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CENTROPE Regional Development Report 2010

Focus on Spatial Integration

Roman Römisch (wiiw),
Peter Huber, Klaus Nowotny (WIFO),
Ulrike Strauss (wiiw)

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Abstract

Integration with the EU or other areas like the Danube region is likely to benefit the CENTROPE regions in a differentiated way. This report will analyse the extent of spatial integration, the future potential for it, as well as strengths, weaknesses and likely points of conflicts in the integration process of the CENTROPE focusing on both integration among the regions of CENTROPE as well as on integration of the CENTROPE within the EU 27 and other areas (such as the Danube region). To this end the report will deal with the following issues: the general economic development in the CENTROPE regions, by type of regions; regional FDI in the CENTROPE and enterprise cooperation within the CENTROPE; regional trading patterns; labour mobility in the CENTROPE.

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Focus Report on Spatial Integration

1. Introduction

The aim of the Focus Report on Spatial Integration is to analyse the current extent of economic integration as well as the future integration potential of the CENTROPE regions – firstly from the point of view of integration within CENTROPE itself and secondly with respect to the integration of the individual CENTROPE regions with other economic areas, especially the EU. Integration in this report is explicitly understood as economic integration. As such it covers the changes in flows of goods (and services), capital (foreign direct investment – FDI) and persons across borders due to a continuing process of decreasing barriers to these flows.

Special emphasis will be put on the economic effects that do or potentially could arise due to integration within CENTROPE or integration of the CENTROPE regions with other economic areas. Increasing integration, at least at the aggregate, is usually considered to raise economic efficiency (through greater competition, better allocation of resources, opening of markets, greater mobility of capital etc.) and consequently the level and also the growth rate of income. At the same time, these positive effects at the aggregate level are not necessarily evenly distributed amongst the integrating regions. Thus, e.g., the reallocation of production factors, the agglomeration of economic activity (or its dispersion) might benefit some regions more than others, and hence the perception of this integration process might be quite different across the population in the involved regions. As a consequence integration of regions of different countries might be a difficult process. The more so as those regions that do not benefit to the same extent than other regions or in fact even may lose from integration are not easily compensated by the winning regions Therefore integration, even if considered to be politically, socially or at the aggregate even economically desirable, might be questioned if it is considered to be unbalanced across the participating regions.

The analysis in this report serves to identify the benefits of integration in CENTROPE, just as the distribution of these benefits across the CENTROPE regions. Moreover the report intends also to show how these benefits could be increased, and if necessary more evenly distributed across regions.

Thus, integration within CENTROPE and the effects on the CENTROPE regions is one main issue of the report. At the same time, integration of CENTROPE with the EU or other economic areas is another main issue, for the simple reason that economic integration of the CENTROPE regions with the EU, especially with Germany, the rest of the EU and increasingly with the CEE countries in- and outside the EU, is in economic terms far more important than mere within CENTROPE integration.

Still, there is a link, or - more accurately - a tension between integration within CENTROPE and integration of CENTROPE with the EU; and this is the conflict between competition between and co-operation amongst CENTROPE regions.

Integration with the EU or other areas is likely to benefit the CENTROPE regions in a differentiated way. The CENTROPE consists of different types of regions, some of them being highly urbanised agglomerations, others being less densely population industrial regions and some of them being more of a rural nature. All these different types of regions have their distinct comparative advantages, if compared to the other CENTROPE regions or other regions inside (and outside) the EU. Those differences in comparative advantages, due to differences in the endowments with skills, wage costs, in the specialisation in certain economic activities etc., have an impact on how the CENTROPE regions benefit from integration. For example it shows that some CENTROPE regions, like Western Hungary or Western Slovakia benefitted in income and employment terms from large inflows of FDI in the manufacturing industry sectors, others like Bratislava benefitted from FDI in the services sector, while some regions had fewer positive impacts. In the end the differences in comparative advantages are in one way or the other causal for the ability of the CENTROPE regions to participate in the EU wide economic integration and as such are a potential source for increasing disparities between the CENTROPE regions.

The simultaneous integration within CENTROPE and of CENTROPE with the EU (or other areas) bears a potential conflict between competition and political, economic integration tendencies. Thus a closer co-operation in certain fields (like education, infrastructure, public services etc.) might be opposed with each individual region’s need to secure employment and income for its own population. And this opposition might be the stronger the more the benefits from co-operation are unequally distributed across the CENTROPE regions. Yet, this tension between competition and (within CENTROPE) integration neither can nor should be fully bridged, because, as desirable as integration might be, competition is an important source for economic development, for innovation, gains in efficiency and

the like. Notably however, deeper integration also has its merits as it firstly raises the resilience of the integrating areas against outside shocks and secondly integration in specific areas (like education, health services etc.) might raise the competitiveness of all participating regions to approximately the same amount.

Against this background the report will analyse the extent of spatial integration, the future potential for it, as well as strengths, weaknesses and likely points of conflict in the integration process.

For this the report will deal with the following issues described in more detail below:

- Regional FDI in CENTROPE
- Regional trading patterns
- Labour mobility in CENTROPE
- Enterprise co-operation in CENTROPE.

The report will take an explicit bird's eye view on these topics. On the one hand this is due to a sheer necessity, because each of the topics dealt with in this report, bears a large number of interesting details, often dealing with very special and locally confined issues, that in their sum cannot be reasonable analysed within a single report. Still, the report intends to derive a comprehensive overview of the topics, which in turn will provide a high value added to the stakeholders. Firstly, the overview will put in perspective all smaller initiatives and actions within CENTROPE, and as such will serve to improve the strategic planning and co-ordination of this kind of activities. Secondly, by using and generating information that so far does not exist in this form, the report will increase our knowledge about CENTROPE. Thirdly, the results from our bird's eye view analysis allows stakeholder to identify important strategic factors in the integration of the CENTROPE regions, that can be analysed in more detail and depth in subsequent studies, just as the questions that will arise out of this report.

Importantly, in this report all CENTROPE regions will be treated the same; region specific concerns, issues and needs etc. will be addressed if necessary from a scientific point of view, but in general we will follow the principle that within CENTROPE all regions are equal.

2. Regional foreign direct investment

Authors: Ulrike Strauss, Roman Römisch (both wiiw)

2.1. *Introduction*

Foreign direct investments are an important source for economic development in the new member states (NMS) in Central and Eastern Europe (CEE) in general, and especially for the NMS countries in CENTROPE. The fall of the iron curtain, the transition to a market economy, the accession to the EU were - for many reasons - important steps for NMS countries and amongst other things lead to a deeper integration of these countries with the European and global economy. The opening of the NMS markets for trade and investment flows led to a large inflow of FDI, as, on the one hand, the NMS, and especially the CENTROPE economies have a favourable geographic location, being close to large European markets, combined with a large pool of skilled and educated workers, relatively low wages, generous investment incentives. On the other hand the NMS economies also had a lack of domestic capital, entrepreneurial experience, moreover many industries and firms were not competitive on European markets. The prospects to generate economic growth and development out of own resources seemed to be limited, while opening up to foreign investment flows (pari passu with privatisation of state owned companies) in many countries promised a rapid change to the better.

Indeed, over the last decade or more FDI flows into the NMS countries were key for the structural change of the economy, the increase in productivity, the provision of jobs and incomes (though many jobs were lost during the transition) and raising living standards. At the same time, FDI flows were quite unevenly distributed across the regions within the respective NMS countries and as a consequence also the path of economic development differed widely across the regions. These differences in regional FDI flows are rooted in the differences in the regions' characteristics, which are determinants not only for the amount of FDI flows going to a region, but also for the type of FDI that is coming in.

This part of the study analysis FDI flows to the CENTROPE countries and regions. Firstly, an overview of FDI developments at the level of countries will be given. Secondly we will look in detail at the CENTROPE regions and analyse the amount of FDI as well as the type of FDI they have received, how competitive they are in attracting FDI compared to other European regions, and how integrated the CENTROPE regions are in terms of FDI

relationships. After a short overview of the relevant theoretical background and concepts, country-level FDI will be analysed followed by an analysis of regional FDI, finally conclusions will be provided.

2.2. Theoretical background

Foreign trade and foreign direct investment (FDI)[1] are two of the major channels for economic integration between two countries. In part they can be seen as alternative forms of supplying a host country's market with goods and services, neglecting other motives for FDI at the moment. Usually foreign trade is considered to be the less demanding, less expensive form to sell the goods and services of a home country to a host country, while inter alia FDI might be associated with a number of costs, including communication and transport costs, higher costs of stationing personnel abroad, barriers due to language and customs, and being outside the local business and government network.

Therefore, a multinational enterprise (MNE) must have some intrinsic advantages, which makes the engagement in FDI superior to foreign trade as the form of supplying a host market. A conceptual framework for determining these advantages was introduced by Dunning (*Dunning*, 1989). He suggested three main factors, on which the extent and pattern of foreign owned production in a host country depend. This has become known as the OLI framework: ownership, location and internalization:

Ownership advantages refer to the extent and nature of the technological, managerial and marketing assets a firm possesses and can acquire, and the way in which these assets are organized and geographically dispersed. These comprise the ownership-specific or comparative advantages of firms, determining their ability to service particular markets vis-à-vis their competitors, such as establishing a successful brand image, product innova-

[1] According to the IMF Balance of Payment Manual, Revision 5, foreign direct investment occurs when an investment is made in order to acquire lasting interest in enterprises outside of the investor's economy. Furthermore, the investor's purpose is to gain an effective voice and influence in the management of the enterprise. Some degree of equity ownership is almost always considered to be associated with an effective voice in the management of an enterprise; the BPM5 suggests a threshold of 10 per cent of equity ownership to qualify an investor as a foreign direct investor.
The components of FDI are equity capital, reinvested earnings and other capital (mainly intra-company loans). As countries do not always collect data for each of those components, reported data on FDI are not fully comparable across countries. In particular, data on reinvested earnings, the collection of which depends on company surveys, are often unreported by many countries (UNCTAD, 2003).

tions, organizational and marketing systems, innovative capacity, non-codifiable knowledge, marketing, finance, know-how etc.

Location advantages refer to the fact that the foreign market must offer a certain advantage that makes it profitable to produce the goods and services in the host country rather than simply produce them in the home country and export it to the foreign country. Tariffs, quotas, transport costs, factor prices (e.g. wages) are obvious sources of location advantages, but also factors such as access to customers or specific production inputs, or infrastructure provisions can be important.

Internalization advantages are considered to be the benefits arising from internalizing transaction costs through owning a foreign affiliate rather than licensing the right to use the assets of an indigenous firm located in the country of production. This is based on the assumption that it is less profitable for a firm, which has specific advantages, to lease its right to those advantages to firms in the foreign country than to become a MNE and probably incur high setup costs. Such costs are search costs, negotiation costs, costs of monitoring service quality, and costs imposed by a possible principal – agent problem. Furthermore FDI offers advantages like being able to control supplies and the conditions of sale of inputs, to control the market outlets, to engage in practices, e.g. cross subsidization, transfer pricing etc., as a (anti-) competitive strategy and to compensate for the absence of (foreign exchange) future markets and political risk.

Apart from Dunning other economic models of FDI are concerned with two different types of foreign investment, depending on the type of MNE that invests in foreign markets. There are two different types of MNEs identified vertically integrated MNEs (producing goods in a value chain over several countries), and horizontally integrated MNEs (producing the same goods in different countries).

Helpman and Krugman (1985) deal with the former type of MNEs, i.e. firms with production facilities in more than one country, whereby each facility produces goods of different production stages (intermediate – final goods). Their model focuses on two countries with different factor endowments (e.g. one country has an abundant supply of highly skilled workers, the other an abundant supply of low skilled workers). Each country is a net exporter of the good which uses that factor intensively in production, with which this country is relatively well endowed. As long as technology is sufficient to employ all the factor endowments in both countries fully there is no need for MNEs to establish, and factor prices (e.g. wages) will actually equalize across the countries.

The crucial point in Helpman's and Krugman's theory is, if factor endowments are such that they cannot be employed fully with a given technology, there is room for differences in factor prices. In other words, this situation is given if one country has relatively more low skilled workers than highly skilled workers (e.g. China) compared to another country where there are relatively more highly skilled workers (e.g. the EU 15), i.e. the share of highly skilled workers in total employment is higher in the EU 15 than in China. In principal therefore relative wages of low skilled will be lower (importantly: in relative terms) in China than in the EU 15, while in the EU 15 wages of highly skilled are relative lower (wage pressure on highly skilled are higher than for low skilled, because there is an excess supply of highly skilled). In the *Helpman – Krugman* model the consequence is that these differences in relative wages are an incentive for firms to partly relocate their production. That is firms locate their highly skill intensive part of production in the country, where highly skilled labour is relatively cheap, and the low skill intensive part is placed in the country, where low skilled labour is relatively cheap. A drawback of this model is certainly that it is only suited for the examination of trade and FDI relationships between countries with significant disparities in factor endowments, i.e. North-South (e.g. EU 15-China) trade and investment.

By contrast, if countries are similar in factor endowments it is more likely that horizontally-integrated MNEs occur. This has been shown by *Markusen* (1995), *Markusen and Venables* (1995, 1996a, 1996b). In their work they deal explicitly with horizontally integrated firms, and the key assumptions are economies of scale at the level of firms, which may operate several production plants. In other words it is more efficient to have one single, big firm that operates two plants, as two smaller firms with each operating one plant, as the first can economize e.g. on administration or input costs. If such firm specific economies of scale exist the existence of MNEs (and FDI) depends on the trade costs between two countries and on the existence and size of plant specific economies of scale.

