFTA Rim countries reveals Russia to be the main investor. Russian firms accounted for most inward non-EFTA FDI in 2006 and 2007 (Figure 6.4) but were also responsible for the massive capital withdrawals afterwards.

Until 2008, Russia was also the prime destination for outward non-EFTA FDI, often with more than half of total non-EFTA flows (Figure 6.5). As a result, EU companies account for an overwhelming share (83 %) of the total FDI stock in Russia. It should however be noted that no less than a third of the EU stock of FDI in Russia is owned by Cypriot firms, making Cyprus the largest investor country in Russia. The large Cypriot stock is mainly the result of flows of Russian capital being channelled through Cyprus for tax purposes, so-called round-tripping (Hunya and Stöllinger 2009). Proper EU investments in the Russian real economy may therefore be overstated by as much as a third.

Figure 6.5. Outward FDI flows from the EU to the Rim (excl. EEA/EFTA), EUR million



Note: EU is EU25 for 2001–2003, EU27 for 2004–2010. EU flows calculated as the sum of flows to Member States. Intra-EU flows to Luxembourg are adjusted downwards by 90% in order to exclude activities of special purpose enterprises (SPEs). Extra-EU flows exclude offshore centres (Guernsey, Jersey, Isle of Man, Gibraltar, Bahamas, Bermuda, British Virgin Islands, Cayman Islands, Netherlands Antilles).

Source: Eurostat; background study.

Another important destination for EU investments in the non-EFTA part of the Rim is the Southern Rim, in particular Egypt and Morocco. Over the last ten years, both countries have received about EUR 1 billion each per year in FDI from the EU, while Morocco has increased its share of total EU FDI, from 6% in 2000 to about 16% in 2009 (Zachmann et al. 2012). Host country statistics reveal that in Algeria, Egypt and Libya, most FDI went into the petroleum industry, while FDI flows to the manufacturing sector were much smaller (between 4% and 8% of the total). The EU is the leading investor (based on announced projects listed at www.animaweb.org) in the Southern Rim, followed by the Gulf countries. The strong role of the EU can be attributed to its geographical proximity and historical ties with the Southern Rim: France, Italy and Spain have retained strong links with North African countries, while British firms are in a strong position in Egypt (Zachmann et al. 2012). Significant FDI liberalisation measures since the mid-2000s have given a boost to FDI, in particular in 2006–2008. Nonetheless, the upswing was followed by setbacks, first in the form of the global crisis and then, in 2011, the events of the Arab Spring. The revolutions interrupted a period of rapid economic growth and had a negative impact on both trade and FDI.

Economic reforms to make Southern Rim countries more attractive to FDI have included privatisations in the telecommunication and banking sectors, in particular around 2005/2006. In addition, the influx of petrodollars from the Gulf States has pushed up prices and activity in the real estate sector. In Egypt for example, increasing FDI in the energy and service sectors

followed a policy change in 2006, when some state-owned assets were privatised and foreign investors gained more access. Similar policy changes took place in Tunisia, triggering a rise in FDI in 2006. But even in those two countries, several business sectors remain largely off-limits to foreign investors, mainly media, air transportation and natural resources.

Another way to look at the development of foreign investment is to see when and where new greenfield projects have been announced. The number of greenfield FDI projects undertaken by EU-based MNCs reached a high in 2008, when it was higher than in any of the three years before or since. Whilst the impact of the current crisis has so far been limited, the number of new projects has declined in each of the past three years. With a fifth of all projects, Germany is the Member State investing the most in the Rim, followed by France and the UK. Over the last eleven years, the main focus of investments by EU MNCs has been Russia (47% of all EU projects and 51% of total EU pledged investment). Ukraine attracted much less FDI from MNCs in the EU: 11% of the projects and 6% of the investment capital, which is relatively little considering the size of the economy. In the Western Balkan countries, especially Serbia, there have been a remarkably high number of projects relative to their size. Among the Southern Rim countries, Morocco and Tunisia also have relatively numerous projects in different industries, confirming that these countries have a comparatively liberal attitude to FDI. EU Member States have been involved in more than 70% of the greenfield investment projects in Serbia, Tunisia, Morocco and BiH. While Germany, Austria and Italy were the main investors in the Western Balkan countries, France and Spain were important investors in Morocco, and France by far the most frequent investor in Tunisia. Egypt is a special case, as it combines a late opening of a large market with an important oil sector. The other big oil producers in the European neighbourhood – Azerbaijan, Algeria and Libya – attracted a small number of high-capital projects. The other Rim countries are either too small or provide a less liberal environment to attract FDI from EU MNCs on a big scale; most of their new FDI projects tend to come from historical and geographical allies.

Difficult local business conditions (cf. Section 6.2 above) are the main obstacle to FDI. However, reforms undertaken since the early 2000s have made it easier to do business in several countries and have contributed to an upswing in FDI. Morocco, Tunisia and Serbia, but also the other Western Balkan countries, have been successful in this regard and have attracted FDI in the manufacturing sector as well as a relatively high number of greenfield investment projects, often involving SMEs. EU policies fostering trade and FDI and supporting the liberalisation process have been beneficial for both parties, and for MNCs and SMEs alike. Supporting open and fair competition and shaping a transparent and predictable business environment could provide more opportunities for further FDI and SME development in Rim countries.

Apart from the business environment, the investment risk of the destination country is also a factor to consider and has to be weighed against the expected return on the investment. According to the latest country risk assessment published by Coface, only two Rim countries, Norway and Switzerland, are in the lowest risk category (A1). Israel is rated third in terms of risk, marginally ahead of Morocco and Tunisia. Libya is the Rim country where it is most

risky to invest. BiH, Moldova, Syria and Ukraine are also rated as high-risk countries for investment, but slightly less risky than Libya (Coface 2012).

6.5. Southern Rim: fostering North-South and South-South economic integration

The Euro-Mediterranean Partnership gained momentum in 1995 with the Barcelona Declaration and the established goal of a common area of peace, stability and shared prosperity around the Mediterranean. The current goal is the creation of a deep Euro-Mediterranean free trade area, aimed at substantial trade liberalisation both between the EU and Southern Rim countries (North-South) and between Southern Rim countries (South-South). Relations between the EU and the Southern Mediterranean are currently organised mainly through bilateral Euro-Mediterranean association agreements (apart from Syria and Libya). The Association Agreements with Jordan, Egypt, Israel and Morocco have been revised based on the 2005 Rabat Roadmap for Agriculture and the Euro-Mediterranean ministerial mandate to proceed with further trade liberalisation in the areas of agriculture, processed agriculture and fisheries. In these areas, the new trade arrangements negotiated in 2008–2011 have led, or will lead, to a significant opening of agro-food markets on both sides of the Mediterranean. A further leap forward in Euro-Mediterranean cooperation took place on 14 December 2011, when a fresh round of trade negotiations was launched with Egypt, Jordan, Morocco and Tunisia with the aim to establish deep and comprehensive free trade agreements (DCFTAs) which will go beyond the mere removal of tariffs and cover all regulatory issues relevant to trade, e.g. investment protection, intellectual property rights, competition and public procurement. Moreover, in 2012 Jordan and Tunisia joined the European Bank for Reconstruction and Development (EBRD). The Bank will be able to invest up to EUR 2.5 billion a year across the Southern Rim, following the recent decision to extend its activities to the Southern and Eastern Mediterranean. At the same time, loans from the European Investment Bank (EIB) are guaranteed by the EU to all Southern Rim countries except Syria.

The EU will also support capacity building and intends to pay particular attention to measures to enhance regional economic integration, in particular the process launched within the framework of the Agadir Agreement (FTA between Egypt, Jordan, Morocco and Tunisia). Since 1996, the Commission has coordinated the Euro-Mediterranean industrial cooperation process, with the aim to spur entrepreneurship and improve the business environment in the Mediterranean neighbouring countries. This process strengthens Euro-Mediterranean economic integration and helps companies, in particular SMEs, on both sides of the Mediterranean to start, grow, export and do business together in a safe, predictable, transparent environment. The Commission has stated its intention to upgrade the existing Euro-Mediterranean Charter for Enterprise (European Commission et al. 2008) into a Euro-Mediterranean Small Business Act and to extend EU cross-sector and sector-specific networks and actions to Southern Mediterranean partner countries (European Commission and High Representative 2012a).

Fostering regional (South-South) economic integration is one of the key objectives of the Euro-Mediterranean industrial cooperation and trade partnership, and an essential element in the move towards establishing a fully-fledged Euro-Mediterranean free trade area. However, regional economic integration between Southern Mediterranean countries is still limited: intra-regional trade accounts for a small fraction of the total trade of Southern Rim countries (6% of exports, 5% of imports); many of the borders are either closed or subject to burden-some procedures, and there is little infrastructure in place for South-South logistics. In spite of progress and reforms made (cf. European Commission et al. 2008), SMEs still face extraordinary challenges both in access to finance, starting up new businesses and in maintaining or extending existing businesses. At the same time SMEs are of fundamental importance in the Southern Rim region in at least two specific areas: job creation and economic diversification. Appropriate financing of SMEs is a precondition for a more dynamic development of the region. To that end the European Commission has established a special instrument to foster financing of the private sector, including SMEs. Both the EIB and the EBRD intend to intensify their activities in Southern Rim countries.

6.6. Eastern Rim: hesitant integration

At present, the main institutional arrangements underlying relations between the EU and Eastern Rim countries are bilateral partnership and cooperation agreements (PCAs). As regards the economy, PCAs aim at fostering trade, ensuring a level playing field for investments through the principle of 'national treatment' (non-discrimination of foreign investments), and promoting cooperation in a number of priority areas. Most PCAs do not envisage a free trade regime between Eastern Rim countries and the EU but offer a 'most favoured nation' (MFN) treatment of exports from Eastern Rim countries to the EU.

Except for Russia, all Eastern Rim countries are also party to the Eastern Partnership (EaP) initiative launched in May 2009. The EaP aims to 'create necessary conditions to accelerate political association and further economic integration' of Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine with the EU. Cooperation within the EaP framework has concentrated on four broad areas: democracy and governance, economic integration, energy security, and contacts between people (including visa liberalisation). Within these four areas, a number of flagship initiatives have been launched: on integrated border management, support for SMEs, energy efficiency, civil protection, and the environment. The task now is to press ahead with the negotiation of AAs with four of the six EaP partners, including DCFTAs where appropriate, and to enhance the mobility of people through visa facilitation and re-admission agreements, as well as gradual steps towards visa liberalisation..

The current EU strategy towards EaP countries is to negotiate DCFTAs, as part of broader Association Agreements. The purpose is to integrate EaP countries into the EU single market in trade-related areas, to the extent justified by their economic profile and level of development. In December 2011, DCFTA negotiations were completed with Ukraine and opened with two other EaP countries: Georgia and Moldova (European Commission and High Representative 2012a). Armenia followed suit in 2012. As regards Azerbaijan, its WTO

accession is a precondition for any future tightening of relations, therefore current negotiations on an Association Agreement merely include an update on the trade part of the PCA (European Commission and High Representative 2012b). As regards Russia, an agreement on greater compatibility in the updated PCA is a precondition for further deepening of EU-Russia trade relations on a preferential basis. A free trade agreement (rather than a DCFTA) is a long-stated common objective but has become more difficult to pursue in the short to medium term in the light of the customs union between Russia, Kazakhstan and Belarus.

The aims of the DCFTAs are to liberalise trade in goods and services and ensure an approximation of legislation to EU standards in areas that have an impact on trade, such as competition policy, public procurement, customs and trade facilitation, technical barriers to trade, sanitary and phytosanitary rules, sustainable development, and intellectual property rights. The idea is to create, through the adoption of these reforms, a favourable business climate in order to accelerate the flow of EU FDI into the country, as well as to boost exports to the EU of products that do not currently meet essential EU safety requirements (De Gucht 2011).