Markusen argues that if trade would be completely costless between two countries that are identical in technologies, factor endowments and preferences, only national firms would exist, exporting to each other's markets, because no firm can afford to incur the fixed costs of a second plant in the foreign market. On the other hand, if trade costs are high, a multinational has lower fixed costs per market (due to firm specific economies of scale), and therefore it could outcompete national firms, which face prohibitive high export costs. At intermediate levels of transport costs the existence of multinationals depends on whether

firm specific fixed costs and transport costs are relative large compared to plant-specific fixed costs. A corollary of this is that multinational activity is more likely to arise between countries of similar size.

Alternatively to these theories one could also to refer to the new economic geography (NEG) to formulate some of the key driving forces of FDI. The advantage of the NEG is that it can be applied directly to the situation in CENTROPE, an area mainly consisting of border regions. With the EU enlargement of the ten new member states in 2004 trade and investment barriers between neighbouring countries were ultimately reduced, which potentially led to an alteration in the regional allocation of international trade that could eventually shift activities to the regions located closer to foreign markets, i.e. the border regions. Before EU enlargement and even more so before the fall of the iron curtain the border regions in CENTROPE were more or less disadvantaged because of their peripheral location within their countries. This limited the incentives for domestic producers to locate there. However with EU integration and the creation of an area overlapping national borders, border regions along the national frontiers, especially in the NMS CENTROPE could benefit from the integration process, because their market access strongly improved after the trade liberalization, due to their closer location to foreign demand. (*Lafourcade Paluzie-Hernandez*, 2005). There may, however, also be countervailing effect to the detriment of border regions, if opening borders puts firms in the border region at competition with more competitive firms located across the border.

2.2.1. Determinants and motives for FDI

Whether or not FDI flows into a region, as well as the size of these flows, depends very much on the region's characteristics and attractiveness for foreign firms. Apart from climatic conditions and the geographic location of a region, *UNCTAD* (1998) identifies three main spheres that determine a region's attractiveness: a) the policy framework for FDI, b) economic determinants and c) business facilitation.

As far as the policy framework is concerned this refers to a number of things like the economic, political and social stability of country/region, the rules regarding entry and operations, standards of treatment of foreign affiliates, policies on functioning and structure of markets, international agreements on FDI, privatization policy, trade policy (tariffs and non-tariff barriers), tax policy etc.:

Business facilitation is understood e.g. as investment promotion, investment incentives, hassle costs (related to corruption, administrative efficiency, etc.), social amenities etc.:

As far as the economic determinants are concerned, they may be separated according to three main motives of FDI: resource-seeking FDI, efficiency-seeking FDI and market-seeking FDI (*UNCTAD*, 1998).

Resource-seeking FDI occurs if foreign firms are interested in the host country's or region's raw materials, or the availability of low-cost unskilled labour or skilled labour. Furthermore foreign firms might invest in a region because it has technological, innovatory and other created assets (e.g. brand names) given an adequate physical infrastructure (ports, roads, power, tele-communication).

Efficiency-seeking FDI corresponds to the vertically integrated forms of FDI flows, as foreign firms want to benefit from the low production costs in the host country, partly to relocate their production from high cost to low cost destinations. Hence determinants for this kind of FDI are again the availability of low-cost unskilled labour or skilled labour, physical infrastructure, other input costs, e.g. transport and communication costs to/from and within host economy and costs of other intermediate products as well as the host country's membership in a regional integration agreement conducive to the establishment of regional corporate networks:

Market-seeking FDI is a substitute for foreign trade as the foreign companies' intention is to sell their goods and services directly in the host country's market. Therefore the main determinants for this kind of FDI are: the market size and per capita income of the host country/region, market growth, access to regional and global markets, country-specific consumer preferences as well as the structure of markets.

These different forms of FDI might also have different impacts on the receiving/host country or region (*Nunnenkamp and Spatz*, 2005):

"Resource-seeking FDI in the primary sector tends to involve a large up-front transfer of capital, technology and know-how, and to generate high foreign exchange earnings. On the other hand, resource-seeking FDI is often concentrated in enclaves dominated by foreign affiliates with few linkages to the local product and labour markets. Furthermore, its macroeconomic benefits can easily be embezzled or squandered by corrupt local elites. Rather than enhancing economic growth, resource-seeking FDI in the primary sector might lead the country into some kind of "Dutch Disease".

By contrast, efficiency-seeking FDI in some parts of manufacturing draws on the relative factor endowment and the local assets of host economies (*UNCTAD*, 1998, chapter IV). This type of FDI is more likely to bring in technology and know-how that is compatible to the host countries' level of development, and to enable local suppliers and competitors to benefit from spillovers through adaptation and imitation. Additionally, the world market orientation of efficiency-seeking FDI should generate foreign-exchange earnings for host economies. As a result, one would expect a relatively strong growth impact of FDI in industries that attract efficiency-seeking FDI.

Market-seeking FDI in services and other parts of manufacturing can benefit host countries' consumers by introducing new products and services, by modernizing local production and marketing and by increasing the level of competition in the host economies. However, fiercer competition may also lead to the crowding out of local competitors, especially if foreign affiliates command superior market power. Moreover, in the long run, the host countries' balance of payments is likely to deteriorate through the repatriation of funds since market-seeking FDI often does not generate export revenues, especially if the protection of local markets discriminates against exports. Hence, the growth impact of this type of FDI should be weaker than the growth impact of efficiency-seeking FDI" (*Nunnenkamp and Spatz*, 2005, p.57f.).

A recent study for the EU Commission DG Regio (Study on FDI and regional development, *Final Report*, 2006) conducted an empirical analysis of regional FDI in the EU regions. Its main findings with respect to the effect of FDI were:

a) Foreign firms exert significant productivity spillovers to domestic firms in the host regions, as the productivity of local firms increases as a result of foreign investment in their region.
b) FDI increases the demand for labour in the host region, but also cause a structural change in the sectors of economic activity.
c) Regional policies are important to attract FDI. Important determinants for FDI are: good infrastructure and accessibility, a highly educated regional workforce and a high level of spending on R&D attract FDI. Also good penetration of information- and communication technologies and a large pool of competitors, clients and suppliers within the firm's industry are shown to attract FDI. However, other factors that cannot be influenced at the regional level, such as firm specific conditions, national macro-conditions, market size, geography and language, are equally or more important.

d) FDI enhances the host regions economic growth and convergence at large

2.3. FDI in the CENTROPE countries

The following report is divided into two chapters. The first chapter describes the development of FDI in CENTROPE from the early 1990s until 2007. The second chapter deals with the performance of the CENTROPE countries during and after the financial crisis, starting in 2008 until 2010. One reason for this division is the very diverse development of FDI within the CENTROPE countries, especially between Austria and the NMS countries, but also between Slovakia and the Czech Republic or Hungary. Another important reason is the performance of FDI during the crisis. The global financial crisis caused extraordinary mechanisms, which require further explanations. These explanations will be provided in the introduction of chapter 2.

Austria

Table 1: Inward FDI in Austria, in EUR Mio.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Inward flows	9,227	6,358	147	5,489	2,564	8,672	6,324	22,762	4,682	6,203
In % of GFCF	18.5	13.0	0.3	11.2	5.2	17.4	12.5	43.1	8.5	12.4
Per capita	1,152	791	18	676	314	1054	765	2742	562	742
Inward stocks	33,493	39713	42,811	45,635	51,915	69,977	84,337	110,356	106,190	111,700
In % of GDP	16.1	18.7	19.6	20.4	22.3	28.7	32.8	40.6	37.5	40.7
Per capita	4,176	4,925	5,285	5,604	6,330	8,478	10,182	13,266	12,709	13,337

Source: Austrian National Bank, Eurostat.

Until the 1980s Austria used to be a net receiver of FDI flows, which means that inward flows exceeded outward flows and thus caused a negative FDI balance. Foreign direct investment was rather unimportant at that time with a share in GDP of 0.3 to 0.4% (Dell`mour). But with the fall of the Iron Curtain in 1989 the situation changed completely. FDI started to skyrocket and soon in 2002 outward flows exceeded inflows and Austria took up its position as a net investor.

Thus, inward flows have never played such an important role in the Austrian economy as in other economies. In the last 10 years the ratio of inward flows to gross fixed capital formation ranked between 5 and 13%, far below the EU 15 and EU 27 average. But two years are particularly striking: 2002 and 2007. With a volume of 147 Mio EURO and a

share in gross fixed capital formation (GFCF) of 0.31% Austria recorded a sudden setback in 2002 due to the 'dotcom' crisis, which in particular affected the electronic sector. The size of stocks was not affected and in the following year, the market had recovered again. In 2007 FDI inflows more than tripled due to the selling of one of Austria`s major financial institutes, the BA-CA, to the Italian UniCredit.

Also the ratio of inward stock to GDP has always been far below the EU 27 average and within the CENTROPE countries the lowest. It peaked in 2009 with about 41%, a value which Hungary had already reached 10 years earlier.

In contrast to the other CENTROPE countries, where the manufacturing sector is the main recipient of inward FDI, inward FDI in Austria is mainly concentrated on the services sector. Half of the stocks are in real estate, followed by financial intermediations (about 20%) and wholesale, retail trade, repair of motor vehicle (15%).

Czech Republic

Table 2: Inward FDI in the Czech Republic, in EUR Mio.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Inward flows	5,404	6,296	9,012	1,863	4,007	9,374	4,355	7,634	4,415	1,965
In % of GFCF	31.4	32.5	41.0	8.6	17.6	37.6	15.5	23.8	12.5	6.4
Per capita	526	615	883	182	392	916	424	739	424	187
Inward stocks	23,323	30,717	36,884	35,852	42,035	51,424	60,621	76,338	81,302	84,615
In % of GDP	37.9	44.5	46.1	44.3	47.6	51.3	53.3	60.0	55.0	61.7
Per capita	2,272	3,010	3,615	3,511	4,113	5,016	5,893	7,354	7,767	8,053

Source: wiiw Database incorporating national and Eurostat statistics.

After the so-called "Big Bang" in 1991, a shock therapy which led to a consistent liberalization and change in economic management, a wave of privatization took place which let FDI inflows surge. Between 1991 and 1995 more than 12180 companies were passed into private hands (*Schaft et.al.,* 2003). Within five years, the size of theFDI inward stock had increased nearly 13-fold. The ratio of FDI inflows to gross fixed capital formation increased from 8.5% in 1991 to 15.4% in 1995, inward stocks to GDP from 2.2% to 14.3%. Until 1993 the main recipient of FDI was the secondary sector, but in 1994 the tertiary sector was able to register a real boom in FDI inflows and from this time it remained the major recipient of FDI flows (*UNCTAD*, 2003). But the share of manufacturing in FDI inward stocks was still the highest.

Although privatizations started to decline after 1995, the Czech Republic didn't lose its attractiveness to investors. FDI became more and more important for the Czech economy and until 2002 the ratio of inward flows to gross fixed capital formation had grown to 41%, inward stock to GDP to 46%. The main driver of inflows was equity capital with a share of up to two thirds in total inflows. The most important recipient of FDI inflows was still the tertiary sector, closely followed by the secondary sector (*UNCTAD*, 2003).

The investment boom had a sudden end in 2003. Inflows dropped below the level of 1995, mainly caused by the large amount of divestment, which exceeded new investment. Reinvested earnings stagnated, while other capital became negative, which means that the still well-performing subsidiaries had to credit the parent companies. The size of inward stocks decreased for the first and only time in history by about 3%.

The crisis didn`t last for long and in the following year the situation had recovered again. The ratio of FDI inflows to gross fixed capital formation grew from 8.6% in 2003 to 17.6% in 2004 and the ratio of inward stocks to GDP from 44.3% to 47.6%. The share of manufacturing in FDI inward stocks remained the highest, but grew less than the services sector.

There is some evidence for a positive effect due to the EU accession in 2004. In terms of total FDI inflows, the ratio of inflows from the EU 15 slightly increased from average 74% between 2000 and 2003 to average 76% between 2004 and 2007. From the EU 25 it increased from average 78% to 86%. For the same period, the annual average growth rate of EU 15 stocks to the Czech Republic rose only slightly from 19.2% to 19.5%, for EU 25 stocks from 19.4 to 20.7%.

The following years were characterized by normal fluctuations in FDI inflows and its components equity capital, reinvested earnings and other capital, while the size of inward stock grew constantly to EUR 78 billion or 60% in terms of GDP by the end of 2007, the second highest among the NMS 10. In 2005 FDI inflows reached its peak due to the privatization of the Czech Telekom. But not only privatizations provoked investment. In 2007 no inflows due to privatizations were reported, but nevertheless inflows reached the third highest value in history and the highest non-privatization-related (*Hunya*, 2008). This shows the attractiveness of the Czech Republic to international investors. So it is not surprising that most international comparisons ranked the Czech Republic as one of the major leading FDI destinations among the NMS (*Hunya,* 2008). According to the Foreign Direct Investment Confidence Index 2010, a regular survey of global executives conducted by A.T.

Kearney (www.atkearney.com), the Czech Republic ranked 25th , the second highest position after Poland among the CEEC.

Hungary

Table 3: Inward FDI in Hungary, in EUR Mio.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Inward flows	2,998	4,391	3,185	18,88	3,439	6,172	5,454	2,852	4,897	1,550
In % of GFCF	24.9	32.0	19.5	11.4	18.5	30.2	27.8	13.3	21.5	8.0
Per capita	293	430	313	186	340	611	541	283	487	155
Inward stocks	24,578	31,045	34,575	38,329	45,134	51,644	60,876	65,044	62,829	68,189
In % of GDP	47.8	52.0	48.8	51.6	54.5	58.3	67.8	64.6	59.1	73.4
Per capita	2,410	3,051	3,409	3,789	4,470	5,125	6,048	6,475	6,264	6,810

Source: wiiw Database incorporating national and Eurostat statistics.

In 1990 the Hungarian government decided to sell state property as an instrument against the high foreign debt and first steps towards privatization were taken. Green Field investments of companies like Ikea, Tesco and Cora let FDI already burst in the early 1990s. Until 1993 the size of FDI inward stocks had increased more than 12 times. Inward FDI flows reached a first peak in 1995 due to the so-called "big privatization", where most gas and electricity suppliers were sold to strategic investors (*Voszka*, 1999). The ratio of inward FDI flows in gross fixed capital formation was more than 50%, a value Austria and the Czech Republic have still not reached. Following that record year, FDI inflows started to gradually decline, while the size of inward FDI stocks constantly increased. Interestingly, the sectoral distribution of inward FDI flows differs from the other CENTROPE countries. Although the tertiary sector remained the major recipient of inward flows, it declined between 1995 and 2000, while FDI in the secondary sector increased, which is the opposite development as for example in the Czech Republic. The next peak in FDI was registered in 2001 due to further foreign investment in the manufacturing sector. With a ratio of inward FDI stock to GDP of 52%, Hungary was one of the major recipients of FDI in the NMS region and the leading FDI country among the CENTROPE countries. But just as the other CENTROPE countries also Hungary was hit strongly by the following ‘dotcom’ crisis. Inward flows declined by about 40% and had a ratio in gross fixed capital formation of 11.4%, the lowest by then, but after Slovakia still the second highest within the CENTROPE countries. For the first time, divestment exceeded new investment and equity capi-

tal turned negative. Thanks to the relatively high reinvested earnings and other capital (the highest by then) inward FDI flows stayed positive. The manufacturing and the electricity sectors were affected most. The crisis had no impact on the size of inward stocks.

Although inward FDI recovered quickly from the 'dotcom' crisis, it stayed below the pre-crisis values. The accession to the EU in 2004 had only a slight impact on inward FDI. The average ratio of inward stocks from the EU 15 to total inward stocks between 2000 and 2003 increased from 76.4% to average 77.1% between 2004 and 2007. The ratio from EU 27 rose from average 77.1% to 78.6%. On the other hand, inward FDI stocks from the EU 15 and EU 27 grew less/more slowly than before the accession. FDI flows peaked once more in 2005 mainly due to increasing investment in the services` sectors. Although Hungary was still attractive to foreign investors, a slowdown in FDI was more and more observable. In terms of per capita inward flows, smaller countries fared better than Hungary and between the 'dotcom' and the financial crisis Hungary ranked second last or even last among the CENTROPE countries. Also in terms of per capita inward stock it lost its leading position among the NMS-10 countries to countries like Estonia or the Czech Republic. The main recipients of inward FDI flows were still the manufacturing and the services sectors. In terms of ratio to total inward FDI stocks, inward FDI stocks in the manufacturing sector declined from 45.7% in 2003 to 37% in 2007, while stocks in the services sector (financial intermediations and real estate) increased from 27% to 35%. A similar progress is also observable in the other CENTROPE countries.

Slovakia

Table 4: Inward FDI in Slovakia, in EUR Mio.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Inward flows	2,089	1,768	4,397	1,914	2,441	1,952	3,733	2,382	2,323	-36
In % of GFCF	36.7	26.3	61.9	26.2	29.9	19.1	31.6	16.6	14.4	-0.2
Per capita	3,88	329	817	356	454	362	692	441	430	-7
Inward stocks	5,129	6,495	8,563	12,617	16,068	19,968	25,517	29,058	32,606	34,887
In % of GDP	23.3	27.6	33.0	42.8	47.3	51.9	57.3	52.9	50.3	55.1
Per capita	954	1,207	1,592	2,345	2,984	3,705	4,731	5,380	6,024	6,431
	2,089	1,768	4,397	1,914	2,441	1,952	3,733	2,382	2,323	-36

Source: wiiw Database incorporating national and Eurostat statistics.

As in the Czech part of Czechoslovakia a first wave of privatization was started after the fall of the Iron Curtain. But the progress was stopped soon. Due to the following increase of unemployment and the galloping inflation two thirds of the Slovakian people claimed for an end of the privatization wave in 1992. In 1993 Czechoslovakia was split and in Slovakia privatization was stopped. In the following years under the governance of Prime Minister Vladimir Mečiar further privatizations were uneven due to very strict laws on privatizations, which also had impacts on FDI. Compared to the neighbouring countries Czech Republic and Hungary the ratio of inward flows to gross fixed capital formation in Slovakia was rather low (6.6% in 1994). In these terms the Czech Republic reported a peak of 15.4% in 1995 and Hungary of 50.8% also in 1995. A similar picture is given when looking at the ratio of inward stock to GDP. The main recipient was the manufacturing sector. But nevertheless, Slovakia was able to increase the size of its inward stocks between 1994 and 1997 by 156% (Czech Republic 124%, Hungary 181%). This may be surprising taking into account the relatively low levels of inflows in comparison with the Czech Republic and Hungary. So it is important to add, that Slovakia had started from a relatively low level in 1994. So a high increase was easily reached.

Under the new pro-reform government with Mikuláš Dzurinda as Prime Minister the country followed a path of economic reforms, with efforts in advancing privatization, corporate restructuring and improvement of public service delivery (Commission on Growth and Development, 2008). The result was a tripled size of inward flows in 1998. In the following years Slovakia was able to attract more and more investors. The privatization of telecommunications in 2000 led to a first peak on inward FDI. A ratio of FDI inflows to gross fixed capital formation of 36.8% was reported, which even exceeded the ones in the other CENTROPE-countries (AT: 18.53%, CZ: 31.4%, HU: 24.9%). The size of inward stock had more than doubled within 2 years. Another boost in FDI was reported in 2002 due to the privatization of the electricity supplier network and Slovakia reported the highest ratio of FDI inward flows to gross fixed capital within the CENTROPE countries (AT: 0.31%, CZ: 41%, HU: 19.5%, SK: 61.9%). The ratio of FDI inward stocks to GDP were still below the levels in the Czech Republic and Hungary, but constantly increasing. Traditionally the main receiver of FDI was the manufacturing sector, but also the sector of financial intermediations won more and more significance. The only sign of the ‘dotcom’ crisis can be found in the flow-component other capital, which turned negative in 2003, but had just a slight impact on total FDI. In contrast to the other CENTROPE countries equity capital in Slovakia stayed positive and in addition it was relatively high.

2004 was an important year for Slovakia as well as for foreign investors for two reasons. One reason was the accession to the EU. The other reason was the reform of the tax system. Slovakia replaced its complex tax system with its 21 categories of personal income taxes, five tax brackets, and scores of exemptions and deductions by a flat rate of 19%. The intention for the reform was mainly to build an investor-friendly climate. The plan succeeded. Especially for highly paid expatriate employees the relatively low flat tax made Slovakia more attractive. A $1.3 billion investment by the Korean automobile producer Hyundai Corp was secured and further new investment was landed in the following years[2].

Both, the EU-accession as well as the tax reform let FDI skyrocket, especially in the manufacturing and the financial sector but also in the real estate sector. Between 2004 and 2007 the size of inward stocks increased with an annual average rate of 23%, the second highest after Austria within the CENTROPE countries.

2.3.1. The CENTROPE countries during and after the crisis

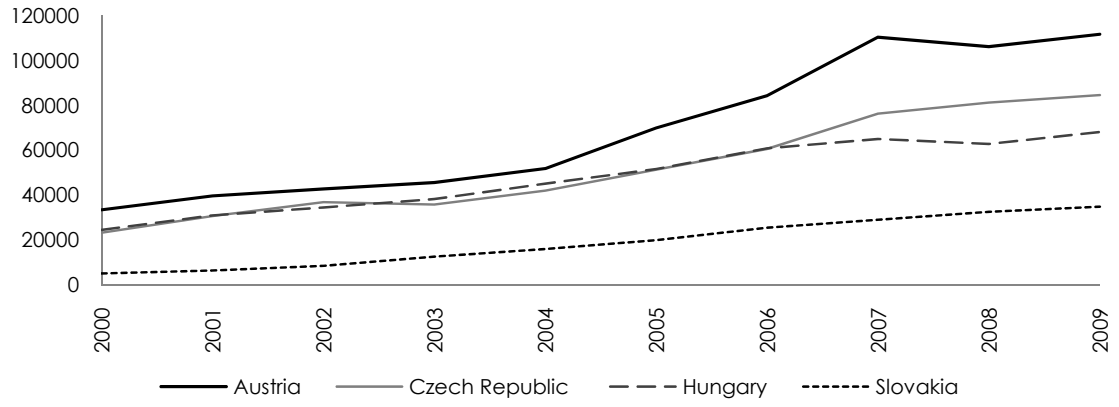
A liquidity shortfall in the US banking system in 2007 led to a collapse of the financial and capital market and triggered a global crisis, which is still not over. Fixed capital investment as a whole and FDI in particular were strongly affected by the impacts of the crisis. According to UNCTAD, global FDI flows in 2008 contracted by more than 20% mainly due to the reduced access to financial resources, which cut the companies` capacities to invest. Weak growth and profit prospects on the one hand and high risks on the other hand curtailed the willingness of companies to invest (*UNCTAD*, 2009). Furthermore, overcapacities due to global falling demand emerged which made new investment needless.

The crisis affected FDI inflows in several ways. Equity capital shrank as credits to finance them became more difficult and more costly to get. Reinvested profits declined on the one hand as a result of declining profits, on the other hand they were often withdrawn by the parent company from more successful locations abroad to balance losses in the home country. The third component of FDI flows, other capital, which mainly consists of loans from the parent company to the subsidiary, often dried out or even became negative, which means that the subsidiary had to credit the parent, which was the case of Austria in 2008 and Slovakia in 2009 (*Hunya*, 2009).

[2] Bloomberg Businessweek, 26 September 2005.

Inward stocks are not only affected by the declining amount of inflows, but also by the end-year exchange rate and the climate at the stock market, which may have positive and negative effects on the size of stocks. A devaluation of the national currency may lead to a decline of inward stocks despite an increase of inflows, which happened to Hungary in 2008. On the other hand, an appreciation can also balance a drop in inflows and lead to a boost of inward stocks. Also a positive climate at the stock market and a resulting increase in prices are able to balance a decline of inflows and even of a continuing devaluation of the currency, as Hungary showed in 2009.

Figure 1: Inward FDI stocks in the CENTROPE countries, in EUR Mio



Source: Respective National Banks according to balance of payments statistics.

It is important to add, that high values for inward stock as percentage of GDP, which occurred in all four CENTROPE countries in 2009, are mainly the result of falling GDP and not necessarily of an increase of stocks.

Austria

Compared with the pre-crisis year 2007, Austria seemed to be hit strongly by the crisis in 2008. FDI inflows dropped by 80%. But this value is only of limited significance, taking into account the selling of one of Austria`s major banks, the BA-CA, to the Italian UniCredit in the year 2007, which had led to a peak in Austria`s FDI history. Compared to the year 2006, FDI inflows in 2008 shrank by about 26%. This can be seen as of one the usual ups and downs in foreign investment. So FDI seemed to be quite unimpressed by the crisis. However going into more detail, the signs of the crisis are easily found out. FDI inflows

seemed to be unaffected thanks to the relatively high equity capital. In contrast, reinvested earnings became negative and claims to the holding company were higher than liabilities – for the first time ever. This led to an extreme reduction of other capital (e.g. loans). So the year 2008 was characterized by an outflow of capital from the subsidiary to the parent company and not the other way around which is normally the case.

Table 5: FDI inflow by form, in EUR Mio.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Austria										
FDI inflow, total	9,227	6,358	147	5,489	2,564	8,672	6,324	22,762	4,682	6,203
Equity capital	8,126	4,041	–644	1,958	943	6,839	444	4258	7,138	301
Reinvested earnings	944	1,362	1,884	838	1,301	3,323	2,983	3,743	-2,512	1,043
Other capital	156	955	–1,093	2,693	321	–1,490	2,896	14,761	56	4,858
Czech Republic										
FDI inflow, total	5,404	6,296	9,012	1,863	4,007	9,374	4,355	7,634	4,415	1,965
Equity capital	3,788	3,762	6,676	-48	1,433	6,189	1,496	1,837	788	977
Reinvested earnings	1,035	1,695	2,088	1,912	2,375	2,624	3,076	5,062	1,653	2,856
Other capital	580	839	248	-1	199	561	-218	735	1,975	–1,869
Hungary										
FDI inflow, total	2,998	4,391	3,185	1,888	3,439	6,172	5,454	2,852	4,897	1,550
Equity capital	1,510	1,096	1,157	-664	1,082	3,966	1,475	844	3,261	–2,326
Reinvested earnings	1,135	1,479	1,911	1,788	2,227	1,918	1,359	2,275	1,336	798
Other capital	354	1,816	117	764	130	288	2,621	-266	300	3,078
Slovakia										
FDI inflow, total	2,089	1,768	4,397	1,914	2,441	1,952	3,733	2,382	2,323	–36
Equity capital	2,338	1,419	4,347	937	936	575	1,722	808	914	839
Reinvested earnings	.	.	.	1339	1299	702	881	723	574	470
Other capital	–249	350	50	–362	206	675	1,130	851	835	–1,344

Source: Respective National Banks according to balance of payments statistics.