DCFTAs are expected to have significant and positive effects on EaP economies because of the potential benefits of the structural reforms that they require. Francois and Manchin (2009) found that a simple FTA with the EU would lead to a decline in the GDP of the Commonwealth of Independent States of between 1.1% and 1.4%, depending on whether or not trade in agricultural and food products is liberalised. In contrast, a DCFTA with the EU would boost their GDP by 1.2%. Maliszewska et al. (2009) also expected deep integration with the EU to have positive effects on the EaP countries, with the greatest benefits for Ukraine, whose GDP would be 5.8% higher in the long term, followed by Armenia (3.1% higher), Azerbaijan (1.8%) and Georgia (1.7%). These overall gains would, however, be accompanied by profound structural changes and the output of some sectors would go down drastically. The Institute for Economic Research and Policy Consulting has found that a DCFTA with the EU would increase welfare in Ukraine by nearly 12% in the long term – more than twice the figure to be expected in the case of a simple FTA with the EU (Movchan and Giucci 2011). In a similar vein, the experience of Turkey, whose entry into a customs union with the EU in 1995 was accompanied by the approximation of various policies to EU standards, also suggests strongly positive effects (Togan 2011).

Failure to conclude DCFTAs would have negative consequences for both sides: the EaP countries would find themselves stuck in the current trap of low competitiveness and instability, while at the same time the competitiveness of EU businesses in the EaP countries would suffer. For instance, the unreformed (and in many cases corrupt) system of public procurement in EaP countries would continue to disadvantage foreign suppliers (including those from the EU) and hamper the development of SMEs.

6.7. Labour markets and migration

The impact of increased labour migration from Rim countries is of particular interest to EU policymakers. The Southern Mediterranean region is recognised as a region of emigration, with the total number of first-generation emigrants somewhere between 10 million and 13 million (World Bank 2011 b). Increasing differences in economy, demography, politics and security matters, together with its geographical proximity, make the EU the main destination for migrants from the region. Immigrants from Mediterranean neighbouring countries represent 20 % of the 30 million immigrants in the EU and 1.2 % of the total EU population. Following the Arab Spring, the flow of migrants from the region is expected to rise. Moreover, the region is a transit route for migrants from other, more distant and even less developed regions. Consequently, EU migration policy towards this region can be expected to evolve significantly and gain even greater prominence.

The promotion of the mobility of EaP citizens represents one of the main commitments made by the EU in the Prague Declaration of the Eastern Partnership Summit (May 2009) as well as in the Joint Communication on a new response to a changing Neighbourhood (European Commission and High Representative 2011) and the subsequent Joint package on delivering a new European Neighbourhood Policy (European Commission and High Representative 2012a). As a contribution to a more ambitious partnership with its Eastern neighbours, this commitment builds on the four pillars of the global approach to migration of the EU: better organising legal migration and fostering well-managed mobility; preventing and combating irregular migration/eradicating trafficking in human beings; maximising the development impact of migration and mobility; and promoting international protection, and enhancing the external dimension of asylum. The Western Balkan countries, some of which are candidates or potential candidates for EU membership and most of which (apart from Kosovo) have recently benefited from visa liberalisation, are experiencing a new migration development, since their citizens no longer need a visa to travel to the EU (except for Kosovo citizens).

The development of migration management systems has been uneven across regions, not least because of differences in available resources and in the general development of the quality of public institutions. The links between migration and employment or education policies remain vague in all countries of the region (European Training Foundation 2011) but these links are none the less relevant for their competitiveness. In particular, the high level of migration is linked to economic hardship and unemployment. Labour migration represents an alternative mechanism to gain employment and is a reaction on the part of the population to social and economic crisis and internal conflict.

6.7.1 The Eastern Rim

The population structure in the Eastern Rim countries is very heterogeneous: Armenia and Azerbaijan have very young populations, with the age group up to 14 years accounting for around 30 %, while this age group represents only 14 % in Ukraine and Russia. Ageing of the population in these economies will pose a serious risk to welfare systems. With the exception of Russia, the economic activity rates are below the EU average of 71 %. A salient feature of the labour market in the Eastern Rim countries is the high activity rate of females, which in most cases is comparable to the EU level (and distinctly higher than the Southern Rim).

With the exception of Russia (and to a lesser extent Ukraine), agriculture is an important source of income in the Eastern Rim countries, although its share has been declining everywhere. Agriculture in Moldova, Azerbaijan and Armenia can barely be considered to be an economic sector (in the sense used in more developed economies) as the '*preponderance of subsistence farming on small scale plots has made this activity a buffer for employment lost during restructuring of industrial enterprises and small scale farms*' (European Training Foundation 2011). The relevance of industry is highest in Ukraine and Russia (cf. European Commission (2009a, 2011a) for discussions of Russian industry), whereas the industrial base is very small in Georgia and Azerbaijan, accounting for only 10-13% of total employment. The share of employment in the service sector has been rising steadily in Moldova, Ukraine and Russia. In the latter two countries, the service sector accounts for about 60% of total employment. The fragility of the labour markets is highlighted by the high proportion of self-employment – 64% in Georgia, 58% in Azerbaijan, 39% in Armenia and around 30% in Moldova. Unemployment has been relatively low in most Eastern Rim countries. However, given the high proportion of self-employment (subsistence agriculture) in these countries, unemployment is probably much higher than official figures suggest (European Commission 2011b).

The latest data available on migrants from the EaP region show that the number of migrants reached almost 11 million in 2010 – a figure only slightly below the total stock of migrants from Russia. Among the EaP countries, more than 6 million people emigrated from Ukraine, more than 1 million each from Azerbaijan and Georgia, and less than 1 million each from Armenia and Moldova. The preferred destinations for Eastern Rim migrants are Russia and the EaP region itself, which hosts more than half of all EaP migrants.

Migrants from Eastern Rim countries make up 12% of all migrants in the EU (in absolute numbers, the EU hosts around 1.4 million migrants from the EaP region and 1.1 million from Russia). The EaP country with the largest share of immigrants in the EU is Moldova. The EU Member States with the largest number of Eastern Rim migrants are Germany, Poland, Spain, Greece, Italy, Estonia and Latvia.

Mobility Partnerships aiming at enhancing and promoting mobility of people have been concluded between the EU and Moldova, Georgia and Armenia. Negotiations with Azerbaijan are ongoing.

6.7.2 The Southern Rim

A prominent feature of the Mediterranean neighbouring countries is the high share of young people in their populations: almost a third of them are younger than 14. As a consequence, and notwithstanding rapidly declining birth rates, the working-age population in the region will continue growing in coming decades. The large influx of new labour market entrants, combined with lower rates of workers retiring and low job creation, has put enormous pressure on Southern Rim labour markets and will continue to do so. Thus, job creation will remain a top priority in the coming years if the countries are to retain or reduce their current

unemployment levels. Estimates made by international organisations of the need for additional jobs in the next decade range from 25 million jobs (MENA-OECD Investment Programme) to 50-75 million jobs (World Bank 2011c). Such high rates of job creation would require annual GDP growth rates of 6.5% or more, which is hardly realistic given the structure and poor competitiveness of the economies.

Activity rates are very low in the region and have grown only modestly (if at all). This is mainly because of low rates among females, ranging from only 14% in Syria to 32% in Libya (OECD and International Development Research Centre 2012). Israel is the only country in the region where female labour force participation (61 %) is comparable to EU levels. Employment patterns by broad economic sector differ substantially across the region, but agriculture is still an important employer almost everywhere. Industrial employment is highest in Tunisia (35%) and Syria (32%), while Israel, Jordan and Morocco have the lowest shares (around 20 % each). A breakdown of service-sector employment shows that administration (government services) accounts for more than half of the sectoral employment in Jordan, Algeria, Syria and Egypt, while its share is relatively small in Morocco. As regards market services, the major sectoral employers are trade, tourism and communications (World Bank 2011c). Together with construction and, in some cases, agriculture, these sectors have also been the major drivers of employment creation in recent years. The public sector – including government agencies, military and state-owned enterprises – is the preferred source of employment for graduate (female) workers in the Mediterranean neighbouring countries, accounting for up to 35% of total employment. Employment in the public sector offers higher wages, employment protection, shorter working hours and other social benefits. In the past, the rise of public sector employment was driven by social contract obligations guaranteeing all graduates a state job; this led to a concentration of highly skilled people in the state sector. Consequently, '*guaranteed employment without concern for productivity led to the prevalent rent-seeking behaviour among graduates and created strong disincentives for work in the productive sectors*' (European Commission 2010b). Governments have therefore had to terminate the system of guarantees. Despite the reforms, however, the public sector wage bill still accounts for 8-10% of GDP in most countries (European Commission 2011b).

In 2010, the unemployment rate in the Mediterranean neighbouring countries was around 10%. However, unemployment among people with a university or secondary education is considerably higher than among people with little or no education, and in some Southern Mediterranean countries the time between completing university education and finding employment can be as long as eight years. This represents a particular challenge, even though the number of university graduates remains very low in the region. Youth unemployment is considered to be a major challenge and is highest in Palestine (39%) and Tunisia (31%). It is lower (14-18 %) in Israel, Lebanon and Morocco and around 20% in other Southern Rim countries. The labour markets of the Southern Rim countries have been less affected by the euro area crisis than most EU Member States or the Western Balkan countries (European Commission 2011b). The crisis mainly affected export-oriented firms in certain Southern Rim countries (Egypt, Libya, Syria and Tunisia) as well as migrant workers. On top of the enormous pressure of young cohorts entering the labour market, the revolutions of the Arab

Spring have brought about additional increases in unemployment as numerous migrants have returned (e.g. from Libya) and the private sector has laid off temporary workers (Galal and Reiffers 2011).

Southern Rim countries have very dynamic populations and high migrant numbers, with several of them serving not only as sending and receiving countries, but also as transit countries. Before the Arab Spring, there were over 12 million Southern Rim migrants, more than from any other Rim region, with Egypt and Morocco receiving the greatest numbers of migrants. The EU is the main destination region, hosting more than 40 % of migrants from the Southern Rim, particularly from Morocco, Algeria and Tunisia. Moreover, almost a third of migrants from Lebanon and Libya have moved to the EU, while only 7 % or less of migrants from Egypt, Israel and Jordan find their way to the EU. The main destination countries for Moroccan migrants are France, Italy, Belgium, Germany and the Netherlands, while more than 80 % of Algerian and Tunisian migrants are in France.

The flow of migrants from the Southern Rim countries to the EU was on the increase until 2008, when it reached 180.000. However, as in the case of Eastern Rim migrants, the flow from the Southern Rim countries has declined significantly in the wake of the recent financial crisis. The turmoil of the Arab Spring generated a fresh wave of irregular migration, particularly from Tunisia, where attempts to reach Italy and France increased significantly in late 2010 and early 2011. Fears over sizeable movements of irregular immigrants induced EU governments to sign bilateral agreements with potential migration countries, with a view to halting the irregular crossing of coastal borders. Moreover, climate change and environmental disasters have generated another flow of migrants from outside the Rim who have been forced to migrate because of unsustainable conditions at home.

Cooperation on migration and mobility related issues between the EU and Southern Rim is very intense, in particular with Morocco and Tunisia with which the EU is negotiating Mobility Partnerships in order to enhance mobility and strengthen cooperation on migration related issues. Cooperation with Egypt and Libya will intensify in the future, leading to possible Mobility Partnerships, once the internal situation of those countries so allows.

6.7.3 Western Balkans

Almost the entire Western Balkans region is characterised by demographic contraction, high outward migration and ageing populations. Only Albania and Kosovo have a large share of the population in the age group up to 14 years. The entire region also has low activity rates, with extremely low levels in Kosovo (below 50 %) and in BiH, while in Albania and Serbia the rate is about 60 %. Female participation in the labour force is particularly low in specific ethnic groups across the region, and in particular in Kosovo and BiH. The region has a high share of agricultural employment (Albania, with 55 % of its total workforce employed in agriculture, is an extreme case in this respect and is similar to Georgia and Morocco). Employment in industry is highest in BiH (31 %) and about 25 % in Serbia and Kosovo. The service sector is less developed in the Western Balkan countries, accounting for about half of

total employment in Serbia and BiH, and only 37 % in Albania. By contrast, the service sector represents a very high proportion of the labour force in Kosovo.

Unemployment in the Western Balkans is very high – in fact higher than in any other Rim region. Kosovo and BiH have the highest rates of unemployment in the region. Albania is the only country where unemployment has remained flat in recent years, possibly helped by a long tradition of outward migration in combination with relatively stable employment in agriculture. Unemployment has a disproportionate impact on young people. Like in some Eastern Rim countries, there is a sizeable and persistent regional imbalance in unemployment, which suggests that there are major barriers to regional labour mobility. In many cases young people lack the skills and professional experience for employment, so their options are to emigrate or enter the informal economy (Vidovic 2011). Long-term unemployment has become a persistent and salient feature of the Western Balkan labour markets and is much more severe than in other transition economies. However, it can be assumed that the high reported rates of long-term unemployment are distorted and hide large flows between the formal and informal sector.