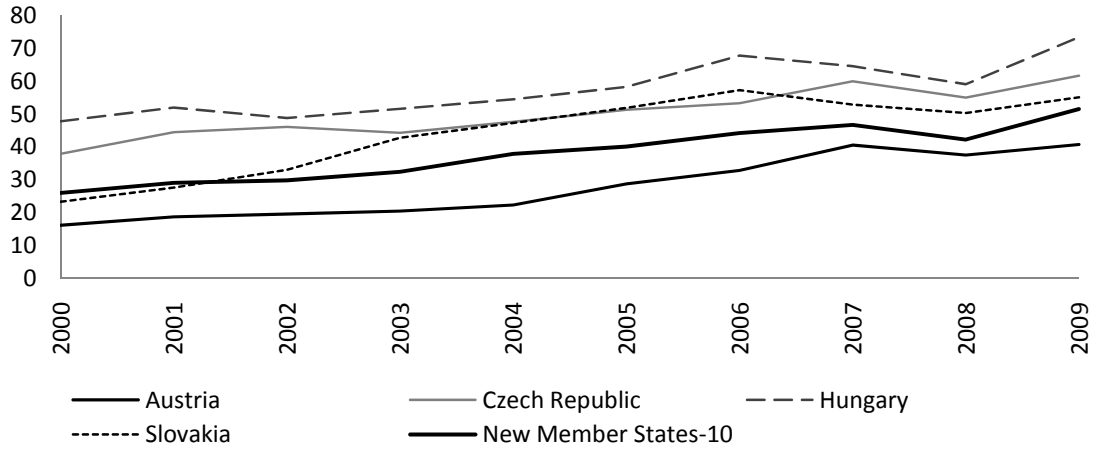
Also inward stocks were affected by the crisis. For the second time in 40 years the size of inward stocks decreased due to the high payment of dividends, which exceeded the profits in 2008. The highest losses were recorded in the sector transport, storage and communi-

cation with a decline of 48%, followed by public and private services with a decline of 40% and manufacturing of other non-metallic products of 32% .The highest increase was recorded in the manufacturing sector of electrical and optical equipment with a plus of 111%.

In 2009 FDI inflows increased by 32% and the crisis already seemed to be over. But,again, a more detailed look shows that investors were still cautions. Divestment was nearly as high a new investment and while equity capital was the main driver of FDI in 2008, it contributed to only 5% to total FDI inflows in 2009. Reinvested earnings became positive again, with a share of about 17% in total FDI. The major part of FDI was transacted in form of credits from the parent company to the subsidiary with a share of 78% in total FDI.

In the first half-year 2010, the situation recovered completely and confidence in the Austrian market seemed to be back. Equity capital returned to be the main driver of FDI with a share of 80% and also reinvested earnings increased.

Figure 2: Inward FDI stock in percentage of GDP



Source: Own calculations based on wiiw Annual Database and Eurostat.

Czech Republic

Although the Czech Republic continued to be a major FDI recipient within the NMS-5 and CENTROPE in 2008, the crisis had only minor effects and the decline in 2008 is still interpretable as a result of normal fluctuations due to one-time large projects in previous years (*Hunya*, 2008, p.7). In 2008 FDI inflows contracted by more than 40% and its share in gross fixed capital formation fell from 23.8% in 2007 to 12.5% in 2008. The main driver of FDI turned out to be other capital with an unprecedented share of 44% in total FDI, while equity capital and reinvested earnings declined, which can be seen as a first indicator of the crisis. In the following year 2009 the situation became more serious when FDI inflows more than halved. Foreign companies reduced or even shut down their production in the Czech Republic because of a slump in demand like the Japanese company Hitachi, which closed a new flat-screen company[3]. FDI inflows declined to a level as low as it was in 2003 when the drop was caused by the 'dotcom' crisis. The share of inflows in gross fixed capital formation even fell below the level of 2003 to 6.4%. Thanks to the high share of reinvested earnings FDI inflows stayed positive, while other capital inflow became negative.

In the first half-year 2010, the situation improved, but the crisis is still observable. FDI inflows increased by nearly 60%, but the main drivers are still reinvested earnings and, now positive, other capital. Together they account for 91% in total FDI inflows. Although it seems, that investors are still precautious, the Czech Republic has won its attractiveness to investors back. According to the Foreign Direct Investment Confidence Index 2010, the Czech Republic has even been able to improve its ranking in 2010 to 17th, the highest among the CENTROPE countries.

The size of FDI inward stock continued to increase by 6.5% in 2008 and 4% in 2009. This was the smallest growth ever, apart from the decline in 2002. FDI inward stocks in percentage of GDP declined from 60% in 2007 to 55% in 2008, which was also a result of the booming GDP in 2008. In the following year the crisis had also hit the GDP, which dropped and as a result, the share of inward stocks increased to 61.7%.

Hungary

After a weak year 2007, FDI improved in 2008 and inflows increased by more than 70%. This development was mainly driven by the high equity capital, with a two-thirds share in

[3] Financial Times, 12 May 2009

total FDI inflows – the highest since 1997- and reinvested earnings with a share of 27%. With a ratio of 21.5% in gross fixed capital formation, Hungary`s FDI inflow was clearly above the MNS-10 average of 17.4%. But the situation changed dramatically in the following year. Inflows more than halved in 2009 and returned to the low levels of the early 1990s. Equity capital became negative, which means that divestment exceeded new investment. Reinvested earnings also declined. Thanks to the high share of other capital, the highest ever, FDI inflows remained positive. Liabilities nearly tripled, which means that enormous amounts of credits flowed from the parent companies to the subsidiaries. On the other hand, more and more companies, especially in the manufacturing sector, cut jobs or moved their production to low-wage countries. The ratio of FDI inflow to gross fixed capital formation contracted by 12.5 pp and lay below the NMS-average of 10.9%.

First signs of the crisis were observable in the field of FDI inward stock. For the first time since measuring FDI, the size of inward stock did not increase in 2008, but declined by 3.5%. This was mainly caused by the devaluation of the Forint in 2008. Interestingly the stocks were able to recover quickly and in 2009 the size of inward stocks increased again, although the devaluation of the Forint went on and inflows decreased. The explanation for this phenomenon might lie in the recovery of stock market prices, which led the FDI stocks boost. In relationship with the GDP, FDI inward stock burst from about 60% share in 2008 to 73% in 2009 due to the slump of GDP.

Still, the situation has not improved. The first half-year 2010 was characterized by an outflow of capital, mainly caused by negative reinvested earnings and other capital. In general, capital flowed from the subsidiary to the parent company in forms of assets and earnings instead of receiving new investment. This has also affected the size of inwards stock, which declined for another time.

Table 6: FDI inflow in percentage of gross fixed capital formation

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Austria	18.53	12.99	0.31	11.2	5.2	17.38	12.45	43.14	8.52	12.38
Czech Republic	31.4	32.5	41.0	8.6	17.6	37.6	15.5	23.8	12.5	6.4
Hungary	24.9	32.0	19.5	11.4	18.5	30.2	27.8	13.3	21.5	8.0
Slovakia	36.7	26.3	61.9	26.2	29.9	19.1	31.6	16.6	14.4	-0.2
NMS-10	24.4	20.9	23.5	13.7	25.3	25.7	27.3	24.3	17.4	10.9
EU 27	.	.	.	.	12.3	28.7	33.2	44.5	24.5	18.7

Source: Own calculations based on wiiw Annual Database and Eurostat.

Slovakia

In 2008, Slovakia recorded more a stagnation than a decline of FDI inflow. In terms of per capita inflow the country was still above the NMS-average, in terms of FDI inflow as percentage of gross fixed capital slightly below. The size of FDI inward stocks augmented by 12% and recorded the highest increase within the CENTROPE countries in that year. As percentage of GDP, inward FDI stock declined as a result of the booming GDP, just like in the Czech Republic.

In 2009 the crisis hit Slovakia and the situation changed completely. For the first time the country had to report a negative FDI inflow, caused by the repatriation of accumulated capital reserves. Interestingly equity capital declined only slightly by 8%, which implies that new projects and restricting investment were not stopped even in the crisis. Volkswagen Slovakia, for example, was able to realize a profit of 57 Mio EUR even in economical difficult times and decided to start the production of a small family car series in Bratislava (www.volkswagen.sk). The Slovak Republic experienced a similar phenomenon as the Czech Republic did in the same year. Although new investment entered the country, the credits from the subsidiary to the parent company were so high, that in the Slovak case they even exceeded the sum of equity capital and reinvested earnings, and so inward flows turned negative.

Inward stocks were only slightly affected by the crisis, but increased less than in previous years but still by about 7%. The ratio of inward stocks in GDP improved by 4.8 p.p.

Although inflows in the first half-year 2010 remained below the level of pre-crisis years, the situation has improved. Low equity capital and reinvested earnings still indicate the economical difficult circumstances the world is dealing with, but further improvement is in sight. According to the Slovak Investment and Trade Development Agency (SARIO), one of the leading producers of LCD panels, AUO, decided to invest EUR 191.3 million into the factory in Trencin, creating about 1300 direct and almost 2000 indirect jobs. Production is planned to begin in 2011[4]. Furthermore, there have been negotiations with Shanghai to bring new investment to Slovakia, mainly in the automobile and food production industry[5].

[4] www.sario.sk, 16 April 2010
[5] www.sario.sk, 6 September 2010

2.4. FDI in the CENTROPE regions

Regional data on foreign direct investment is taken from fdimarkets.com, a commercial database tracking global cross border greenfield and expansion investments. Joint ventures are only included where they lead to a new physical operation. However Mergers & acquisitions (M&A) and other equity investments are not tracked. Foreign investments are recorded independent of the size of the project to be included. The information sources for the fdimarkets.com database are: Financial Times newswires, around 9000 media sources, project data received from over 1000 industry organisations and investment agencies, data purchased from market research and publication companies, whereby information from these sources are cross-validated with company sources.

The drawback that this database does not include M&A investments[6] is compensated by the fact that the database offers up-to-date data at the European regional level (in fact data are available at the city level) including a sectoral breakdown. It is a very comprehensive data set, from which we extracted 31,547 individual FDI projects in the European Union for the period January, 2003 to March, 2010. 793 of these projects occurred in the CENTROPE regions.

The raw data were available at the city level, but was aggregated in general to the NUTS 2 regional level and for certain CENTROPE regions to the NUTS 3 level, to keep analysis and results manageable and to have enough observations for each region and year.[7] The original data offers a rich sectoral breakdown, which however is prone to misinterpretations. To keep analysis manageable the sectoral breakdown was cleared and aggregated to five sectors of economic activity:

1. Headquarters, business services, innovation. Business and innovation investments include investments into: design, development and testing, education and training, research and development.
2. Retail trade and transport

[6] In Austria more than 40% of the FDI's are M&As, so that a large part of the FDI activities are not seen in this data.

[7] In the following sections we compare CENTROPE NUTS 2 regions with other NUTS 2 level regions while we compare NUTS 3 level regions with other NUTS 3 level regions, when making EU wide comparisons. We did not disaggregate the data from fear of having only very few observations.

3. Construction and other services. Other services include: customer contact centres, ICT and internet infrastructure, maintenance and servicing, sales, marketing and support, shared services centres and technical support services
4. High and medium technology intensive industries. They include: Aerospace, alternative/renewable energy, automotive components, automobile production, biotechnology, chemicals, consumer electronics, electronic components, industrial machinery, equipment and tools, medical devices, pharmaceuticals, semiconductors, space and defence industry.
5. Low technology intensive industries and electricity. They include beverages, building and construction materials, ceramics and glass, coal, food and tobacco, metals, minerals, plastics, rubber, textiles and wood products. [8]

Regional FDI in the CENTROPE region

We start the analysis of regional FDI in CENTROPE by looking at the number of FDI projects in the CENTROPE regions from 2003 to March 2010. During this period Vienna had the highest inflow of FDI projects in CENTROPE, at least if the absolute number of projects is considered. Thus, over the seven years from 2003 284 FDI projects were established in Vienna, which corresponds to 36% of all FDI projects in CENTROPE. With some distance to Vienna the second most FDI projects were established in Bratislava (171 projects) followed by Györ-Moson-Sopron (99 projects) and South Moravia (88 projects). In Trnava, Lower Austria and Vas 54, 53 and 37 projects, respectively were established. The smallest number of FDI projects occurred in Burgenland, which received only 7 projects from 2003-2010 according to the available data.

The comparison of the absolute numbers of FDI projects per region provides some valuable information on the distribution of FDI across the CENTROPE regions. However, it also disguises the importance of these projects for the individual regions, as the absolute number of FDI projects that went into one region depends –inter alia- on the size of the region concerned (e.g. on the size of the population).

[8] For details about the aggregation of the initial, raw data contact: roemisch@wiiw.ac.at

Table 7: Total number of FDI projects

	2003	2004	2005	2006	2007	2008	2009	2010	TOTAL
Austria	**79**	**100**	**104**	**90**	**109**	**111**	**74**	**25**	**692**
Burgenland	0	1	2	1	2	1	0	0	7
Lower Austria	6	13	5	8	10	6	4	1	53
Vienna	24	25	38	41	50	53	43	10	284
Czech Republic	**143**	**149**	**151**	**179**	**149**	**143**	**107**	**40**	**1,061**
South Moravia	6	14	18	18	15	9	5	3	88
Hungary	**216**	**221**	**208**	**243**	**219**	**156**	**108**	**50**	**1,421**
Gyor-Moson-Sopron	12	13	18	19	17	10	7	3	99
Vas	2	6	6	12	7	1	2	1	37
Slovakia	**65**	**88**	**118**	**117**	**100**	**85**	**57**	**24**	**654**
Bratislava	11	27	28	28	27	22	17	11	171
Trnava	6	10	3	8	6	11	6	4	54

Source: fdimarkets.com, own calculations.

Table 8: Total number of FDI projects, in % of CENTROPE total

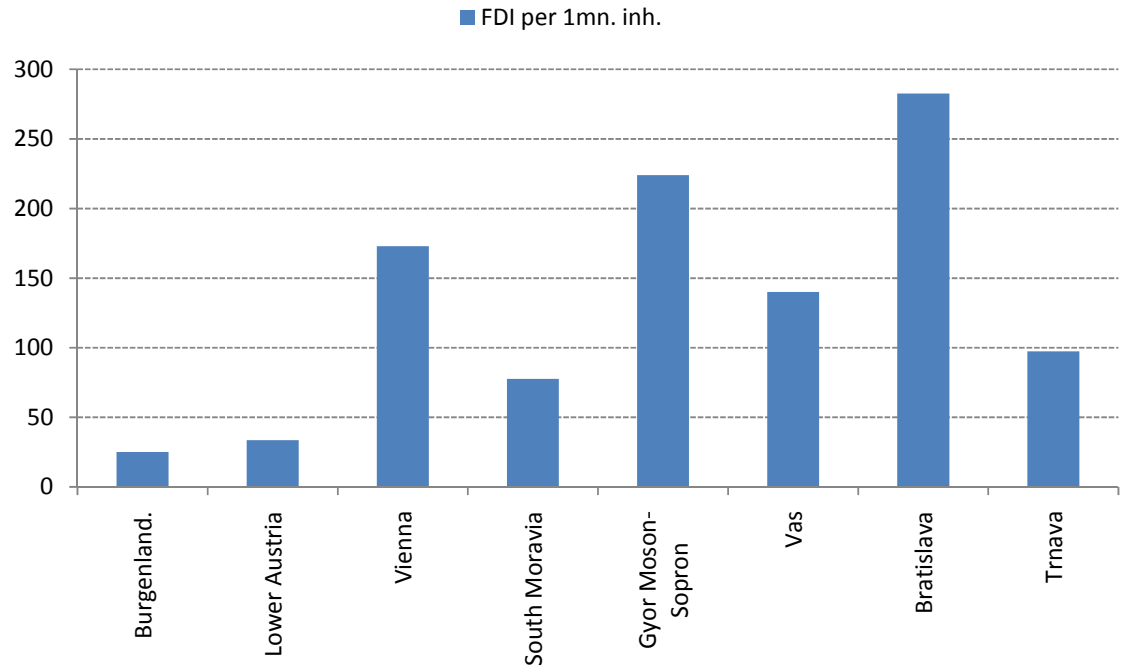
	2003	2004	2005	2006	2007	2008	2009	2010	TOTAL
CENTROPE	**67**	**109**	**118**	**135**	**134**	**113**	**84**	**33**	**793**
CENTROPE	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Burgenland	0.0	0.9	1.7	0.7	1.5	0.9	0.0	0.0	0.9
Lower Austria	9.0	11.9	4.2	5.9	7.5	5.3	4.8	3.0	6.7
Vienna	35.8	22.9	32.2	30.4	37.3	46.9	51.2	30.3	35.8
South Moravia	9.0	12.8	15.3	13.3	11.2	8.0	6.0	9.1	11.1
Gyor-Moson-Sopron	17.9	11.9	15.3	14.1	12.7	8.8	8.3	9.1	12.5
Vas	3.0	5.5	5.1	8.9	5.2	0.9	2.4	3.0	4.7
Bratislava	16.4	24.8	23.7	20.7	20.1	19.5	20.2	33.3	21.6
Trnava	9.0	9.2	2.5	5.9	4.5	9.7	7.1	12.1	6.8

Source: fdimarkets.com, own calculations.

Therefore, in order to enhance the basic comparability of FDI flows, the absolute number of FDI projects is corrected by the size of the population, (see Figure 3). Interestingly, this correction shows that in per capita terms Bratislava has the highest inflows, i.e. 282 FDI projects per 1mn. inhabitants. It is followed by Győr-Moson-Sopron (224 projects/1mn.

inh.), Vienna (173 projects) and Vas (140 projects). The high proportion in the Hungarian CENTROPE regions to some extent is remarkable, as the other two regions that - per 1mn inhabitants - received most FDI are capital cities that usually tend to attract more FDI than other regions. By contrast, Trnava has in relative terms lower FDI flows, around 97 projects per 1mn. inhabitants. It, thus, has received in per capita terms 20 projects more FDI than South Moravia. The lowest number of FDI projects per head were recorded in Lower Austria and Burgenland, though the difference between these two is much smaller in per head terms than could be expected from the absolute number of FDI projects.

Figure 3: Total number of FDI projects 2003-2010, per 1mn. Inhabitants and square km



Source: fdimarkets.com, own calculations.

The next step in the analysis is to dis-aggregate the FDI flows by sector of economic activity. As discussed earlier there are different motivations for multinational corporations to invest in foreign countries. While some investments are undertaken to exploit the host countries' market potential, i.e. to sell the goods or services produced by the multinational in the host market, other FDI intends to make use of the favourable conditions for the pro-

duction of goods (e.g. low wage costs) to export the goods produced in the host country to European or global markets.

In practice these two different forms of FDI are not always easily separated, as the goods or services produced by primarily market seeking FDI might also be sold abroad, especially – as it is the case in CENTROPE – in a cross border context. Likewise goods produced mainly for exports can also be sold in the host market. Thus the distinction is not entirely clear cut, and against this background it is no surprise that there exist no exact numbers on the proportion of these two types of FDI in the CENTROPE countries. What is more important however, these two forms of FDI have in principal different needs as far as their choice of location is concerned.

That is, foreign investments aiming at selling goods or services in the host market are expected to prefer locations or regions with high income or high market potential. Depending on the skill or technology intensity of the goods and services, more skill and technology intensive FDI also requires the availability of an adequate pool of skilled labour. Not to forget other factors like adequate transport and communication infrastructure, existing networks of suppliers and customers and other factors that raise the probability to sell goods and services easily. Parts of these factors are certainly important for efficiency seeking FDI, too. However for the latter form of FDI there are some other factors that have potentially a higher weight in location decisions for firms producing for the export markets, like e.g. land prices, wage costs, transport connection to export markets, subsidies etc.

From this we expect the geographic pattern of FDI to depend to a considerable extent on the type of investment. Expectations are that FDI aiming to sell goods or services on the local market is likely to locate in or close to urban agglomerations, given that such areas tend to have a higher density of population and economic activity, higher average income levels, better infrastructure than more rural areas. On the other hand urbanised areas also tend to have higher land prices and high average wages, especially in capital city regions. These are factors that make urban centres less attractive for industrial production. Therefore, investments into an export-oriented production of goods are expected to have a higher probability to locate outside capital cities, that preferably still are close enough to urban areas to benefit from agglomeration externalities (like the availability of a pool of skilled labour within a certain, acceptable commuting distance).

Looking at the numbers of FDI projects by sector (both in absolute terms and in percent of the CENTROPE total) we find that in CENTROPE on aggregate the highest number of

projects were recorded in the construction and other services sector (217 projects out of 793 in total from 2003 to early 2010). Slightly less projects were established in the retail trade and transport (188 projects). Moreover in CENTROPE there were 178 investments made in the headquarters, business services and innovation sector, 144 projects in the high and medium high technology intensive industries and 76 in the low technology intensive manufacturing industry sector.

Table 9: FDI by sectors, absolute number of projects, 2003-2010

	Construction & Services	HQ, business services, innovation	High and medium technology intensive industries	Low technology intensive industries and electricity	Retail trade and transport
Austria	**182**	**167**	**102**	**52**	**189**
Burgenland	2		2	2	1
Lower Austria	10	5	13	9	16
Vienna	96	98	16	4	70
Czech Republic	**274**	**152**	**303**	**126**	**206**
South Moravia	21	13	30	8	16
Hungary	**310**	**186**	**354**	**240**	**331**
Gyor-Moson-Sopron	13	12	33	24	17
Vas	7		19	7	4
Slovakia	**130**	**64**	**199**	**127**	**134**
Bratislava	62	39	10	10	50
Trnava	6	1	21	12	14

Source: fdimarkets.com, own calculations.

Table 10: FDI projects by sectors in percent of CENTROPE total, 2003-2010

	Construction & Services	HQ, business services, innovation	High and medium technology intensive industries	Low technology intensive industries and electricity	Retail trade and transport
CENTROPE	**217**	**168**	**144**	**76**	**188**
	in % of CENTROPE total				
Burgenland	0.9	0.0	1.4	2.6	0.5
Lower Austria	4.6	3.0	9.0	11.8	8.5
Vienna	44.2	58.3	11.1	5.3	37.2
South Moravia	9.7	7.7	20.8	10.5	8.5
Gyor Moson-Sopron	6.0	7.1	22.9	31.6	9.0
Vas	3.2	0.0	13.2	9.2	2.1
Bratislava	28.6	23.2	6.9	13.2	26.6
Trnava	2.8	0.6	14.6	15.8	7.4

Source: fdimarkets.com, own calculations.

The distribution of these investments across the individual CENTROPE regions was however far from uniform. Hence the vast majority of services related FDI projects went into the two capital cities Bratislava and Vienna. Together their share in total CENTROPE FDI in construction and other services is 73%, 82% in the headquarters, business services and innovation and still over 63% in the retail trade and transport services.

By contrast manufacturing FDI projects, regardless whether they referred to high or low technology intensive industries, went into the less urbanised NMS regions in CENTROPE, mostly to Györ-Moson-Sopron, South Moravia and Trnava. To illustrate, around 58% of all manufacturing FDI projects were established in these three regions.

This pattern is more or less confirmed by the numbers on FDI projects per million inhabitants (*Table 11*).

Table 11: FDI projects by sectors, projects per 1mn. Of inhabitants, 2003-2010

	Construction & Services	HQ, business services, innovation	High and medium technology intensive industries	Low technology intensive industries and electricity	Retail trade and transport
Austria	**22.1**	**20.3**	**12.4**	**6.3**	**22.9**
Burgenland	7.2	0.0	7.2	7.2	3.6
Lower Austria	6.3	3.2	8.2	5.7	10.1
Vienna	58.5	59.7	9.7	2.4	42.6
Czech Republic	**26.7**	**14.8**	**29.5**	**12.3**	**20.0**
South Moravia	18.5	11.5	26.5	7.1	14.1
Hungary	**30.7**	**18.4**	**35.1**	**23.8**	**32.8**
Gyor Moson-Sopron	29.4	27.2	74.7	54.3	38.5
Vas	26.5	0.0	71.9	26.5	15.1
Slovakia	**24.1**	**11.9**	**36.9**	**23.6**	**24.9**
Bratislava	102.5	64.5	16.5	16.5	82.6
Trnava	10.8	1.8	37.9	21.6	25.2

Source: fdimarkets.com, own calculations.

2.4.1. Regional FDI in the European context

The descriptive analysis of FDI in CENTROPE has revealed a quite heterogeneous picture of the distribution of FDI project across the CENTROPE regions, both in terms of the absolute number of projects as well as with respect to the sectoral structure. This part extends the analysis from the within CENTROPE context to the European context. Thus it will be analysed how successful the CENTROPE regions are to attract FDI at the European level. Moreover the analysis also allows identifying the main investing countries in the CEN-

TROPE region. To account for size differences between the European regions all FDI flows will be given as a proportion to the regions' population, i.e. FDI projects per 1mn, inhabitants.

Box 1: Main investing companies in CENTROPE

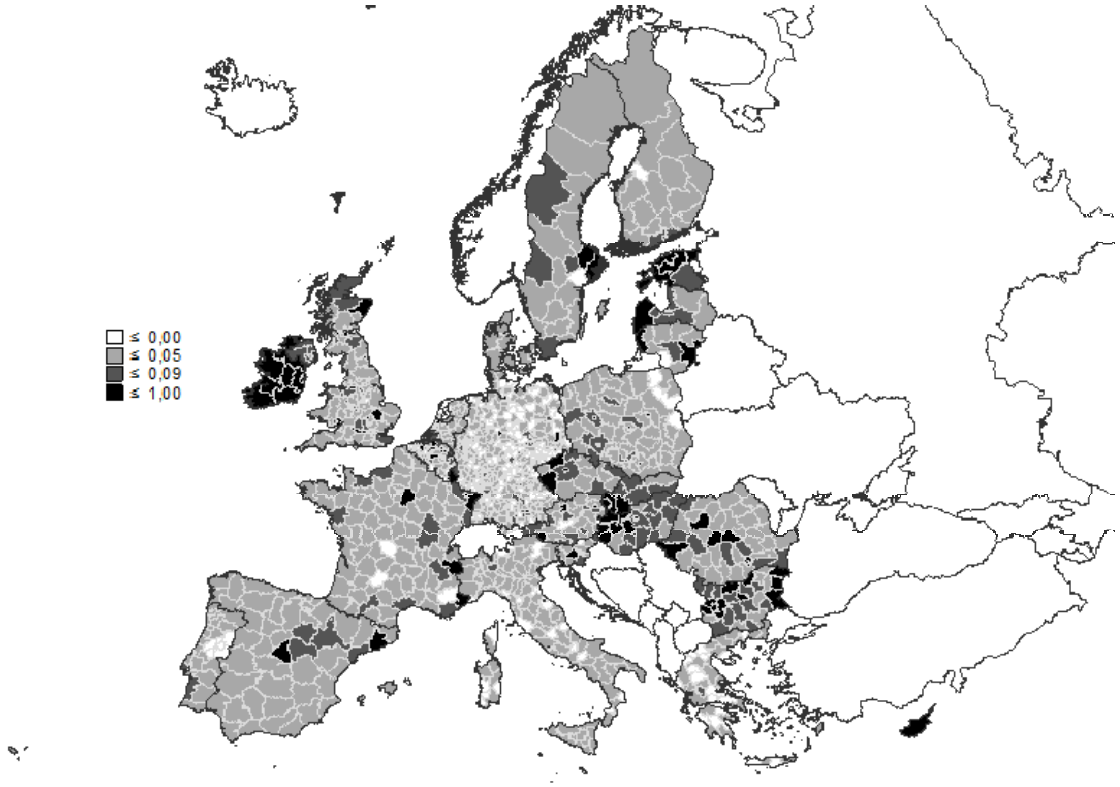
The CENTROPE regions are major destinations for multinational enterprises from Europe and all over the world. The following table lists for each CENTROPE country the top-10 investing companies in terms of job creation*. The period covered is January 2003-March 2010.