There is a long history of migration in the Western Balkans as most Balkan countries share common borders and cultural ties with EU Member States. More recently, wars have created additional migration by forcing refugees to flee to other countries. The total number of migrants from the Western Balkans is around 4.5 million, mainly from BiH and Albania, each with more than 1.4 million migrants. While 85 % of all Albanian migrants have migrated to the EU, only half of the migrants from BiH have chosen the EU as their destination. Visa liberalisation in 2011 contributed to an intensification of circular migration and to a reduction in illegal migration to the EU. There have been fewer cases of Albanian migrants illegally crossing the EU border or overstaying their visas in Member States. However, there has been an increase in the number of applications for international protection (asylum) submitted in the EU, particularly from Serbia and Albania. The difficult economic situation in Greece has forced many Albanians to return home, for good or temporarily and will continue to exert pressure on Western Balkan labour markets.

6.7.4 Norway, Switzerland and Liechtenstein

All three countries have experienced population growth over the past decade. Their labour markets are characterised by low unemployment and high activity and employment rates, the latter reaching over 75 %. In all three countries, unemployment is very low compared with the EU – another example of the diversity of the Rim.

6.8. Remittances

6.8.1 The Eastern Rim

Migration and remittances both show an increasing trend over the last 20 years, generating significant welfare gains either for the home country of the migrants or for the migrants themselves. In 2000, remittances sent to the EaP group of countries amounted to around USD 769 million, while in 2011 the estimated amount was 16 times higher, at around

USD 12.3 billion. Moldova has the highest share of remittances to GDP (23 %), and remittances are among the main contributors to developments on its labour market.

6.8.2 The Southern Rim

In 2011, the overall amount of remittances was around USD 33 billion, three times higher than in 2001. The main receiving countries were Lebanon and Egypt. In the light of persistent unemployment in Europe and precarious employment prospects for existing migrants, as well as rigid immigration policies, there is a risk that remittances will decrease in future years (Mohapatra et al. 2011a, b). In Libya, Tunisia and Egypt, numerous migrants returned home or were deported back to their country of origin during the Arab Spring. Such developments might also negatively affect the future flow of remittances to the country of origin, holding back growth in the region (Ben Mim and Ben Ali 2012).

6.8.3 Western Balkans

Remittances strongly affect the economic development in the Western Balkans, in particular in Kosovo and BiH, where the share of remittances to GDP is 18 % and 13 % (World Bank 2011b). In 2011, the flow of remittances to the Western Balkan countries reached nearly USD 10 billion, three times more than in 2002. As in other regions, most of the Western Balkan countries recorded a decline in the flow of remittances from 2008 to 2009, but from 2010 to 2011 there was again an increase (+6 %). The difficult economic situation in the euro area (particularly in Greece, Spain and Italy) raises concerns that there will be less demand for migrant workers, which might trigger a massive return migration and depress flows of remittances accordingly. Remittances to Albania may keep falling if migrants continue returning from Italy and Greece. At the same time, the positive effects in terms of migrants returning to their country of origin with new skills, knowledge and capital, must not be ignored.

6.9. Labour migration and EU competitiveness

One of the policy objectives of the Europe 2020 strategy is to reinforce EU competitiveness in the international arena. In view of recent developments in the EU, in particular its ageing population and shrinking labour force, potential labour market shortages – in terms of numbers as well as skills – put the competitiveness of the EU at risk. In this context, labour migration has gained higher attention in the policy debate as it could contribute to meeting the objectives of sustaining employment growth, reducing unemployment, satisfying labour demand for highly skilled workers and filling sectoral labour market shortages with migrant workers (European Commission 2009a). The 3rd EU Annual Report on Immigration and Asylum underlines the positive contributions that migration makes and will need to bring in order for the EU to grow and continue to thrive (European Commission 2012b).

The economic crisis and increase in unemployment in the EU have forced several Member States to introduce severe austerity measures. At the same time, despite the sharp rise in unemployment in several Member States, labour shortages persist for various reasons, for instance unattractive working conditions, lower wages offered by employers, and limited

geographical mobility (EMN 2011). Meanwhile, qualitative shortages are the result of insufficient numbers of workers with appropriate qualifications and skills. Moreover, migration within the EU, particularly migration from and between the 2004/2007 accession states, has generated labour market shortages also in several of these Member States.

In contrast, demographic trends indicate that the Southern Rim countries will experience a significant increase in the working-age population, which will exceed demand on the domestic labour market. It is highly likely that a considerable number of young, and particularly well-educated, people will not find a place on the domestic labour market and will be forced to migrate. Several Member States have adopted national strategies to mitigate the demand for labour through the migration of third-country nationals, and in particular migrant workers from Rim countries. Available data on third-country workers in the EU suggest that Rim countries account for a large share of migrants and that the contribution of migrant workers from the Rim countries, especially from the Western Balkans, Russia and Ukraine, is very important for a number of Member States.

6.10. Policy implications

Countries belonging to the Rim are extremely diverse. Their diversity is multidimensional (geographical, socio-economic, political, cultural and religious) and each individual dimension has important implications for EU policies towards the region, for EU institutional relations with individual Rim countries, and for Rim countries themselves – including their competitiveness.

More specifically, with respect to the institutional relations between the EU and the Rim, the key question is whether the current EU approach – aiming at the conclusion of bilateral DCFTAs with the countries in the Rim able and willing to do so – is optimal and sufficient (or even appropriate) for every country and society in such a diverse group. Evidence suggests that for sustainable development, there is no alternative to domestic policy reform as outlined in the DCFTAs, to boost domestic competitiveness and external trade. Apart from policies aimed at bilateral trade liberalisation and measures to support the investment climate in the countries concerned, the DCFTAs and the industrial cooperation process will also contribute to promoting regional integration and intra-regional cooperation, in particular as and when the pan-EuroMediterranean rules of origin allow diagonal cumulation. If duly implemented by the partner countries, these initiatives would be particularly helpful in the Eastern and Southern parts of the Rim, where regional fragmentation is particularly detrimental to further growth.

Regarding the economic development model, except for in the Advanced Rim, the economic growth of Rim countries and their progress in catching up have been the result not of increased exports, but in most cases – apart from energy exporters and tourist destinations – stem from increasing domestic demand, frequently financed from transfers (aid and remittances to resource-poor countries). The growth of industry in the majority of Rim countries, and in the Southern Rim in particular, has been slower than the growth of GDP. Recent experience in the EU shows that any pre-crisis neglect in building up a viable trade

sector and sufficiently competitive export capacities tends to aggravate the crisis. Policies leading to an expansion of the export sector have to take priority, and the use of different policy instruments (e.g. labour market, investment promotion, institutional development, entrepreneurial promotion) needs to be strengthened (Gligorov et al. 2012).

Competitiveness in the Rim needs to be improved (again, except for the Advanced Rim). This is reflected in the low intensity of manufacturing exports and insufficient inward FDI flows. The reasons for this are manifold and related to the political context, the economic sluggishness (and dependence on slow-growing EU economies) in general, low employment skills and also the poor business climate, adversely affecting SMEs in particular. The Eastern Rim has been doing somewhat better in this respect than both the Western Balkans and the Southern Rim in a number of business-relevant areas (such as access to finance, use of foreign technology, labour market regulations and worker skills). Southern Rim countries are highly heterogeneous; some have made impressive progress while others are held back by poor competitiveness in industry and technology. Improving investments in education is key; there is a lack of high-quality, technology-based teaching and a severe mismatch between the orientation of students and the needs of the economy, as well as poorly performing secondary education students. In several countries there can be up to eight years between completion of university education and taking up employment (European Commission et al. 2008).

Though important for the trade surpluses of some EU Member States, the Rim countries are relatively minor trading partners for the EU as a whole and do not pose any serious challenge to EU competitiveness. However, the trade asymmetry – the EU being the main trading partner of Rim countries in most cases – is challenging, not least for the formulation of EU policies, since any bilateral agreement will impact more on the Rim than the EU. Trade asymmetry and the underexploitation of the trade potential arising from geographical proximity should be overcome. In particular, the proximity of the huge EU market can be thought of as a locational competitive advantage of the Rim, so far largely unexploited. Each of the four Rim regions is a focal area in terms of trade flows for at least one part of the EU. The varying regional specialisation (and interests) of individual Member States represents another challenge for the formulation of a uniform and effective EU policy or policies towards the Rim.

Limited diversification of exports (except for the Advanced Rim) is one of the greatest stumbling blocks for competitiveness. In spite of attempts to improve the international competitiveness of the Rim countries – product and labour market reforms, but also liberalisation efforts and improvements in the business climate in general – the Rim economies still need to develop the industrial capacity and the necessary structural flexibility to respond successfully to external competitive pressures. These drawbacks result in high adjustment costs and low gains from liberalisation in terms of an increased emergence of new firms and new export products.

European FDI plays a crucial role in the Rim region. FDI by European companies, including SMEs, can exploit locational benefits, even though the poor business environment in the Rim limits FDI flows. Improved conditions for doing business benefit local SMEs and EU

investors alike. SMEs have benefited in countries like Serbia, Morocco and Tunisia, all of which have managed to attract a number of greenfield FDI projects in different industries. Further policy reforms should take place in order to open the remaining restricted sectors in the Rim countries. Open and fair competition, breaking local (often state-supported) monopolies, could increase opportunities for further FDI flows and the development of SMEs (European Commission 2011c).

A major impediment to the competitiveness of the Rim is regional fragmentation. Even within the four Rim regions there are many barriers to trade and business in general (the persisting frozen or open conflicts are obviously unhelpful as well). Numerous trade barriers exist in both the Eastern and Southern parts of the Rim. In the Southern Rim, the limited intra-regional integration is viewed as the key obstacle to FDI, trade diversification and growth. In the Eastern Rim, attempts at a revival of Russian-led regional integration (the customs union between Russia, Belarus and Kazakhstan) have had the effect that the prospects of a free trade agreement between the EU and Russia – a long-stated objective on both sides – should now be seen in a long-term perspective. The continuing bilateral 'hub-and-spoke' trade arrangements between the EU and the Rim resemble the pre-accession arrangements which the EU concluded with accession countries from Central and Eastern Europe during the 1990s (Baldwin 1994). However, without a strong anchor in the form of future EU membership, it is important to maintain a high level of ambition in EU trade agreements with the neighbourhood countries to foster reforms, regional integration and a sustainable development of the Rim (Dreyer 2012).

Demography and labour market developments are among the crucial areas affecting competitiveness, yet frequently neglected in this context. The Rim is characterised by large informal sectors, labour market segmentation, high unemployment and large-scale migration. A number of differences and common features can be identified:

- Because Armenia, Azerbaijan, Albania, Kosovo and the Mediterranean neighbouring countries all have a high share of young people in their populations, large cohorts are entering the labour market each year. All other countries are faced with ageing (and often shrinking) populations, exerting serious pressure on the welfare systems and potentially holding back competitiveness (as it is in the EU).
- Activity rates are below 50% in all Southern Rim countries and Kosovo. In Eastern Rim countries, labour force participation is similar to the 2004/2007 accession states and can even exceed the EU average.
- The employment gap between males and females is substantial in some Western Balkan countries and in the Mediterranean neighbouring countries. On the other hand, female labour force participation in the Eastern Rim countries is traditionally high, on a par with that in the EU.
- With the exception of Russia and Ukraine, Eastern Rim countries have a high share of persons in vulnerable employment. Among Southern Rim countries, Morocco stands out as about half of its workforce have vulnerable jobs. There is also an important

north/east/south divide in the educational attainment and qualification structure of employment, with more highly educated workers in the north and east than in the south.

Given the irreversible nature of the ageing workforce in the EU, the potential of human resources in the Southern Rim represents an opportunity for sustaining employment growth and international economic competitiveness in the EU as well as in the Southern Rim in coming decades. The promotion of circular migration and various programmes that induce temporary migration is a challenging way of satisfying labour shortages in the EU. It should not be neglected.

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7. STATISTICAL ANNEX

7.1. Sectoral competitiveness indicators

Explanatory notes

Geographical coverage: all indicators refer to EU-27

Production index.[62] The production index is actually an index of final production in volume terms.