	Burgenland		Lower Austria		Vienna	
	company	country	company	country	company	country
1	Solon	Germany	IPIC	UAE	General Motors (GM)	USA
2	Nokia	Finland	PSA Peugeot-Citroen	France	Fiat	Italy
3	Lidl & Schwarz Stiftung	Germany	Seeste bau	Italy	ProLogis	USA
4	Toyota Motor	Japan	FCC	Spain	Boehringer Ingelheim	Germany
5	Coca-Cola	USA	C&A	Belgium	Bombardier	Canada
6	Accor	France	Moeller Group	Germany	Seeste bau	Italy
7	Kampa	Germany	Baxter	USA	Magna International	Canada
8			Diamond Aircraft Ind.	Austria	Accor	France
9			Tubacex	Spain	Rodamco Europe	Netherlands
10			Voith Group	Germany	Royal Philips Electronics	Netherlands
	South Moravia		Győr-Moson-Sopron		Vas	
	company	country	company	country	company	country
1	Celestica	Canada	Volkswagen	Germany	Jabil Circuit	USA
2	IBM	USA	Engel Group	Israel	Provertha	Germany
3	Daikin Industries	Japan	Doxeon	Cyprus	Flextronics	Singapore
4	BenQ	Taiwan	Leier	Austria	Evbl International	Austria
5	CTP Project	Netherlands	Inter-Bonum	Germany	Epcos	Germany
6	Inventec	Taiwan	Alphapark	Austria	Hisense	China
7	Itab Shop Concept	Sweden	Provertha	Germany	Meinl Bank	Austria
8	Honeywell	USA	Roto Frank	Germany	Delphi	USA
9	kika/Leiner Group	Austria	ProLogis	USA	AKE	Germany
10	J & T Investment	Slovakia	ECE Projekt Management	Germany	Schaeffler Group	Germany
	Bratislava		Trnava			
	company	country	company	country		
1	Volkswagen	Germany	PSA Peugeot-Citroen	France		
2	Quinlan Private	Ireland	Samsung	South Korea		
3	Porr	Austria	Parker Green International	UK		
4	Ballymore Properties	Ireland	Sony	Japan		
5	Immofinanz	Austria	Texas Pacific	USA		
6	Soravia Group	Austria	ArcelorMittal	Luxembourg		
7	Meridian Group	USA	Dong Jin Precision	South Korea		
8	Naumann Services	Germany	Merkury Market	Poland		
9	Tesco	UK	Danubius Hotels	Hungary		
10	Erste Bank	Austria	Berkshire Hathaway	USA		

* according to informations from fdimarkets.com. Job creation is either actual job creation or estimated job creation by fdimarkets.com. There is no information on the reliability of job creation estimates, however inspection of the data suggests, that the estimates are not fully reliable and should be treated with caution.

Figure 4 presents an overview map of the total FDI projects per head of population for 261 EU 27 NUTS 2 regions and the respective CENTROPE NUTS 3 regions over the years 2003 to March 2010. Already from the map it is apparent that at the European level three CENTROPE regions, namely Bratislava, Györ-Moson-Sopron and Vienna were amongst the EU top destinations for FDI, in line with regions like the Dublin region in Ireland, Prague, London and Bucharest.

Figure 4: FDI projects in the EU 27 regions, January 2003-March 2010



Source: fdimarkets.com, own calculations; Note: The map does not take into account latest territorial changes in South Moravia.

To illustrate the performance of the CENTROPE regions in more detail we present the EU 27 regions' rankings for total FDI per head as well as for the five sectors of economic activity (*Table 12* to *Table 14*).

As far as the attraction of investments by multinational companies is concerned the results for total FDI projects per inhabitant exemplify the excellent performance of CENTROPE.

Thus, amongst 261 EU NUTS 2 regions Bratislava is the top location for FDI with 282.4 FDI projects per 1mn inhabitant over the period 2003-early 2010. Hence, proportionally Bratislava received more FDI projects than the Dublin region in Ireland and also leaves behind highly attractive regions like Prague, Brussels and London. Györ-Moson-Sopron is ranked 8th overall, and – in per captia terms – has got more FDI projects than the Hungarian capital city Budapest. Vienna still is ranked 13th out of the 261 regions, Vas 18th Trnava 31st, and South Moravia is still in the first quarter of the EU 27 regions. Only Lower Austria and Burgenland are not amongst the EU top destinations for FDI. Furthermore in a comparison of the 1303 EU NUTS 3 regions 5 of the 16 CENTROPE NUTS 3 regions (Bratislava region, Györ-Moson-Sopron, Vienna, Vas and Trnava region) are ranked among the top 10% of the FDI receiving NUTS 3 regions in Europe, a further three (South Moravia, Vienna environs and St. Pölten) are ranked among the top 25% and only two (Waldviertel and Central Burgenland) rank below average.

Table 12: EU 27 TOP-10 FDI regions, Total FDI projects per million inhabitants, construction and other services, 2003-March 2010

Total				Construction & Services			
rank	nuts			rank	nuts		
1	**SK01**	**Bratislava**	**282.4**	1	CZ01	Praha	123.8
2	IE02	Southern and Eastern	267.0	2	RO32	Bucuresti - Ilfov	106.5
3	CZ01	Praha	262.8	**3**	**SK01**	**Bratislava**	**102.4**
4	RO32	Bucuresti - Ilfov	242.7	4	UKI	London	93.1
5	BE10	Brussels	233.9	5	BE10	Brussels	91.6
6	UKI	London	233.9	6	LU00	Luxembourg (Grand-Duché)	76.2
7	LU00	Luxembourg (Grand-Duché)	226.4	7	DK01	Hovedstaden	75.8
8	**HU221**	**Gyor Moson-Sopron**	**223.9**	8	BG41	Yugozapaden	73.7
9	BG41	Yugozapaden	195.1	9	IE02	Southern and Eastern	69.6
10	DK01	Hovedstaden	176.0	10	SE11	Stockholm	66.1
13	AT13	Vienna	171.5	13	AT13	Vienna	58.0
18	HU222	Vas	140.3	28	HU221	Gyor Moson-Sopron	29.4
31	SK021	Trnava	97.3	33	HU222	Vas	26.5
47	CZ064	South Moravia	77.7	51	CZ064	South Moravia	18.5
134	AT12	Lower Austria	33.4	97	SK021	Trnava	10.8
174	AT11	Burgenland	25.0	129	AT11	Burgenland	7.1
				139	AT12	Lower Austria	6.3

Source: fdimarkets.com, own calculations.

The exceptional attractiveness of most CENTROPE regions is also shown by the rankings of the EU 27 regions regarding FDI projects in the various sectors of economic activity. Hence Vienna and Bratislava are top-ranked in the various services sector FDI categories,

e.g. Bratislava is ranked 3rd (Vienna 13th) in the construction and other services sector, 7th in the headquarter FDI (Vienna 8th) and again 1st in the retail and transport sector (Vienna 12th). More generally, in all the services sectors the other NMS CENTROPE sectors are also performing quite well, especially taking account that these sectors are not their main fields of specialisation. Notably, despite it is more attractive for manufacturing FDI Györ-Moson-Soproan is also highly ranked in all services sectors (14th in retail trade and transport), while the other NMS regions mostly have lower ranks.

Table 13: EU 27 TOP-10 FDI regions, headquarters business services and innovation, retail trade and transport services, 2003-March 2010

HQ, business services, innovation				Retail trade and transport			
rank	nuts			rank	nuts		
1	BE10	Brussels	97.5	**1**	**SK01**	**Bratislava**	**82.6**
2	IE02	Southern and Eastern	96.2	2	IE02	Southern and Eastern	71.5
3	LU00	Luxembourg (Grand-Duché)	95.2	3	BG41	Yugozapaden	64.7
4	UKI	London	94.7	4	RO32	Bucuresti - Ilfov	60.2
5	CZ01	Praha	75.0	5	LV00	Latvia	59.0
6	DK01	Hovedstaden	73.3	6	CZ01	Praha	58.1
7	**SK01**	**Bratislava**	**64.4**	7	HU223	Zala	54.5
8	**AT13**	**Vienna**	**59.2**	8	HU10	Közép-Magyarország	46.8
9	SE11	Stockholm	56.1	9	EE00	Estonia	46.1
10	RO32	Bucuresti - Ilfov	53.5	10	BE21	Prov. Antwerpen	44.8
25	HU221	Gyor Moson-Sopron	27.1	12	AT13	Vienna	42.3
57	CZ064	South Moravia	11.5	14	HU221	Gyor Moson-Sopron	38.4
168	AT12	Lower Austria	3.2	24	SK021	Trnava	25.2
201	SK021	Trnava	1.8	58	HU222	Vas	15.2
239	AT11	Burgenland	0.0	66	CZ064	South Moravia	14.1
239	HU222	Vas	0.0	100	AT12	Lower Austria	10.1
				197	AT11	Burgenland	3.6

Source: fdimarkets.com, own calculations.

This however is due to the fact that the NMS regions' main strength and attractiveness is for manufacturing industry investments. Here Györ-Moson-Sopron is ranked 2nd amongst all 261 EU 27 regions in the high technology intensive industries FDI, followed immediately by Vas. In the low technology intensive industries Györ-Moson-Sopron even ranks 1st amongst all EU regions, while Vas follows on 9th place. Trnava is ranked 8th and 13th and South Moravia still is ranked 17th in the high technology intensive industries, but only 92nd in the low technology industries. Thus with respect to FDI in the manufacturing sectors, these regions are all ranked in the top 5% among 1,303 NUTS 2 regions receiving FDI in

the high technology intensive industries and among these regions only South Moravia does not belong to the top 5% among the low technology intensive FDI receiving regions.

Table 14: EU 27 TOP-10 FDI regions, high and medium technology intensive industries, low technology intensive industries per million inhabitants, 2003-March 2010

Low technology intensive industries and electricity				High and medium technology intensive industries			
rank	nuts			rank	nuts		
1	**HU221**	**Gyor Moson-Sopron**	**54.3**	1	HU21	Közép-Dunántúl	78.5
2	HU21	Közép-Dunántúl	41.5	**2**	**HU221**	**Gyor Moson-Sopron**	**74.6**
3	EE00	Estonia	35.0	**3**	**HU222**	**Vas**	**72.0**
4	BG33	Severoiztochen	34.1	4	SK022	Trencin	50.0
5	HU223	Zala	30.6	5	SK023	Nitra	45.2
6	SK023	Nitra	29.7	6	CZ04	Severozápad	45.2
7	BG31	Severozapaden	29.4	7	HU223	Zala	44.3
8	BG34	Yugoiztochen	27.4	**8**	**SK021**	**Trnava**	**37.9**
9	**HU222**	**Vas**	**26.5**	9	CZ03	Jihozápad	37.2
10	CZ04	Severozápad	23.9	10	PL51	Dolnoslaskie	35.4
13	SK021	Trnava	21.6	17	CZ064	South Moravia	26.5
26	SK01	Bratislava	16.5	33	SK01	Bratislava	16.5
89	AT11	Burgenland	7.1	66	AT13	Vienna	9.7
92	CZ064	South Moravia	7.1	85	AT12	Lower Austria	8.2
117	AT12	Lower Austria	5.7	97	AT11	Burgenland	7.1
177	AT13	Vienna	2.4				

Source: fdimarkets.com, own calculations.

FDI by types of regions

The high attractiveness for FDI of the CENTROPE regions is even more emphasised if certain specific regional properties are taken account of. As discussed above, different types of regions tend differ in their attractiveness for different forms of FDI. Thus, highly urbanised regions, with high average income levels and a high market potential tend to be more attractive for services FDI than other regions. In turn, other regions, especially if they are close to a larger city tend to be more attractive for manufacturing FDI. Given that the degree of urbanisation and the geographic location have an effect on the location of FDI, a direct comparison of all regions jointly might give a biased assessment the attractiveness or competitiveness of a region, e.g. as a capital city regions is – by nature – likely to receive more FDI inflows than a peripheral economically weak region. Therefore in order to evaluate the competitiveness of the CENTROPE regions in the European context more accurately it seems adequate to take account of the regions individual properties.

This is done in two steps. Firstly the OECD classification of regions is used to group the regions by their degree of urbanisation and their geographic location. The OECD classification identifies 5 types of regions (*Dijkstra, L., Ruiz*, 2010)[9]:

- predominantly urban regions: the share of population living in local rural areas[10] is smaller than 15%, or the region contains an urban centre of more than 500 000 inhabitants representing at least 25% of the regional population.
- intermediate rural, close to a city regions: the share of population living in local rural areas is between 15% and 50% AND the driving time of at least 50% of the regional population to the closest locality with more than 50.000 inhabitants is LESS than 60 minutes.
- intermediate rural, remote regions: the share of population living in local rural areas is between 15% and 50% AND the driving time of at least 50% of the regional population to the closest locality with more than 50,000 inhabitants is MORE than 60 minutes.
- predominantly rural, close to a city regions: the share of population living in local rural areas higher than 50% AND the driving time of at least 50% of the regional population to the closest locality with more than 50,000 inhabitants is LESS than 60 minutes.
- predominantly rural, remote regions: the share of population living in local rural areas higher than 50% AND the driving time of at least 50% of the regional population to the closest locality with more than 50,000 inhabitants is MORE than 60 minutes.

Predominantly rural regions are considered to be intermediate rural if they contain an urban centre of more than 200 000 inhabitants representing at least 25% of the regional population.

For the current analysis the intermediate rural, remote regions are included in the intermediate rural, close to a city regions, because there are only 4 regions that would fall under this category (none of them in CENTROPE).

Looking at the FDI flows by these types of regions in the EU 27 shows that, indeed, the urban regions in the EU – on average – attracted the highest number of FDI projects from 2003 to early 2010. Moreover they also attracted a significantly higher share in all the services sectors than all other regions. On the other hand those regions attracted less FDI

[9] Originally these types of regions are defined at the NUTS 3 level of EU regions. For the current analysis the typology has been aggregated to the NUTS 2 level.
[10] A local unit is classified as "rural" if the population density is smaller than 150 inhabitants per square kilometre. (OECD, 2010)

projects in the manufacturing sectors than the intermediate and predominantly rural regions that are close to a city. Overall the EU 27 intermediate rural regions attracted marginally more FDI than the predominantly rural, close to a city region, while the peripheral, predominantly rural, remote regions attracted the least FDI projects in the EU 27. Thus there is a clear pattern in the attractiveness for FDI that depends on the typology of regions.

Table 15: FDI by OECD type of regions

Type of region	Construc-tion & Services	HQ, business services, innovation	High and medium technology intensive industries	Low technology intensive industries and electricity	Retail trade and transport	TOTAL
predominantly urban	23.4	17.2	5.6	4.8	15.4	66.4
intermediate rural, close to a city	9.0	6.5	10.4	8.3	8.9	43.2
predominantly rural, close to a city	6.3	6.4	9.5	8.3	9.5	40.0
predominantly rural, remote regions	5.4	5.0	5.6	5.4	9.3	30.6
predominantly urban						
Vienna	58.0	59.2	9.7	2.4	42.3	171.5
Bratislava	102.4	64.4	16.5	16.5	82.6	282.4
intermediate rural, close to a city						
South Moravia	18.5	11.5	26.5	7.1	14.1	77.7
Gyor Moson-Sopron	29.4	27.1	74.6	54.3	38.4	223.9
Vas	26.5	0.0	72.0	26.5	15.2	140.3
Trnava	10.8	1.8	37.9	21.6	25.2	97.3
predominantly rural, close to a city						
Burgenland	7.1	0.0	7.1	7.1	3.6	25.0
Lower Austria	6.3	3.2	8.2	5.7	10.1	33.4
% of average predominantly urban EU region						
Vienna	247.7	344.0	173.0	50.8	274.4	258.4
Bratislava	437.4	374.4	295.7	347.2	536.0	425.6
% of average intermediate rural, close to a city EU region						
South Moravia	205.1	176.4	253.7	84.9	158.5	179.8
Gyor Moson-Sopron	325.3	417.1	715.1	652.3	431.5	518.1
Vas	293.6	0.0	690.3	318.9	170.2	324.6
Trnava	119.6	27.7	362.7	259.9	283.2	225.2
% of average predominantly rural, close to a city EU region						
Burgenland	113.7	0.0	75.3	85.8	37.8	62.6
Lower Austria	100.4	49.1	86.4	68.2	106.8	83.6

Source: fdimarkets.com, own calculations.

The CENTROPE consists of three types of regions. Bratislava and Vienna are predominantly urban regions, the other four NMS CENTROPE regions are classified as intermediate rural, close to a city regions and Lower Austria and Burgenland are predominantly rural, close to a city region.

Exception of the two Austrian rural regions, all CENTROPE regions attracted much more FDI projects than comparable regions in the EU. On a relative basis, Györ-Moson-Sopron was most successful as it recorded over 5 times more FDI projects than the average intermediate rural region in the EU. Vas recorded more than three times the FDI of this type of region and the Trnava and South Moravia region still twice as much. With respect to the urban regions, Bratislava got over 4 times as many FDI projects as the average urban region in the EU and Vienna 2.5 times as many.

From a sectoral point of view, part of the CENTROPE regions were extremely successful in attracting high technology intensive manufacturing FDI, especially Györ-Moson-Sopron and Vas that received around 7 times as many projects as the average region of the same type. This also holds for Trnava and South Moravia that recorded more than 3.5 and 2.5 times the average FDI projects. Vienna, Bratislava but also Györ-Moson-Sopron and with some limitation also the other NMS CENTROPE regions, are highly competitive regions with respect to services FDI. In all three services sectors those regions recorded at least 2.5 times as many FDI projects than the respective EU region-type average.

In a similar type of analysis the EU 27 NUTS 2 regions have been grouped according to their income per capita levels (in purchasing power parities), instead of their urban and rural characteristics. Four groups of regions were identified, a high income group with a GDP per capita level of above 125% of the EU 27 average, a medium high income group with GDP between 100% and 125% of the EU average, a medium low income group, where the regional GDP is between 75% and 100% of the EU average and a fourth group with the low income regions. Within CENTROPE two regions (Bratislava and Vienna) are in the high income group, Lower Austria is in the medium high income group, Burgenland in the medium low and the remaining four NMS CENTROPE regions in the low income group.

The comparison of FDI projects per head of the CENTROPE regions with the average FDI projects per head of the EU 27 regions in the respective income groups basically confirms the previous analysis. Thus, compared to similar regions in the EU, all CENTROPE regions except Burgenland and Lower Austria recorded an over-proportionate inflow of FDI projects per head of population.

Table 16: FDI by regional income groups (in projects per million inhabitants)

Type of region	GDP	Con-struction & Ser-vices	HQ, busi-ness services, innova-tion	High and medium technoolo-gy inten-sive indus-tries	Low tech-nology intensive industries and elec-tricity	Retail trade and transport	TOTAL
High income	above 125%	35.4	30.1	5.8	4.5	19.7	95.5
Medium high income	100% - 125%	9.6	7.6	5.1	4.1	8.2	34.6
Medium low income	75% - 100%	9.5	6.5	6.0	6.0	8.2	36.2
Low income	below 75%	8.4	4.5	13.7	11.6	12.4	50.6
CENTROPE high income regions							
Vienna	166.3	58.0	59.2	9.7	2.4	42.3	171.5
Bratislava	151.5	102.4	64.4	16.5	16.5	82.6	282.4
CENTROPE medium high income regions							
Lower Austria	100.3	6.3	3.2	8.2	5.7	10.1	33.4
CENTROPE medium low income EU regions							
Burgenland	82.6	7.1	0.0	7.1	7.1	3.6	25.0
CENTROPE low income regions							
Trnava	74.7	18.5	11.5	26.5	7.1	14.1	77.7
South Moravia	71.1	10.8	1.8	37.9	21.6	25.2	97.3
Gyor Moson-Sopron	70.9	29.4	27.1	74.6	54.3	38.4	223.9
Vas	60.2	26.5	0.0	72.0	26.5	15.2	140.3
% of average high income EU region							
Vienna	166.3	163.6	196.5	165.6	54.2	214.6	179.5
Bratislava	151.5	289.0	213.9	283.1	370.7	419.3	295.6
% of average medium high income EU region							
Lower Austria	100.3	65.7	41.5	161.2	138.5	122.4	96.5
% of average medium low income EU region							
Burgenland	82.6	75.5	0.0	119.2	119.2	43.7	69.2
% of average low income EU region							
Trnava	74.7	219.6	252.5	193.9	60.8	114.3	153.5
South Moravia	71.1	128.1	39.7	277.1	186.3	204.3	192.3
Gyor Moson-Sopron	70.9	348.3	597.2	546.3	467.5	311.2	442.4
Vas	60.2	314.4	0.0	527.3	228.6	122.8	277.2

Source: fdimarkets.com, own calculations.

Source countries of FDI in CENTROPE

The final analysis with respect to regional FDI refers to the origins of FDI flows in the CENTROPE regions. This analysis allows on the one hand drawing conclusions on the level of integration amongst the CENTROPE countries and regions. On the other hand it

shows the degree of integration of CENTROPE with other countries in- and outside the EU. Cross-border investments are one channel of integration between two countries, next to the trade of goods and services or the flow of persons. The general assumption is that the higher the mutual flow or exchange of goods and services or persons is, the higher the two countries are integrated with each other. The same holds for cross border investment flows.

Table 17: FDI projects in CENTROPE by source country, 2003-2010

	Total FDI projects in CENTROPE	In % of Total
Total projects	**793**	**100.0**
source country		
Germany	193	24.3
USA	116	14.6
Austria	86	10.8
France	49	6.2
UK	41	5.2
Italy	37	4.7
Switzerland	29	3.7
Japan	26	3.3
Netherlands	26	3.3
Sweden	19	2.4
Belgium	15	1.9
Spain	15	1.9
Czech Republic	13	1.6
Ireland	11	1.4
Denmark	10	1.3
Finland	9	1.1
Canada	8	1.0
Hungary	8	1.0
South Korea	8	1.0
Taiwan	8	1.0

Source: fdimarkets.com, own calculations.

Table 18: Ranking of source countries by total FDI projects – CENTROPE regions, 2003-2010

	AT11		AT12		AT13		CZ064		HU221		HU222		SK01		SK021	
	Burgenland		**Lower Austria**		**Vienna**		**South Moravia**		**Gyor Moson-Sopron**		**Vas**		**Bratislava**		**Trnava**	
1	Germany	3	Germany	13	Germany	86	USA	21	Austria	32	Germany	9	Austria	33	France	12
2	Finland	1	France	5	USA	49	Germany	14	Germany	28	USA	7	Germany	31	Germany	9
3	France	1	Finland	4	Italy	20	Austria	9	USA	8	Austria	6	USA	23	S. Korea	7
4	Japan	1	Italy	4	Switzerl.	17	Japan	8	France	7	Belgium	2	UK	11	Austria	5
5	USA	1	USA	4	UK	13	Taiwan	6	Sweden	5	China	2	Czech Rep.	10	UK	5
6			Belgium	3	France	12	UK	6	Denmark	3	Singapore	2	France	9	USA	3
7			Switzerl.	3	Netherl.	11	France	3	Italy	3	Spain	2	Ireland	7	Hungary	2
8			UAE	3	Japan	8	Netherl.	3	Switzerl.	2	UK	2	Netherl.	7	Italy	2
9			Netherl.	2	Spain	8	Sweden	3	UK	2	Denmark	1	Italy	6	Japan	2
10			Norway	2	Sweden	6	India	2	Belgium	1	Italy	1	Japan	6	Luxembourg	2

Source: fdimarkets.com, own calculations.

Because of data limitations the analysis here is confined to measuring investment flows from source countries to the CENTROPE regions, as cross regional investment flows are not available. Thus, results do not precisely represent the state of integration by investment of the CENTROPE regions, but are expected to be highly indicative of the present state of integration.

Looking at the investment flows by source countries to the CENTROPE regions in the period 2003 to early 2010 we find that the main investing country in CENTROPE is Germany (*Table 18*). In each of the CENTROPE regions Germany is either the most or second most important investing country, and overall almost one quarter of all 793 FDI projects in CENTROPE has German origins. The second most important country in terms of individual FDI projects is the USA with 116 projects or 14% of the total FDI in CENTROPE. Moreover the USA is the most important investor in South Moravia.

Austria is the third most important investor in CENTROPE, despite its small size compared to Germany and the USA and the fact that it is part of CENTROPE. Austria is one of the main investors in Slovak and Hungarian CENTROPE regions, but interestingly enough not in Trnava, where it only comes fourth behind the France, Germany and South Korea. By contrast, FDI from the NMS CENTROPE countries to other CENTROPE regions is much rarer. The only significant investments undertaken are those by the Czech Republic, which in total has established 13 FDI projects in CENTROPE. The majority of these projects were in the Bratislava region.

2.5. Summary and conclusions

Despite a rapid catching up process in the NMS, the CENTROPE area still consists of regions at different stages of economic development. On the one hand there are high income regions in Austria as well as Bratislava in Slovakia, while on the other hand there are three regions with lower income. This shapes the pattern of integration that is observed both at the country and at the regional level. Thus, as far as FDI flows are concerned they have to be considered as unilateral, both within CENTROPE and also with respect to the European level. The NMS CENTROPE regions are all net receivers of foreign investment flows, while at the same time they conduct almost no foreign investment on their own. Still compared to all other EU regions the NMS CENTROPE regions as well as Vienna belong to the prime investment locations in Europe. Vienna (and Austria) has a special position, as it is both a main destination for foreign investment and a major investing country and

region, especially in the CENTROPE countries and regions (together with Germany and the USA). This makes its a primary gateway for FDI in the region.

At the same time the type of investment that flows into a region depends very much on its characteristics. Thus, both capital cities in CENTROPE attract predominantly FDI in the services sector, though for a highly urbanised area Bratislava has an over-proportionate amount of manufacturing FDI, too. In turn, Györ-Moson-Sopron, Vas, Trnava and also South Moravia are mainly attracting FDI in the manufacturing sectors. That is the FDI patterns in CENTROPE, and as a consequence also foreign trade patterns, show a clear functional split between the CENTROPE regions, with highly services oriented urban agglomerations on the one hand, and less urbanised regions specialising in manufacturing on the other side.

Overall, it seems that, independent of the type of FDI, the attraction of foreign investments is a sound strategy for the CENTROPE regions in terms of economic growth and development. A recent study by the EU Commission (European Commission, 2006) shows that the presence of multi-national enterprises (MNEs) in a region has positive spillovers on local firms, which through learning effects, taking over of new practices, co-operation with MNEs etc. increase their productivity and competitiveness. Furthermore FDI has also positive effects on the regions' labour markets, firstly through direct effects, but importantly also through indirect effects, as the jobs created in FDI firms generate income that supports more local activities. Moreover FDI spillovers to local firms add to employment generating effects, which in total outweigh the negative FDI effects from takeover restructuring and loss of market shares for competitors.