Labour productivity: this indicator is calculated by combining the indexes of production and number of persons employed or number of hours worked.[63] Therefore, this indicator measures final production per person of final production per hour worked.

Unit Labour Cost: it is calculated from the production index and the index of wages and salaries and measures labour cost per unit of production. "Wages and salaries" is defined (Eurostat) as "the total remuneration, in cash or in kind, payable to all persons counted on the payroll (including homeworkers), in return for work done during the accounting period, regardless of whether it is paid on the basis of working time, output or piecework and whether it is paid regularly wages and salaries do not include social contributions payable by the employer".

Relative Trade Balance: it is calculated, for sector "i", as (Xi-Mi)/(Xi+Mi), where Xi and Mi are EU-27 exports and imports of products of sector "i" to and from the rest of the World.

Revealed Comparative Advantage (RCA):

The RCA indicator for product "i" is defined as follows:

$$RCA_i = \frac{\frac{X_{EU,i}}{\sum_i X_{EU,i}}}{\frac{X_{W,i}}{\sum_i X_{W,i}}}$$

where: X=value of exports; the reference group ('W') is the EU-27 plus 105 other countries (see list below); the source used is the UN COMTRADE database. In the calculation of RCA, X_{EU} stands for exports to the rest of the world (excluding intra-EU trade) and X_W measures exports to the rest of the world by the countries in the reference group. The latter consists of the EU-27 plus the following countries: Albania, Algeria, Azerbaijan, Argentina, Australia, Bahamas, Bahrain, Armenia, Bermuda, Bhutan, Bolivia (Plurinational State of), Bosnia Herzegovina, Brazil, Belize, Bulgaria, Myanmar, Burundi, Belarus, Cambodia, Canada, Cape Verde, Sri Lanka, Chile, China, Colombia, Costa Rica, Croatia, Dominica, Dominican Rep., Ecuador, El Salvador, Ethiopia, Fiji, French Polynesia, Georgia, Gambia, Occ. Palestinian

[62] The data are working-day adjusted for production.

[63] The data are working-day adjusted for hours worked.

Terr., Ghana, Guatemala, Guyana, China, Hong Kong SAR, Iceland, Indonesia, Israel, Côte d'Ivoire, Jamaica, Japan, Jordan, Kenya, Rep. of Korea, Kyrgyzstan, Lebanon, China, Macao SAR, Madagascar, Malawi, Malaysia, Maldives, Mali, Mauritius, Mexico, Other Asia, Rep. of Moldova, Montenegro, Oman, Nepal, Aruba, New Caledonia, New Zealand, Nicaragua, Niger, Nigeria, Norway, Pakistan, Panama, Paraguay, Peru, Russian Federation, Rwanda, Saint Vincent and the Grenadines, Saudi Arabia, Senegal, Serbia, India, Singapore, Viet Nam, South Africa, Zimbabwe, Suriname, Switzerland, Syria, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Uganda, Egypt, United Rep. of Tanzania, USA, Burkina Faso, Samoa, Zambia.

Statistical nomenclatures: the indicators in tables 7.1 to 7.6 are presented at the level of divisions of the statistical classification of economic activities in the European Community (NACE Rev.2[64]), while those in tables 7.7 and 7.9 are presented in terms of divisions of the statistical classification of products by activity (CPA). Table 7.10 uses extended balance of payments services classification. In terms of data sources: tables 7.1 to 7.6 are based on Eurostat's short-term indicators data. Tables 7.7, 7.8 and 7.9 are based on United Nations' COMTRADE. Table 7.10 is based on IMF balance of Payments. Royalties and license fees were not included as it is not related to a special service activity.

[64] Compared to the statistical annexes of the previous publications, the new activity classification is used: NACE REV 2. The correspondance tables from NACE Rev. 2 – NACE Rev. 1.1 and from NACE Rev. 1.1 to NACE Rev. 2, are available on Eurostat: http://epp.eurostat.ec.europa.eu/portal/page/portal/nace_rev2/introduction

Table 7.1 - EU-27 - Industry production index, annual growth rate (%)

Code (NACE Rev. 2)	Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average 2006-2011
B	MINING AND QUARRYING	-2.3	-2.7	0.5	-2.9	-2.2	-6.2	-3.9	-0.2	-3.6	-10.6	-0.5	-8.1	-4.7
C	MANUFACTURING	5.6	0.1	-0.7	0.4	2.7	1.6	4.8	4.3	-1.8	-14.7	7.4	4.6	-0.4
C10	Manufacture of food products	1.1	1.2	2.0	0.1	2.0	2.3	1.5	1.9	-0.5	-0.9	2.0	1.4	0.8
C11	Manufacture of beverages	-1.0	2.5	2.5	1.4	-2.5	1.0	3.9	1.3	-2.3	-2.4	-0.2	5.7	0.4
C12	Manufacture of tobacco products	-6.4	-2.0	-0.8	-5.4	-6.4	-4.5	-5.2	3.0	-16.8	-1.4	-5.8	-2.4	-4.9
C13	Manufacture of textiles	1.9	-3.0	-4.7	-3.4	-4.7	-5.6	-0.8	-1.3	-9.6	-17.7	8.1	-2.9	-5.1
C14	Manufacture of wearing apparel	-4.4	-3.9	-10.6	-6.1	-4.8	-9.0	2.4	2.4	-3.3	-11.4	0.7	-5.9	-3.6
C15	Manufacture of leather and related products	-1.8	-5.2	-7.5	-7.2	-11.6	-9.0	-1.8	-1.6	-7.5	-13.2	3.0	4.3	-3.2
C16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	6.8	-3.9	0.7	2.2	3.3	0.1	4.3	1.1	-8.6	-13.9	3.4	-0.2	-3.9
C17	Manufacture of paper and paper products	2.8	-2.0	3.4	1.5	2.7	0.0	3.8	2.7	-3.0	-8.5	6.2	-0.8	-0.8
C18	Printing and reproduction of recorded media	1.8	-2.1	-0.3	-1.3	1.2	2.3	0.4	0.4	-2.1	-7.5	-0.4	-1.8	-2.3
C19	Manufacture of coke and refined petroleum products	5.3	0.2	-2.3	2.1	4.8	-0.8	1.6	-0.3	2.6	-7.9	-0.8	0.4	-1.3
C20	Manufacture of chemicals and chemical products	4.6	-1.5	1.9	0.0	3.2	1.8	3.5	3.3	-3.2	-11.9	10.3	1.4	-0.3
C21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	4.9	10.8	9.0	5.2	-0.4	4.8	6.5	1.9	0.9	3.5	5.7	0.8	2.5
C22	Manufacture of rubber and plastic products	4.7	-0.5	0.1	1.9	1.7	0.8	4.1	4.5	-4.4	-13.7	7.6	4.2	-0.7
C23	Manufacture of other non-metallic mineral products	3.8	-0.5	-1.8	0.5	1.9	0.6	4.5	2.0	-6.5	-18.7	2.2	3.3	-3.9
C24	Manufacture of basic metals	7.1	-1.0	0.1	0.5	4.8	-0.5	6.3	1.2	-3.2	-26.7	18.6	4.8	-2.2
C25	Manufacture of fabricated metal products, except machinery and equipment	6.6	0.3	-0.6	1.1	2.7	1.5	5.0	6.2	-2.5	-22.1	7.1	6.7	-1.6
C26	Manufacture of computer, electronic and optical products	15.5	-5.9	-9.0	1.2	7.8	4.8	9.4	9.9	2.1	-16.6	8.4	6.7	1.6
C27	Manufacture of electrical equipment	9.7	0.0	-3.2	-2.4	2.8	1.4	8.5	4.8	-0.3	-20.2	11.6	4.1	-0.6
C28	Manufacture of machinery and equipment n.e.c.	6.0	1.3	-2.0	-0.6	4.1	3.9	8.4	8.4	1.5	-26.4	10.7	11.4	0.0
C29	Manufacture of motor vehicles, trailers and semi-trailers	7.7	2.2	1.0	1.9	5.0	1.9	2.9	6.1	-6.0	-24.2	21.5	12.8	0.7
C30	Manufacture of other transport equipment	2.1	1.7	-3.9	1.3	0.5	2.3	7.6	5.1	4.9	-4.9	1.1	4.7	2.1
C31	Manufacture of furniture	2.5	-1.8	-4.4	-2.5	0.4	0.6	3.2	3.3	-4.5	-16.3	-0.6	2.5	-3.4
C32	Other manufacturing	5.5	3.5	2.9	-1.2	1.5	1.2	4.9	2.5	-1.4	-5.8	7.7	3.2	1.1
C33	Repair and installation of machinery and equipment	5.9	-0.8	-4.9	-2.5	4.4	1.5	8.1	4.2	4.7	-9.2	2.6	5.6	1.4
D	ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	3.7	2.2	0.8	3.0	2.2	2.0	0.9	-0.7	-0.1	-4.7	4.2	-4.5	-1.2
E	WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F	CONSTRUCTION	4.0	0.7	0.6	2.0	0.9	2.5	3.3	2.5	-2.8	-7.7	-3.5	1.1	-2.1

N/A: data not available.
Source: Eurostat.

Table 7.2 - EU-27 - Number of persons employed, annual growth rate (%)

Code (NACE Rev. 2)	Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average 2006-2011
B	MINING AND QUARRYING	-8.2	-3.3	-4.7	-4.5	-4.6	-3.2	-3.9	-3.5	-1.4	-3.8	-4.1	-3.5	-3.3
C	MANUFACTURING	-0.5	0.0	-2.0	-2.0	-1.9	-1.4	-0.7	0.5	-0.3	-7.1	-3.6	0.6	-2.0
C10	Manufacture of food products	-0.7	-0.6	-0.9	-0.5	-1.2	0.0	-0.1	0.0	0.0	-1.9	-0.4	0.5	-0.4
C11	Manufacture of beverages	N/A	-1.8	-1.2	-1.8	-1.4	-1.5	-1.4	-0.1	-1.2	-6.3	-1.8	-1.5	-2.2
C12	Manufacture of tobacco products	-4.1	-3.4	-0.5	-5.1	-5.7	-2.4	-0.4	-10.1	-9.0	-5.7	-6.6	-3.0	-6.9
C13	Manufacture of textiles	-3.9	-3.3	-5.1	-7.2	-6.3	-4.5	-5.9	-5.3	-6.4	-12.8	-5.8	-2.8	-6.7
C14	Manufacture of wearing apparel	-5.7	-3.3	-3.7	-4.0	-6.2	-7.7	-5.7	-5.6	-6.5	-12.8	-8.5	-1.6	-7.1
C15	Manufacture of leather and related products	-3.3	-1.1	-1.0	-4.4	-6.9	-5.8	-2.7	-3.0	-5.2	-12.0	-3.0	4.0	-4.0
C16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	-0.8	-1.2	-1.8	-1.3	-1.4	-0.8	-0.8	0.9	-2.2	-12.1	-2.9	-0.2	-3.4
C17	Manufacture of paper and paper products	-1.5	-1.7	-1.0	-2.9	-1.6	-2.6	-2.6	-2.7	-2.0	-5.1	-2.1	-0.7	-2.5
C18	Printing and reproduction of recorded media	-0.9	-0.3	-2.2	-4.0	-1.9	-3.3	-1.6	-0.1	-2.3	-7.0	-4.6	-3.4	-3.5
C19	Manufacture of coke and refined petroleum products	-1.4	-2.2	-3.1	-3.4	-2.1	-3.4	-3.4	1.2	-1.0	-3.0	-2.7	-2.2	-1.6
C20	Manufacture of chemicals and chemical products	-2.8	-0.9	-1.6	-2.6	-3.3	-2.1	-1.2	-0.5	-2.3	-4.5	-2.2	-0.1	-1.9
C21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	1.3	2.0	2.5	-0.2	-2.5	-0.9	1.9	0.9	-2.2	-3.2	-0.2	-0.4	-1.1
C22	Manufacture of rubber and plastic products	2.5	0.9	-0.9	0.2	-0.2	-0.7	-0.8	1.5	0.5	-6.8	-2.5	1.2	-1.3
C23	Manufacture of other non-metallic mineral products	-0.5	-0.6	-2.3	-2.7	-2.1	-1.0	-0.6	1.4	-2.0	-10.3	-6.3	-1.8	-3.9
C24	Manufacture of basic metals	-4.2	-0.3	-4.0	-3.2	-3.9	-1.1	-1.0	-0.4	-0.4	-8.0	-5.3	1.1	-2.7
C25	Manufacture of fabricated metal products, except machinery and equipment	0.9	0.9	-1.1	-1.2	0.1	-0.3	1.3	3.3	2.6	-8.2	-5.3	1.5	-1.3
C26	Manufacture of computer, electronic and optical products	3.8	1.8	-5.7	-4.5	-3.0	-1.3	-0.8	1.2	-1.8	-8.6	-3.7	1.0	-2.5
C27	Manufacture of electrical equipment	1.6	0.5	-3.9	-4.1	-1.4	-0.6	1.0	2.4	1.2	-8.1	-2.1	3.2	-0.8
C28	Manufacture of machinery and equipment n.e.c.	-2.0	1.1	-1.5	-2.2	-2.4	-0.9	0.8	2.9	2.1	-5.7	-5.0	2.7	-0.7
C29	Manufacture of motor vehicles, trailers and semi-trailers	2.2	1.8	-1.0	-0.4	0.2	-0.8	-0.9	-0.2	0.9	-8.9	-2.7	2.9	-1.7
C30	Manufacture of other transport equipment	-2.3	-0.3	-1.6	-2.7	-1.7	0.3	0.6	2.8	2.1	-2.5	-4.8	-0.9	-0.7
C31	Manufacture of furniture	N/A	0.4	-3.3	0.0	-2.5	-2.5	-1.1	0.3	-2.1	-9.1	-8.2	-1.6	-4.2
C32	Other manufacturing	-4.6	1.0	-1.6	-0.2	-1.0	-1.8	-0.4	0.3	0.0	-3.0	-1.8	-1.2	-1.1
C33	Repair and installation of machinery and equipment	-4.7	-0.1	-2.9	-2.5	-1.0	-0.6	0.2	0.3	3.8	-2.0	-2.1	-1.3	-0.3
D	ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	-3.9	-2.9	-4.3	-4.3	-3.8	-2.5	-1.2	-1.5	-0.8	2.4	0.3	0.7	0.2
E	WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	0.9	-1.3	-0.5	0.4	-0.8	-1.7	1.4	0.5	-0.5	0.1	0.5	-0.1	0.1
F	CONSTRUCTION	-0.3	0.2	-0.5	0.6	1.4	2.5	4.1	4.9	-0.9	-7.7	-5.6	-3.3	-2.6

N/A: data not available.
Source: Eurostat.

Table 7.3: EU-27 - Number of hours worked, annual growth rate (%)

Code (NACE Rev. 2)	Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average 2006-2011
B	MINING AND QUARRYING	N/A	-3.0	-4.9	-5.6	-3.7	-3.2	-4.5	-3.4	-1.2	-4.9	-2.4	-2.5	-2.9
C	MANUFACTURING	N/A	-1.2	-2.4	-2.7	-1.1	-1.6	-0.1	0.2	-0.6	-9.3	-0.5	1.5	-1.8
C10	Manufacture of food products	N/A	-1.1	-2.2	-2.1	-0.2	-0.4	-0.1	-0.6	0.3	-2.5	0.5	0.5	-0.4
C11	Manufacture of beverages	N/A	-0.7	-3.5	-0.7	0.4	-2.4	-3.9	-1.3	-1.7	-4.6	-4.3	-0.2	-2.4
C12	Manufacture of tobacco products	N/A	2.3	-3.1	-9.7	-5.2	-4.0	-6.1	-3.5	-9.7	-5.4	-4.5	-4.6	-5.6
C13	Manufacture of textiles	N/A	-4.2	-5.1	-7.1	-5.7	-5.0	-5.5	-2.9	-5.4	-14.9	0.0	-0.3	-4.9
C14	Manufacture of wearing apparel	N/A	-4.1	-3.1	-3.5	-3.5	-3.8	-3.7	-5.4	-6.3	-14.7	-8.2	0.5	-6.9
C15	Manufacture of leather and related products	N/A	-2.2	-3.6	-4.0	-3.8	-4.3	-1.0	-3.7	-5.8	-11.0	0.1	3.7	-3.5
C16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	N/A	-4.1	-1.9	-2.3	-0.8	-1.8	-0.1	-0.1	-2.6	-12.9	0.6	0.2	-3.1
C17	Manufacture of paper and paper products	N/A	-1.4	-0.8	-2.8	-1.7	-1.9	-1.0	-1.1	-3.9	-7.2	-0.2	0.3	-2.4
C18	Printing and reproduction of recorded media	N/A	0.0	-3.4	-4.2	-3.0	-2.3	0.1	0.1	-1.7	-5.9	-3.1	-1.7	-2.5
C19	Manufacture of coke and refined petroleum products	N/A	-2.5	-4.4	-1.6	-0.6	-0.6	-3.3	0.1	2.1	-8.3	-3.0	-3.4	-2.6
C20	Manufacture of chemicals and chemical products	N/A	-2.4	-2.1	-2.7	-2.0	-3.0	-1.0	-1.5	-1.7	-5.4	-1.2	1.2	-1.7
C21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	N/A	0.3	2.1	0.0	-1.0	-1.5	-0.1	1.0	-0.2	-1.9	-0.3	-0.2	-0.3
C22	Manufacture of rubber and plastic products	N/A	-0.2	-1.8	-1.6	-0.3	-1.4	1.8	0.6	-0.4	-9.0	1.0	2.3	-1.2
C23	Manufacture of other non-metallic mineral products	N/A	-2.6	-3.1	-3.1	-1.0	-0.9	-0.3	0.6	-2.5	-12.0	-1.9	-0.3	-3.3
C24	Manufacture of basic metals	N/A	-1.9	-3.3	-4.8	-1.7	-2.4	0.2	-0.4	-0.9	-12.8	1.8	2.6	-2.1
C25	Manufacture of fabricated metal products, except machinery and equipment	N/A	-0.4	-1.4	-2.2	-0.4	-1.1	1.7	2.3	3.0	-11.4	-0.5	2.0	-1.1
C26	Manufacture of computer, electronic and optical products	2.8	0.1	-4.8	-4.5	-2.8	-1.6	-0.5	0.3	-1.0	-12.0	-2.0	-0.4	-3.1
C27	Manufacture of electrical equipment	N/A	-1.1	-3.0	-3.9	-1.4	-1.9	2.5	1.7	0.8	-12.6	3.1	3.3	-0.9
C28	Manufacture of machinery and equipment n.e.c.	N/A	-0.6	-2.3	-2.4	-1.3	-1.3	1.5	2.5	1.5	-10.6	-0.6	3.8	-0.8
C29	Manufacture of motor vehicles, trailers and semi-trailers	N/A	0.7	-1.5	-1.1	0.5	-0.5	-0.4	0.9	-1.4	-14.0	3.9	4.6	-1.4
C30	Manufacture of other transport equipment	N/A	-1.4	-2.1	-2.1	-2.3	-0.3	1.5	1.0	1.4	-3.5	-4.0	0.1	-1.0
C31	Manufacture of furniture	N/A	0.3	-4.2	-3.4	-1.0	-3.4	1.0	0.4	-2.9	-11.4	-4.8	-0.5	-3.9
C32	Other manufacturing	N/A	0.1	-3.0	-2.4	-0.2	-2.6	-0.5	0.8	0.3	-4.9	0.0	2.7	-0.3
C33	Repair and installation of machinery and equipment	N/A	-2.2	-3.5	-3.6	-2.7	-0.4	0.9	0.5	1.1	0.3	-2.9	0.2	-0.2
D	ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	N/A	-1.7	-4.8	-4.5	-2.4	0.2	-1.7	-1.2	-0.1	-0.5	-0.5	1.5	-0.2
E	WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	N/A	-2.0	-1.5	-0.8	0.8	-3.0	-0.5	0.4	0.9	-2.3	1.7	0.7	0.3
F	CONSTRUCTION	1.7	-1.6	-3.0	-1.2	0.0	5.9	3.2	2.8	-1.5	-9.1	-6.7	-0.6	-3.1

N/A: data not available.
Source: Eurostat.

Table 7.4: EU-27 - Labour productivity per person employed, annual growth rate (%)

Code (NACE Rev. 2)	Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average 2006-2011
B	MINING AND QUARRYING	6.4	0.6	5.5	1.6	2.5	-3.1	0.0	3.4	-2.3	-7.1	3.7	-4.8	-1.5
C	MANUFACTURING	6.1	0.1	1.3	2.4	4.7	3.0	5.6	3.8	-1.5	-8.2	11.4	3.9	1.7
C10	Manufacture of food products	1.8	1.8	3.0	0.6	3.2	2.3	1.7	1.9	-0.5	1.0	2.4	0.9	1.1
C11	Manufacture of beverages	N/A	4.4	3.8	3.3	-1.2	2.6	5.4	1.4	-1.1	4.2	1.7	7.3	2.6
C12	Manufacture of tobacco products	-2.4	1.4	-0.3	-0.3	-0.7	-2.2	-4.8	14.5	-8.6	4.6	0.8	0.6	2.1
C13	Manufacture of textiles	6.1	0.3	0.4	4.1	1.7	-1.2	5.4	4.2	-3.4	-5.7	14.7	-0.1	1.7
C14	Manufacture of wearing apparel	1.4	-0.6	-7.2	-2.2	1.5	-1.4	8.6	8.5	3.4	1.6	10.0	-4.3	3.7
C15	Manufacture of leather and related products	1.6	-4.2	-6.6	-3.0	-5.1	-3.4	1.0	1.5	-2.4	-1.3	6.2	0.3	0.8
C16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	7.7	-2.8	2.6	3.6	4.7	0.9	5.2	0.2	-6.6	-2.1	6.5	0.0	-0.5
C17	Manufacture of paper and paper products	4.3	-0.3	4.4	4.5	4.3	2.7	6.5	5.5	-1.0	-3.6	8.5	-0.1	1.8
C18	Printing and reproduction of recorded media	2.7	-1.8	1.9	2.8	3.2	5.8	2.0	0.5	0.2	-0.6	4.4	1.6	1.2
C19	Manufacture of coke and refined petroleum products	6.8	2.5	0.9	5.7	7.1	2.6	5.1	-1.5	3.7	-5.1	1.9	2.6	0.3
C20	Manufacture of chemicals and chemical products	7.6	-0.6	3.6	2.7	6.8	4.0	4.8	3.9	-1.0	-7.8	12.8	1.5	1.7
C21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	3.5	8.6	6.3	5.4	2.2	5.8	4.6	1.0	3.2	7.0	6.0	1.2	3.6
C22	Manufacture of rubber and plastic products	2.2	-1.4	1.0	1.7	1.9	1.5	5.0	3.0	-4.9	-7.4	10.4	3.0	0.6
C23	Manufacture of other non-metallic mineral products	4.4	0.1	0.5	3.2	4.0	1.6	5.1	0.6	-4.6	-9.3	9.1	5.2	0.0
C24	Manufacture of basic metals	11.8	-0.7	4.3	3.8	9.1	0.6	7.4	1.6	-2.9	-20.3	25.3	3.7	0.4
C25	Manufacture of fabricated metal products, except machinery and equipment	5.6	-0.6	0.5	2.3	2.6	1.8	3.6	2.8	-5.0	-15.2	13.1	5.1	-0.3
C26	Manufacture of computer, electronic and optical products	11.2	-7.5	-3.5	6.0	11.1	6.2	10.3	8.6	4.0	-8.8	12.6	5.6	4.1
C27	Manufacture of electrical equipment	8.0	-0.5	0.8	1.8	4.2	2.0	7.5	2.3	-1.4	-13.1	14.0	0.9	0.1
C28	Manufacture of machinery and equipment n.e.c.	8.1	0.2	-0.5	1.7	6.7	4.8	7.6	5.3	-0.6	-22.0	16.5	8.5	0.6
C29	Manufacture of motor vehicles, trailers and semi-trailers	5.4	0.4	2.0	2.3	4.8	2.8	3.9	6.3	-6.8	-16.8	24.9	9.7	2.5
C30	Manufacture of other transport equipment	4.5	2.0	-2.4	4.1	2.3	2.0	6.9	2.3	2.8	-2.4	6.2	5.6	2.8
C31	Manufacture of furniture	N/A	-2.2	-1.1	-2.5	3.0	3.2	4.4	3.0	-2.4	-8.0	8.2	4.2	0.8
C32	Other manufacturing	10.5	2.5	4.6	-1.0	2.6	3.1	5.3	2.2	-1.4	-2.9	9.7	4.5	2.3
C33	Repair and installation of machinery and equipment	11.1	-0.7	-2.1	0.0	5.5	2.1	7.8	3.9	0.9	-7.3	4.8	7.0	1.7
D	ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	7.9	5.2	5.4	7.7	6.2	4.6	2.2	0.8	0.7	-6.9	3.9	-5.2	-1.4
E	WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F	CONSTRUCTION	4.3	0.5	1.1	1.4	-0.5	0.0	-0.8	-2.3	-1.9	0.0	2.2	4.6	0.5

N/A: data not available.
Source: Eurostat.

Table 7.5: EU-27 - Labour productivity per hour worked, annual growth rate (%)

Code (NACE Rev. 2)	Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average 2006-2011
B	MINING AND QUARRYING	N/A	0.3	5.7	2.9	1.6	-3.1	0.6	3.3	-2.5	-6.0	1.9	-5.7	-1.9
C	MANUFACTURING	N/A	1.3	1.7	3.1	3.9	3.2	4.9	4.1	-1.2	-5.9	8.0	3.1	1.5
C10	Manufacture of food products	N/A	2.4	4.3	2.2	2.2	2.7	1.6	2.5	-0.8	1.7	1.5	0.9	1.1
C11	Manufacture of beverages	N/A	3.2	6.2	2.1	-2.9	3.5	8.1	2.6	-0.6	2.4	4.3	5.9	2.9
C12	Manufacture of tobacco products	N/A	-4.2	2.3	4.8	-1.3	-0.6	0.9	6.7	-7.9	4.2	-1.4	2.3	0.7
C13	Manufacture of textiles	N/A	1.2	0.5	4.0	1.1	-0.7	4.9	1.6	-4.4	-3.3	8.1	-2.6	-0.2
C14	Manufacture of wearing apparel	N/A	0.2	-7.8	-2.7	-1.3	-5.4	6.3	8.2	3.2	3.8	9.7	-6.4	3.6
C15	Manufacture of leather and related products	N/A	-3.1	-4.0	-3.4	-8.1	-4.9	-0.8	2.2	-1.8	-2.5	2.9	0.6	0.3
C16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	N/A	0.3	2.6	4.6	4.1	1.9	4.4	1.2	-6.1	-1.1	2.8	-0.4	-0.8
C17	Manufacture of paper and paper products	N/A	-0.6	4.3	4.5	4.5	2.0	4.8	3.8	0.9	-1.4	6.4	-1.1	1.7
C18	Printing and reproduction of recorded media	N/A	-2.1	3.2	3.0	4.3	4.7	0.3	0.3	-0.4	-1.7	2.8	-0.1	0.2
C19	Manufacture of coke and refined petroleum products	N/A	2.8	2.2	3.8	5.4	-0.2	5.0	-0.4	0.5	0.5	2.3	3.9	1.4
C20	Manufacture of chemicals and chemical products	N/A	0.9	4.1	2.8	5.3	4.9	4.5	4.8	-1.5	-6.9	11.6	0.2	1.5
C21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	N/A	10.5	6.7	5.2	0.6	6.4	6.6	0.9	1.1	5.5	6.0	1.0	2.9
C22	Manufacture of rubber and plastic products	N/A	-0.3	1.9	3.6	2.0	2.3	2.2	3.9	-4.0	-5.2	6.6	1.9	0.5
C23	Manufacture of other non-metallic mineral products	N/A	2.1	1.3	3.7	3.0	1.5	4.8	1.4	-4.1	-7.6	4.2	3.6	-0.6
C24	Manufacture of basic metals	N/A	0.9	3.5	5.6	6.7	1.9	6.1	1.6	-2.3	-15.9	16.6	2.1	-0.1
C25	Manufacture of fabricated metal products, except machinery and equipment	N/A	0.7	0.8	3.3	3.1	2.6	3.2	3.8	-5.4	-12.1	7.7	4.6	-0.5
C26	Manufacture of computer, electronic and optical products	12.3	-6.0	-4.5	5.9	10.9	6.5	9.9	9.5	3.1	-5.3	10.6	7.1	4.9
C27	Manufacture of electrical equipment	N/A	1.1	-0.2	1.5	4.2	3.4	5.8	3.0	-1.0	-8.7	8.3	0.7	0.3
C28	Manufacture of machinery and equipment n.e.c.	N/A	1.9	0.3	1.8	5.5	5.3	6.8	5.7	0.0	-17.6	11.4	7.3	0.8
C29	Manufacture of motor vehicles, trailers and semi-trailers	N/A	1.5	2.6	3.0	4.5	2.5	3.3	5.1	-4.7	-11.9	17.0	7.8	2.2
C30	Manufacture of other transport equipment	N/A	3.2	-1.9	3.5	2.9	2.6	6.1	4.1	3.5	-1.5	5.3	4.5	3.2
C31	Manufacture of furniture	N/A	-2.1	-0.2	0.9	1.4	4.1	2.2	2.8	-1.6	-5.6	4.4	3.0	0.5
C32	Other manufacturing	N/A	3.4	6.1	1.2	1.7	3.9	5.4	1.7	-1.7	-0.9	7.7	0.5	1.4
C33	Repair and installation of machinery and equipment	N/A	1.4	-1.4	1.2	7.3	1.9	7.1	3.7	3.6	-9.5	5.7	5.4	1.6
D	ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	N/A	4.0	5.9	7.9	4.7	1.8	2.6	0.5	0.0	-4.2	4.8	-5.9	-1.0
E	WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F	CONSTRUCTION	2.3	2.3	3.7	3.2	0.9	-3.2	0.1	-0.3	-1.3	1.5	3.4	1.7	1.0

N/A: data not available.
Source: Eurostat.

Table 7.6: EU-27 - Unit labour cost, annual growth rate (%)

Code (NACE Rev. 2)	Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average 2006-2011
B	MINING AND QUARRYING	-2.8	7.7	-0.7	6.8	4.2	1.1	8.5	5.4	10.9	11.2	2.1	11.3	8.1
C	MANUFACTURING	-1.0	2.8	1.6	0.1	-1.4	-0.5	-2.3	-0.3	5.8	9.8	-6.4	-0.8	1.4
C10	Manufacture of food products	0.3	2.3	0.8	2.8	-0.5	-0.7	0.3	1.4	5.0	1.0	0.2	0.0	1.5
C11	Manufacture of beverages	N/A	1.0	-1.6	2.5	3.8	-1.3	-3.8	1.1	5.2	1.6	-1.5	-3.3	0.6
C12	Manufacture of tobacco products	8.8	4.8	0.8	6.5	8.5	6.2	7.0	-4.1	16.2	2.0	-1.4	-9.0	0.4
C13	Manufacture of textiles	7.8	1.8	3.1	0.6	0.7	2.8	-2.3	0.7	8.8	6.0	-8.8	2.8	1.7
C14	Manufacture of wearing apparel	14.4	0.8	9.2	2.4	1.6	4.3	-3.7	-0.5	3.2	2.2	-5.4	6.7	1.1
C15	Manufacture of leather and related products	15.0	9.1	7.3	4.2	9.5	5.8	4.6	4.9	10.3	4.9	-0.8	1.9	4.2
C16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	-5.1	5.3	-0.9	-1.8	-0.6	1.0	-0.4	4.7	11.9	4.3	-4.5	2.1	3.6
C17	Manufacture of paper and paper products	0.3	4.8	-2.5	-1.7	-1.2	1.0	-3.5	-1.3	3.5	3.5	-5.1	1.9	0.4
C18	Printing and reproduction of recorded media	2.7	5.1	0.4	-1.4	-1.0	-1.8	-0.7	0.9	4.3	1.9	-4.2	-1.6	0.2
C19	Manufacture of coke and refined petroleum products	6.1	1.0	6.2	-5.0	-1.2	4.1	2.5	2.5	4.0	7.9	3.7	-1.2	3.3
C20	Manufacture of chemicals and chemical products	0.5	3.2	-1.0	1.5	-3.5	-0.9	-3.6	-0.4	4.8	10.6	-9.0	4.5	1.9
C21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	N/A	-6.2	-2.8	-0.4	1.6	-2.9	-3.3	4.2	0.3	-3.2	-4.4	1.2	-0.4
C22	Manufacture of rubber and plastic products	0.2	3.3	1.3	-0.2	0.6	0.3	-2.9	-0.9	7.8	8.2	-4.9	0.2	2.0
C23	Manufacture of other non-metallic mineral products	-2.1	2.0	2.9	0.2	-1.0	0.7	-1.8	2.5	8.9	12.3	-3.2	-3.0	3.3
C24	Manufacture of basic metals	-4.9	-3.1	-1.4	-0.6	-3.4	2.9	-3.0	3.0	6.8	23.0	-14.0	0.1	3.1
C25	Manufacture of fabricated metal products, except machinery and equipment	-4.6	4.0	1.9	-0.4	0.0	0.0	-1.0	0.5	10.3	15.1	-6.8	-2.6	3.0
C26	Manufacture of computer, electronic and optical products	-2.2	12.3	6.2	-5.6	-7.7	-4.7	-8.1	-6.2	0.8	10.9	-9.4	-4.2	-1.9
C27	Manufacture of electrical equipment	-4.2	2.4	2.2	0.2	-1.1	-1.0	-4.3	0.6	5.2	12.2	-8.7	2.2	2.0
C28	Manufacture of machinery and equipment n.e.c.	-2.8	2.9	2.8	1.5	-1.9	-2.6	-3.7	-1.6	4.3	27.7	-9.1	-3.7	2.8
C29	Manufacture of motor vehicles, trailers and semi-trailers	0.1	1.1	0.6	0.5	-2.6	-0.5	0.2	-5.4	9.2	16.2	-15.5	-4.2	-0.6
C30	Manufacture of other transport equipment	-0.1	2.9	7.8	0.7	-1.2	0.6	-3.4	0.4	1.8	7.6	-0.1	-1.8	1.5
C31	Manufacture of furniture	N/A	5.5	4.5	-0.6	-1.1	-0.1	-0.2	0.3	7.0	10.3	-3.9	-3.5	1.9
C32	Other manufacturing	-10.7	1.1	-0.9	2.0	0.6	-1.5	-2.4	3.1	3.9	3.3	-5.3	0.3	1.0
C33	Repair and installation of machinery and equipment	-2.3	5.1	5.9	2.4	-2.4	0.8	-4.9	0.0	2.5	12.9	-6.2	-5.1	0.6
D	ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	-1.4	-0.8	1.9	-1.7	-1.3	0.1	4.3	5.1	4.5	8.8	-1.7	6.6	4.6
E	WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F	CONSTRUCTION	-5.8	3.4	3.0	0.1	1.4	5.9	3.3	6.8	6.4	0.4	-2.5	-0.4	2.1

N/A: data not available.
Source: Eurostat.

Table 7.7: EU-27 - Revealed comparative advantage index

Sector	2007	2008	2009	2010
Manufacture of food products	1.20	1.12	1.10	1.09
Manufacture of beverages	1.61	1.58	1.62	1.71
Manufacture of tobacco products	1.52	1.55	1.61	1.67
Manufacture of textiles	0.81	0.76	0.69	0.67
Manufacture of wearing apparel	0.76	0.76	0.76	0.74
Manufacture of leather and related products	0.96	0.90	0.91	0.88
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	1.15	1.17	1.18	1.16
Manufacture of paper and paper products	1.28	1.30	1.35	1.35
Printing and reproduction of recorded media	1.20	1.61	1.79	1.88
Manufacture of coke and refined petroleum products	0.83	0.84	0.77	0.79
Manufacture of chemicals and chemical products	1.13	1.14	1.16	1.16
Manufacture of basic pharmaceutical products and pharmaceutical preparations	1.47	1.54	1.54	1.65
Manufacture of rubber and plastic products	1.18	1.21	1.18	1.19
Manufacture of other non-metallic mineral products	1.22	1.19	1.18	1.15
Manufacture of basic metals	0.92	0.88	0.82	0.86
Manufacture of fabricated metal products, except machinery and equipment	1.18	1.20	1.16	1.20
Manufacture of computer, electronic and optical products	0.60	0.60	0.57	0.57
Manufacture of electrical equipment	0.98	0.98	0.98	0.97
Manufacture of machineryand equipment n.e.c.	1.14	1.17	1.18	1.16
Manufacture of motor vehicles, trailers and semi-trailers	1.22	1.22	1.30	1.28
Manufacture of other transport equipment	0.85	0.87	1.15	1.21
Manufacture of furniture	1.27	1.23	1.20	1.13
Other manufacturing	0.80	0.81	0.75	0.77

Note: there was a transition from NACE REV 1 to NACE REV 2, therefore the data are only available from 2007.
Source: own calculations using Comtrade data.

Table 7.8: EU-27 - Relative trade balance (X-M)/(X+M)

Code (NACE Rev. 2)	Sector	2007	2008	2009	2010
C10	Manufacture of food products	-0.03	-0.03	-0.02	-0.01
C11	Manufacture of beverages	0.21	0.20	0.20	0.22
C12	Manufacture of tobacco products	0.03	0.06	0.06	0.05
C13	Manufacture of textiles	-0.01	-0.01	-0.02	-0.02
C14	Manufacture of wearing apparel	-0.19	-0.19	-0.21	-0.22
C15	Manufacture of leather and related products	-0.07	-0.07	-0.08	-0.08
C16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	0.00	0.02	0.04	0.03
C17	Manufacture of paper and paper products	0.04	0.04	0.06	0.06
C18	Printing and reproduction of recorded media	0.08	0.05	0.04	0.08
C19	Manufacture of coke and refined petroleum products	-0.03	-0.01	-0.05	-0.05
C20	Manufacture of chemicals and chemical products	0.03	0.03	0.06	0.04
C21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	0.07	0.08	0.08	0.10
C22	Manufacture of rubber and plastic products	0.04	0.04	0.04	0.04
C23	Manufacture of other non-metallic mineral products	0.08	0.08	0.09	0.08
C24	Manufacture of basic metals	-0.06	-0.03	0.01	-0.01
C25	Manufacture of fabricated metal products, except machinery and equipment	0.09	0.09	0.10	0.10
C26	Manufacture of computer, electronic and optical products	-0.11	-0.11	-0.11	-0.12
C27	Manufacture of electrical equipment	0.07	0.08	0.08	0.07
C28	Manufacture of machineryand equipment n.e.c.	0.16	0.17	0.20	0.19
C29	Manufacture of motor vehicles, trailers and semi-trailers	0.06	0.08	0.08	0.11
C30	Manufacture of other transport equipment	0.13	0.11	0.11	0.10
C31	Manufacture of furniture	0.04	0.04	0.03	0.02
C32	Other manufacturing	-0.04	-0.04	-0.04	-0.02

Note: there was a transition from NACE REV 1 to NACE REV 2, therefore the data are only available from 2007.
Source: own calculations using Comtrade data.

Table 7.9.1: Revealed comparative advantage index in manufacturing industries in 2010 - EU countries, Japan and Brazil, China, India and Russia.

	Food	Bevarages	Tobacco	Textiles	Clothing	Leather & footwear	Wood & wood products	Paper	Printing	Refined petroleum	Chemicals	Pharmaceuticals	Rubber & plastics	Non-metallic mineral products	Basic metals	Metal products	Computers, electronic & optical	Electrical equipment	Machinery	Motor vehicles	Other transport	Furniture	Other manufacturing
	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31	C32
Austria	0.92	2.25	0.38	0.70	0.53	0.70	4.47	2.19	1.55	0.25	0.50	1.46	1.35	1.40	1.29	2.15	0.40	1.35	1.40	1.29	0.79	1.22	0.80
Belgium	1.33	0.97	1.10	0.84	0.71	0.96	0.83	0.99	7.72	1.13	2.24	3.48	1.04	1.09	1.10	0.69	0.21	0.43	0.67	1.04	0.20	0.54	1.33
Bulgaria	1.53	0.87	5.38	1.15	3.23	1.29	1.66	0.75	0.22	2.14	0.54	0.86	0.92	2.23	2.76	0.76	0.27	1.10	0.78	0.35	0.33	1.37	0.36
Cyprus	2.22	1.23	40.71	0.13	0.46	0.64	0.16	0.41	0.00	0.00	0.69	6.25	0.37	0.20	0.60	0.94	0.85	0.40	0.45	0.22	0.80	1.02	1.78
Czech Rep.	0.46	0.64	1.65	0.87	0.34	0.38	1.41	0.97	1.18	0.25	0.54	0.31	1.71	1.71	0.65	2.09	1.00	1.60	1.14	2.04	0.38	1.51	0.85
Denmark	3.30	1.36	1.68	0.69	1.73	0.79	1.13	0.69	0.86	0.71	0.65	1.54	1.14	1.01	0.33	1.51	0.52	0.98	1.63	0.31	0.51	2.57	0.89
Estonia	1.29	2.28	0.28	1.32	1.08	0.67	8.96	0.82	0.40	2.60	0.61	0.13	1.42	1.49	0.52	1.93	0.63	1.45	0.64	0.72	0.57	2.97	0.64
Finland	0.35	0.45	0.02	0.26	0.17	0.24	5.11	9.43	0.75	1.57	0.87	0.52	0.84	0.74	1.82	0.90	0.51	1.30	1.43	0.25	1.07	0.24	0.49
France	1.16	4.40	0.63	0.56	0.71	1.06	0.62	1.01	1.67	0.53	1.31	1.77	1.11	0.99	0.75	0.94	0.44	0.87	0.86	1.15	4.13	0.52	0.77
Germany	0.76	0.67	1.85	0.52	0.49	0.36	0.83	1.23	2.60	0.23	1.03	1.37	1.31	1.01	0.79	1.31	0.56	1.20	1.57	1.85	1.30	0.80	0.61
Greece	2.89	1.80	6.52	1.57	2.07	0.75	0.60	0.77	1.92	2.13	0.94	1.84	1.25	2.16	1.99	0.97	0.24	0.75	0.38	0.09	0.87	0.37	0.44
Hungary	0.83	0.41	0.10	0.34	0.27	0.47	0.76	0.82	0.10	0.42	0.57	0.97	1.20	1.15	0.33	0.77	1.75	1.69	0.81	1.71	0.16	0.93	0.26
Ireland	1.39	1.87	0.54	0.10	0.15	0.08	0.41	0.11	0.00	0.22	3.06	8.11	0.32	0.25	0.08	0.24	0.70	0.22	0.31	0.02	0.31	0.09	1.65
Italy	0.92	2.28	0.02	1.36	1.57	2.98	0.54	1.04	1.13	0.85	0.73	1.02	1.37	1.99	1.01	1.76	0.21	1.08	1.83	0.73	0.93	2.42	1.02
Latvia	1.60	6.03	1.62	1.13	1.13	0.26	21.28	0.86	1.75	0.71	0.51	1.23	1.02	1.84	1.43	1.53	0.45	0.62	0.51	0.63	0.29	2.56	0.47
Lithuania	1.89	1.47	6.45	1.04	1.36	0.32	3.58	1.08	0.12	4.80	1.28	0.38	1.13	0.87	0.19	1.04	0.23	0.50	0.56	0.69	0.49	5.73	0.39
Luxembourg	0.95	0.88	6.60	2.32	0.39	0.57	2.38	1.93	0.04	0.02	0.54	0.14	4.12	2.47	4.14	1.24	0.26	0.72	0.75	0.61	0.81	0.16	0.24
Malta	0.96	0.26	0.02	1.14	0.18	0.13	0.06	0.02	1.10	0.01	0.28	1.52	1.29	0.37	0.06	0.27	3.05	1.33	0.24	0.04	0.91	0.09	1.83
Netherlands	1.97	1.35	5.34	0.44	0.55	0.60	0.26	0.87	0.21	2.15	1.65	0.94	0.75	0.45	0.62	0.77	1.12	0.55	1.04	0.34	0.38	0.38	0.81
Poland	1.47	0.46	5.02	0.61	0.71	0.41	2.33	1.57	0.45	0.59	0.71	0.34	1.76	1.54	0.90	1.72	0.71	1.31	0.55	1.67	1.06	4.79	0.29
Portugal	1.20	3.79	5.09	1.98	2.31	3.12	4.24	2.55	0.90	0.69	0.76	0.38	1.87	3.51	0.63	1.87	0.32	1.00	0.47	1.38	0.17	2.87	0.28
Romania	0.45	0.26	5.77	1.06	2.25	2.49	4.24	0.33	1.60	1.01	0.50	0.41	1.49	0.54	1.03	1.10	0.57	1.44	0.75	1.88	1.06	3.49	0.27
Slovakia	0.48	0.37	0.00	0.33	0.58	1.21	1.25	1.15	0.46	0.75	0.40	0.18	1.42	1.08	1.21	1.56	1.31	1.00	0.69	2.28	0.28	1.55	0.32
Slovenia	0.54	0.59	0.00	0.70	0.42	0.63	2.85	1.83	0.21	0.42	0.87	2.22	1.73	1.57	1.04	2.02	0.21	2.26	0.96	1.62	0.15	2.91	0.46
Spain	1.64	2.19	0.49	0.80	1.20	1.22	0.79	1.42	0.39	0.59	1.19	1.34	1.21	2.14	1.09	1.30	0.20	0.86	0.67	2.19	1.07	0.78	0.38
Sweden	0.52	0.89	0.28	0.31	0.33	0.19	3.79	5.50	0.22	1.25	0.68	1.53	0.90	0.61	1.14	1.11	0.79	0.98	1.28	1.05	0.39	1.51	0.49
United Kingdom	0.71	3.70	0.80	0.52	0.61	0.48	0.18	0.70	1.32	1.31	1.23	2.55	0.92	0.74	0.74	0.79	0.65	0.69	1.09	1.25	1.61	0.39	1.10
EU-27	1.09	1.71	1.67	0.67	0.74	0.88	1.16	1.35	1.88	0.79	1.16	1.65	1.19	1.15	0.86	1.20	0.57	0.97	1.16	1.28	1.21	1.13	0.77
USA	0.91	0.75	0.27	0.53	0.15	0.20	0.62	1.20	0.55	1.12	1.48	1.07	1.03	0.76	0.69	0.94	0.98	0.88	1.39	1.01	0.44	0.48	1.59
Japan	0.09	0.06	0.07	0.40	0.02	0.02	0.02	0.29	0.18	0.34	0.95	0.16	1.08	1.01	1.16	0.70	1.06	1.07	1.94	2.16	1.32	0.15	0.43
Brazil	5.36	0.11	0.54	0.42	0.04	2.00	1.97	3.15	0.29	0.50	0.93	0.35	0.73	1.12	1.70	0.79	0.10	0.45	0.76	1.08	1.42	0.64	0.17
China	0.37	0.09	0.16	2.46	2.73	2.50	0.90	0.37	0.18	0.25	0.48	0.22	0.93	1.46	0.51	1.29	1.83	1.44	0.72	0.25	0.88	2.12	1.15
India	1.15	0.10	0.47	3.12	1.95	1.21	0.10	0.24	0.88	3.50	0.96	0.93	0.57	0.77	1.37	0.85	0.16	0.40	0.41	0.41	1.00	0.32	5.03
Russia	0.53	0.26	1.17	0.06	0.02	0.11	3.51	1.01	0.14	8.90	1.40	0.05	0.24	0.50	3.28	0.28	0.09	0.20	0.17	0.09	0.67	0.14	0.08

Source: Own calculations using COMTRADE data.

Table 7.9.2: Relative trade balance (X-M)/(X+M) in manufacturing industries in 2010 - EU countries, Japan and Brazil, China, India and Russia.

	Food	Bevarages	Tobacco	Textiles	Clothing	Leather & footwear	Wood & wood products	Paper	Printing	Refined petroleum	Chemicals	Pharmaceuticals	Rubber & plastics	Non-metallic mineral products	Basic metals	Metal products	Computers, electronic & optical	Electrical equipment	Machinery	Motor vehicles	Other transport	Furniture	Other manufacturing
	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31	C32
Austria	-0.05	0.53	-0.69	-0.02	-0.43	-0.20	0.43	0.23	-0.26	-0.59	-0.26	0.04	-0.03	0.00	0.04	0.11	-0.12	0.12	0.07	0.05	0.26	-0.17	-0.07
Belgium	0.15	-0.05	0.03	0.27	-0.01	0.17	0.00	-0.02	0.07	0.03	0.15	0.09	0.07	0.11	0.20	-0.04	-0.17	-0.04	0.05	-0.07	0.04	-0.17	0.06
Bulgaria	-0.09	-0.17	0.41	-0.45	0.52	0.05	0.19	-0.38	-0.80	0.14	-0.38	-0.23	-0.29	0.13	0.39	-0.31	-0.36	-0.07	-0.17	-0.26	-0.01	0.16	-0.24
Cyprus	-0.70	-0.88	-0.28	-0.93	-0.92	-0.87	-0.97	-0.91	-1.00	-1.00	-0.75	-0.05	-0.90	-0.97	-0.73	-0.81	-0.51	-0.88	-0.81	-0.94	-0.86	-0.89	-0.52
Czech Rep.	-0.21	0.09	0.36	0.09	-0.16	-0.25	0.34	-0.05	0.16	-0.14	-0.17	-0.40	0.02	0.26	-0.22	0.18	-0.12	0.14	0.19	0.35	0.20	0.30	0.18
Denmark	0.28	-0.16	0.52	-0.02	-0.04	-0.22	-0.32	-0.37	-0.09	-0.20	-0.10	0.15	-0.08	-0.13	-0.34	0.05	-0.11	-0.03	0.25	-0.40	-0.43	0.19	-0.07
Estonia	-0.03	-0.24	-0.58	0.04	0.02	-0.10	0.45	-0.24	-0.71	-0.12	-0.24	-0.69	-0.11	0.04	-0.27	0.14	-0.07	0.04	-0.07	0.04	0.14	0.59	0.04
Finland	-0.42	-0.42	-0.97	-0.35	-0.68	-0.43	0.55	0.81	-0.48	0.28	-0.01	-0.24	-0.03	-0.10	0.33	-0.01	-0.09	0.18	0.25	-0.48	0.37	-0.59	-0.09
France	-0.06	0.63	-0.58	-0.14	-0.37	-0.13	-0.36	-0.18	0.19	-0.35	0.03	0.08	-0.11	-0.18	-0.09	-0.12	-0.22	-0.05	-0.04	-0.05	0.29	-0.52	-0.16
Germany	0.06	-0.04	0.58	0.03	-0.30	-0.29	0.10	0.14	0.33	-0.36	0.14	0.14	0.23	0.19	0.01	0.25	-0.04	0.23	0.40	0.40	-0.03	-0.10	0.07
Greece	-0.32	-0.39	-0.11	-0.18	-0.37	-0.69	-0.66	-0.71	-0.45	-0.16	-0.52	-0.57	-0.33	-0.22	0.01	-0.37	-0.69	-0.42	-0.63	-0.88	-0.83	-0.82	-0.70
Hungary	0.13	0.07	-0.74	-0.17	-0.02	-0.07	0.11	-0.07	-0.81	-0.03	-0.07	0.04	-0.01	0.12	-0.30	-0.14	0.07	0.09	-0.07	0.42	0.29	0.42	0.00
Ireland	0.27	0.22	0.04	-0.34	-0.62	-0.65	-0.01	-0.68	-0.98	-0.50	0.69	0.77	-0.24	-0.29	-0.30	-0.15	0.32	-0.15	0.19	-0.78	-0.60	-0.61	0.55
Italy	-0.13	0.59	-0.99	0.20	0.11	0.26	-0.42	-0.07	0.09	0.26	-0.21	-0.11	0.25	0.41	-0.12	0.42	-0.48	0.20	0.45	-0.15	0.26	0.63	0.13
Latvia	-0.23	0.25	-0.35	-0.10	-0.03	-0.57	0.79	-0.43	-0.46	-0.59	-0.41	-0.24	-0.26	-0.03	0.07	-0.01	-0.17	-0.26	-0.23	-0.11	-0.46	0.30	-0.30
Lithuania	0.13	-0.18	0.56	-0.11	0.27	-0.28	0.29	-0.17	-0.83	0.79	-0.01	-0.41	0.01	-0.12	-0.42	0.05	-0.25	-0.12	-0.08	-0.07	0.24	0.83	0.04
Luxembourg	-0.30	-0.59	-0.08	0.64	-0.47	-0.18	0.19	-0.05	-0.88	-0.99	-0.39	-0.69	0.35	0.04	0.40	-0.12	-0.34	-0.12	0.01	-0.50	-0.45	-0.86	-0.46
Malta	-0.46	-0.82	-0.98	0.41	-0.68	-0.74	-0.90	-0.98	-0.49	-1.00	-0.61	0.18	-0.02	-0.74	-0.84	-0.61	0.34	-0.02	-0.52	-0.81	-0.74	-0.91	0.35
Netherlands	0.27	0.17	0.71	0.08	-0.17	-0.06	-0.54	-0.01	-0.43	0.19	0.24	0.07	0.00	-0.18	0.00	0.02	0.01	-0.02	0.22	-0.19	0.01	-0.34	0.03
Poland	0.17	-0.10	0.79	-0.30	-0.06	-0.31	0.40	-0.05	-0.35	0.02	-0.26	-0.46	0.05	0.13	-0.07	0.08	-0.17	0.14	-0.27	0.25	0.13	0.75	-0.26
Portugal	-0.36	0.40	0.58	0.00	0.12	0.17	0.36	0.13	-0.24	-0.14	-0.38	-0.63	0.05	0.34	-0.35	0.11	-0.39	-0.13	-0.34	-0.21	-0.44	0.27	-0.58
Romania	-0.49	-0.43	0.70	-0.48	0.53	0.08	0.53	-0.63	-0.17	0.11	-0.40	-0.57	-0.23	-0.50	-0.09	-0.33	-0.22	-0.15	-0.27	0.28	0.61	0.61	-0.25
Slovakia	-0.12	-0.22	-1.00	-0.15	0.09	0.26	0.31	0.18	-0.10	0.26	-0.11	-0.53	0.06	0.08	0.29	0.09	-0.05	0.04	0.07	0.28	0.40	0.32	0.09
Slovenia	-0.33	-0.17	-1.00	-0.04	-0.31	-0.33	0.11	0.10	-0.74	-0.60	-0.17	0.37	0.12	-0.02	-0.14	0.16	-0.27	0.34	0.11	0.08	-0.19	0.34	-0.07
Spain	0.02	0.21	-0.80	-0.06	-0.29	-0.13	-0.13	0.00	-0.58	-0.41	-0.09	-0.11	-0.03	0.31	0.10	0.07	-0.55	-0.07	-0.12	0.16	0.17	-0.28	-0.43
Sweden	-0.31	-0.12	-0.35	-0.20	-0.43	-0.48	0.55	0.70	-0.65	0.14	-0.14	0.39	-0.06	-0.23	0.12	0.09	0.00	0.03	0.17	0.00	0.15	0.08	-0.07
United Kingdom	-0.45	0.07	-0.40	-0.31	-0.59	-0.58	-0.83	-0.47	0.30	0.08	-0.06	0.16	-0.23	-0.28	-0.14	-0.24	-0.26	-0.24	0.00	-0.17	0.08	-0.69	-0.18
EU-27	-0.01	0.22	0.05	-0.02	-0.22	-0.08	0.03	0.06	0.08	-0.05	0.04	0.10	0.04	0.08	-0.01	0.10	-0.12	0.07	0.19	0.11	0.10	0.02	-0.02
USA	-0.02	-0.49	-0.17	-0.36	-0.89	-0.83	-0.43	0.01	0.40	-0.12	0.15	-0.22	-0.16	-0.25	-0.21	-0.16	-0.27	-0.25	0.02	-0.32	-0.43	-0.71	-0.21
Japan	-0.84	-0.81	-0.95	-0.12	-0.97	-0.95	-0.98	-0.17	0.32	-0.41	0.21	-0.59	0.38	0.30	0.34	0.20	0.16	0.35	0.63	0.79	0.56	-0.62	-0.27
Brazil	0.79	-0.81	0.90	-0.46	-0.76	0.62	0.87	0.55	-0.25	-0.62	-0.42	-0.63	-0.27	0.07	0.20	-0.16	-0.83	-0.42	-0.41	-0.14	-0.01	0.42	-0.55
China	0.09	-0.42	0.70	0.70	0.96	0.81	0.36	-0.14	0.29	-0.14	-0.27	0.24	0.37	0.60	-0.14	0.59	0.24	0.31	-0.04	-0.17	0.40	0.92	0.74
India	0.19	-0.11	0.82	0.65	0.95	0.63	-0.39	-0.51	-0.29	0.55	-0.32	0.45	0.07	0.06	-0.47	0.11	-0.66	-0.26	-0.45	0.27	-0.13	0.07	0.22
Russia	-0.62	-0.77	0.19	-0.87	-0.97	-0.90	0.64	-0.20	-0.86	0.93	0.10	-0.94	-0.72	-0.49	0.56	-0.71	-0.83	-0.78	-0.82	-0.89	-0.07	-0.78	-0.83

Source: Own calculations using COMTRADE data.

Table 7.10: Revealed comparative advantage index in service industries in 2010- EU countries, US, Japan and Brazil, China, India and Russia.

	Communication	Computer and information	Construction	Finance	Insurance	Other business services	Personal, cultural and recreational	Transportation	Travel
Austria	0.95	0.60	0.83	0.28	0.98	1.05	0.63	1.15	1.49
Belgium	1.70	0.72	0.76	0.50	0.57	1.49	0.96	1.42	0.49
Bulgaria	1.20	0.93	1.10	0.06	1.01	0.49	0.85	0.93	2.29
Cyprus	0.33	0.17	0.23	1.84	0.28	1.17	0.65	1.17	1.14
Czech Republic	0.96	0.98	1.81	0.04	0.61	0.98	1.21	1.19	1.47
Denmark	0.34	0.48	0.24	0.15	0.22	0.65	0.92	2.97	0.40
Estonia	1.65	0.74	1.83	0.28	0.10	0.76	0.41	1.92	1.02
Finland	0.43	3.93	1.58	0.28	0.19	1.44	0.04	0.54	0.00
France	1.15	0.18	1.69	0.24	0.40	0.90	1.79	1.21	1.38
Germany	0.83	1.11	1.91	0.70	1.12	1.27	0.59	1.14	0.61
Greece	0.41	0.21	0.73	0.06	0.51	0.21	0.65	2.66	1.44
Hungary	0.88	0.99	0.77	0.11	0.08	1.14	8.49	0.94	1.19
Ireland	0.28	6.24	0.00	1.10	4.94	1.18	0.00	0.24	0.18
Italy	2.58	0.34	0.04	0.35	1.38	1.03	0.41	0.72	1.69
Latvia	0.97	0.59	0.83	0.83	0.35	0.65	0.41	2.40	0.75
Lithuania	1.03	0.15	0.80	0.12	0.02	0.31	0.51	2.87	1.07
Luxembourg	1.48	0.19	0.25	8.23	2.49	0.49	3.82	0.25	0.27
Malta	0.42	0.22	0.00	0.89	0.55	0.63	46.84	0.46	1.13
Netherlands	1.93	1.08	1.13	0.19	0.31	1.33	0.94	1.30	0.58
Poland	0.64	0.77	1.57	0.23	0.26	1.16	1.21	1.31	1.26
Portugal	1.00	0.26	1.11	0.12	0.26	0.74	1.99	1.30	1.87
Romania	2.42	1.96	2.96	0.19	0.20	0.90	1.39	1.42	0.56
Slovak Republic	1.22	0.96	1.08	0.10	0.31	0.61	1.54	1.50	1.66
Slovenia	1.76	0.42	1.24	0.11	0.75	0.67	1.10	1.27	1.81
Spain	0.64	0.85	1.30	0.50	0.41	0.91	1.83	0.83	1.82
Sweden	0.98	1.87	0.34	0.23	0.40	1.55	1.11	0.75	0.75
United Kingdom	1.25	0.89	0.34	2.71	1.59	1.28	3.24	0.60	0.55
EU-27 TOTAL	1.12	1.16	0.93	1.12	1.13	1.10	1.63	1.04	0.89
United States	0.78	0.41	0.49	1.65	1.26	0.71	0.00	0.63	1.07
Japan	0.19	0.12	2.92	0.35	0.42	1.17	0.14	1.34	0.41
Brazil	0.51	0.11	0.03	0.88	0.61	1.93	0.44	0.76	0.81
China	0.27	0.88	3.28	0.11	0.47	1.40	0.09	0.97	1.16
India	0.43	7.48	0.16	0.66	0.67	0.91	0.35	0.52	0.50
Russian Federation	1.12	0.49	2.26	0.32	0.48	1.11	1.35	1.62	0.85

Source: IMF, OECD.