Given this, attracting FDI is an economically important goal for the CENTROPE regions, but a goal that to a considerable extent seems to oppose a closer integration. As illustrated by the analysis, FDI in CENTROPE is not mutual FDI, where the CENTROPE regions or countries invest in the other CENTROPE regions. Rather the CENTROPE regions are in competition with each other for FDI coming from outside the CENTROPE area (with the exception of Austrian investments). Thereby not all CENTROPE regions compete for the same type of FDI. Rather it seems that Vienna and Bratislava compete for services FDI, especially in the fields of headquarter, business and innovation services, while Györ-Moson-Sopron, Vas, Trnava, South Moravia and potentially also Lower Austria and Burgenland compete mainly for manufacturing multinational enterprises.

Still, even if competition may be differentiated it puts some tension on integration aims, tendencies and policies. Certainly, to some extent competition and integration contravene each other, or at least they might be perceived to do. In this respect it has to be said that firstly competition can never be ruled out, and in fact should not be ruled out as it is a major force driving the regional economies forward. Secondly, competition for FDI is not confined to the CENTROPE area, rather just as the CENTROPE regions might compete amongst each other for FDI they also compete with regions outside CENTROPE. Accepting therefore that there is and will be completion for foreign investments, two policy questions arise that may somehow close the gap between integration and competition.

Firstly, is it possible that a deeper integration within CENTROPE will give the individual CENTROPE regions a competitive advantage over regions outside CENTROPE?

Secondly, is it possible that if FDI is located in one CENTROPE regions the other CENTROPE regions benefit from it as well?

To find some tentative answers for this it is instructive to look first at the determinants for FDI. The study on FDI published by the EU Commission (*EU-Commission*, 2006) identifies several determinants for FDI. The first set of such determinants is derived from statistical analysis and lists the following characteristics. Border regions and regions with a good transport infrastructure attract more FDI than others. Likewise industry clustering and/or existing clusters of foreign firms are conducive to FDI, just as the educational level of the population, while surprisingly information and communication technology is of less importance. Furthermore the size of the domestic market (either regional or countrywise), language skills of the population as well as the tax rates are important determinants.

Apart from the results of the statistical analysis, which always suffer from data availability and quality limitations, the Commission study also presents the main location determinants from the point of view of a company's CEO (*EU-Commission*, 2006, p.28). Here the most important determinant (for FDI in the NMS) is the market size or the growth potential of the market, followed by the costs of production, the presence of suppliers, universities and research and education of the population.

Some of these determinants are not policy relevant or outside the CENTROPE regions' control, such as whether a region is a border region, tax policy, labour or production costs and market size. Other determinants are – at first sight – more focused on the competition for FDI such as infrastructure, education, language skills. However there are also factors,

where something might be gained from integration for all CENTROPE regions. These are industry clustering, the presence of other multinationals and the presence of suppliers.

These factors highlight the fact that the multinational enterprises that invest in one region are not independent, autarkic entities but rather for their own production depend on a network of local or nearby suppliers of intermediate inputs in the form of goods and services. Given the complexity of production or value chains of multinationals it is more than unlikely that one region alone can provide all the necessary inputs for – at least medium to large scale – multinationals. This fact can be exploited by policies aiming at deeper integration of the CENTROPE regions to the benefit of the whole CENTROPE area.

Firstly, a deeper integration of CENTROPE in the form of establishing cross-border industry or firm networks, fostering the co-operation between enterprises (multinational and locals) may have a number of positive effects. Multinationals might find it easier to find suppliers in close range to their production side, reduce search costs and thus make the CENTROPE regions even more attractive for FDI. The establishment of a cross-border firm network reduces some weaknesses of individual CENTROPE regions, which may arise because of their specialisation in certain economic activities, the lack of availability of specific inputs etc. Moreover embedding the multinationals into a geographically close and dense network of suppliers not only ties FDI stronger to the region but also generates more spillovers to a larger number of local firms, which, in turn, increases the competitiveness of these firms. Last but not least, through a cross border firm network the direct gains of one region because of FDI are more easily spread across the wider CENTROPE area.

3. Enterprise Co-operation

The competitiveness of regions in modern knowledge economies is to a large degree shaped by their capability to generate and use existing and newly created knowledge to produce new or improved commodities or technological processes, restructure existing supplier networks and to adapt existing institutional and organizational structures to the ever changing human needs (*Morgan,* 1997). In addition regional economists – in particular those concerned with regional innovation systems, learning regions and the competitiveness of regions – have often argued that these capabilities are highly dependent on the institutional context in a particular geographical entity. These are inter alia shaped by interactions of firms with respect to production, supply and innovation[11] and may take a variety of forms that are intermediate to both the ownership and market intermitted forms of inter-firm relationships.

To assess the potential of a region in terms of competitiveness in the knowledge economy one thus needs to know something not only about the extent and structure of foreign trade and foreign direct investments, but also about these intermediary forms of inter-firm relationships. In this chapter we therefore make a first step towards generating information on the structure and nature of inter-firm linkages in the CENTROPE region. We use a large scale enterprise survey conducted in Austria, the Czech Republic, Slovakia and Hungary by the Austrian Institute of Economic Research in collaboration with the Paul Lazarsfeld Gesellschaft für Sozialforschung in the framework of two projects (called FAMO/LAMO and AFLA) devoted to analyzing the enterprise strategies in the CENTROPE region and present some stylized facts on the extent of these forms of co-operation both within the CENTROPE region as well as with regions outside CENTROPE. Furthermore, we focus closely on the motivations for and impediments to co-operation in the region. The aim is to identify in which areas (as delimited by for instance industry of operation enterprise size and enterprise age) co-operation can already be observed and how policy could improve conditions for co-operation. In addition, we also augment information on trade and FDI provided in the previous chapters by additional data on the structure of enterprises trading and investing in this region.

[11] See for example. *Porter,* 1990 or *Hakanson*, 1989 for an exposition of the role of inter-firm networks and linkages in securing regional competitiveness, and *Boschma*, 2002, *Saxenian*, 1996 for case studies in which the importance of such inter firm networks

3.1. Data

We use data from a questionnaire conducted among 8,299 enterprises[12] in Austria (3,001 enterprises), the Czech Republic (2,298), Slovakia (1,500) as well as Hungary (1,500). Of these 4,291 resided in one of the NUTS 3 regions of CENTROPE (*Table 19* for details). The data were collected by telephone interviews in the time period from September to November 2010. Sampling was by random quota sampling with quotas set by NUTS 2 regions, sector and enterprise size. In contrast to many other questionnaires which either focus exclusively on manufacturing or on larger enterprises, care was taken to also cover small and medium sized enterprises as well as the service sectors. Thus around 45% of the enterprises in the sample have less than 10 employees and over 75% have less than 50. Only 8% have more than 250 employees. Also the absolute majority of the enterprises interviewed in the CENTROPE region are engaged in the service sector.

Furthermore among the interviewed enterprises 84.8% have domestic owners while 11.9% are owned by international corporations and a further 3.2% have a partial international ownership. Similarly the vast majority of the enterprises are single establishment enterprises (83.6%) while 16.8% are a headquarter of a multi-establishment enterprise and a further 5.7% are a branch (establishment) of a larger enterprise.

The features of the data thus broadly accord with the results of previous literature (e.g. *Pennerstorfer*, 2011*, Rozmahel et al.,* 2011). A large share of small enterprises is found in Vienna and in Bratislava, but also in the Hungarian CENTROPE, and the share of market service sector enterprises is larger in the Austrian CENTROPE than in its new member state parts. Yet, there are also some features of the data, in particular with respect to sectoral structure, which do not accord with previous results. Here in particular the vastly oscillating shares of non-market services and construction as well as the obvious under sampling of agriculture seem to question the representativity of the data on a sectoral level for individual regions.

To reduce the potential problems with representativity on the sectoral-regional level we therefore either aggregate data by sectors to report manufacturing and construction as well as market and non-market services (thereby omitting agriculture) when looking at a

[12] Since in this questionnaire no clear differentiation was made between firms and establishments, we here use the term enterprise, throughout.

regional level, or by aggregating across regions when focusing the analysis on a sectoral level.

Table 19: Sample size and structure of the FAMO/AFLA enterprise level data by CENNTROPE regions

	Győr	Vas	Vienna	Burgen-land	Lower Austria	South Moravia	Brati-slava region	Trnava region	CEN-TROPE
No. of observations	292	214	1,501	143	247	396	1,096	402	4,291
	Owner (in %)								
Domestic	88.0	87.9	88.3	92.3	93.1	77.0	82.8	72.6	84.8
Foreign	9.9	6.5	9.6	4.2	4.0	17.2	11.9	26.9	11.9
Joint Venture	2.1	5.6	1.7	3.5	2.8	5.8	5.4	0.5	3.2
	Organization (in %)								
Single Company	88.7	92.5	73.3	79.0	76.9	85.4	91.7	95.5	83.6
Headquarter	3.8	3.7	18.9	16.8	19.8	7.1	3.8	2.2	10.6
Branch office	7.5	3.7	7.5	4.2	3.2	7.6	4.5	2.2	5.7
	Age (in years, %)								
1 to 4 years	3.1	8.9	2.3	6.3	1.6	0.5	18.3	5.7	7.0
5 to 9 years	10.3	11.7	7.9	19.6	15.4	14.6	25.6	28.6	16.2
10 or more years	84.9	79.0	86.0	74.1	83.0	84.3	56.0	65.7	75.3
	Size (No. of employed, %)								
0 to 9	57.5	57.0	54.8	39.2	33.6	16.2	42.4	40.3	45.3
10 to 49	22.6	23.8	31.4	39.2	37.7	49.5	32.3	40.8	33.8
50 to 249	15.1	15.0	10.5	11.9	15.0	23.5	12.2	9.5	12.9
250 or more	4.8	4.2	3.3	9.8	13.8	10.9	13.0	9.5	8.0
	Sector (in %)								
Agriculture	2.4	2.8	0.8	0.0	1.2	2.3	0.7	3.7	1.4
Manufacturing	14.7	15.4	12.1	9.1	10.1	11.9	3.9	11.2	10.0
Construction	11.3	10.3	4.4	23.8	10.5	12.6	6.9	1.7	7.3
Market services	62.3	60.3	59.5	59.4	64.4	40.7	56.3	44.8	56.1
Non market services	9.2	11.2	23.2	7.7	13.8	32.6	32.1	38.6	25.2

Source: FAMO/AFLA Data, own calculations.

Table 20: Extent and form of co-operation among enterprises in CENTROPE by region and crude sector (in % of co-operating enterprises in all enterprises)

	Exports	Co-operation	Out of this		
	Total	Total	Foreign affiliate Joint Venture	Subcontracting Franchising	Other Cooperation
	Total Economy				
Gyor-Moson-Sopron	18.5	14.7	3.2	7.2	5.8
Vas	15.4	9.8	2.8	4.7	3.3
Vienna	23.1	13.7	9.7	5.1	3.1
Burgenland	14.0	7.0	4.9	2.8	2.8
Lower Austria	17.0	11.7	10.5	8.1	4.9
South Moravia	35.6	11.1	7.6	3.5	0.5
Bratislava	17.1	6.8	4.3	1.8	1.2
Trnava	13.2	3.0	1.7	1.0	0.3
Total	20.4	10.2	6.5	3.9	2.4
	Manufacturing/ Construction				
Gyor Moson-Sopron	32.9	17.1	5.3	6.6	6.6
Vas	30.9	14.6	5.5	7.3	1.8
Vienna	21.9	10.5	7.3	4.8	3.2
Burgenland	4.3	2.1	2.1	2.1	2.1
Lower Austria	17.7	7.8	7.8	7.8	7.8
South Moravia	45.4	16.5	12.4	6.2	0.0
Bratislava	21.0	8.4	6.7	2.5	0.0
Trnava	15.4	1.9	1.9	0.0	0.0
Total	34.2	10.6	6.9	4.7	2.6
	Services				
Gyor Moson-Sopron	12.4	13.9	2.4	7.2	5.7
Vas	9.2	7.8	2.0	3.3	3.9
Vienna	23.3	14.3	10.1	5.1	3.2
Burgenland	18.8	9.4	6.3	3.1	3.1
Lower Austria	17.1	13.0	11.4	8.3	4.2
South Moravia	32.4	9.7	6.2	2.8	0.7
Bratislava	16.6	6.6	4.0	1.8	1.3
Trnava	12.8	3.3	1.8	1.2	0.3
Total	19.4	10.2	6.4	3.8	2.4

Source: FAMO/AFLA Data, own calculations.

3.2. The Extent and forms of inter-enterprise co-operation

Our main focus in this chapter is on a set of questions in which enterprises were asked whether they export to foreign markets and/or co-operate with enterprises abroad. In addition with respect to co-operation the enterprises were asked to separately list the number of co-operations by type of co-operation (ownership, subcontracting/franchising and other forms of co-operation) by the country in which the partner is located. This allows us to also

identify how many partners (by type of co-operation) were located in other CENTROPE countries and how many were located elsewhere.

Table 21: Intensity of co-operation (number of co-operations) by type of co-operation, location of the partner and region

	Foreign affiliate Joint Venture		Subcontracting Franchising		Other Cooperation		Total	
Co-operation with	CENTROPE country	Other country	CENTROPE country	Other country	CENTROPE country	Other country	CENTROPE country	Other country
	Absolute							
Gyor-Moson-Sopron	11	5	72	34	43	12	126	51
Vas	17	3	18	3	15	6	50	12
Vienna	178	435	75	230	43	112	296	777
Burgenland	2	18	1	4	1	4	4	26
Lower Austria	18	156	24	73	10	54	52	283
South Moravia	42	45	13	12	0	13	55	70
Bratislava region	129	58	25	40	19	21	173	119
Trnava region	7	2	6	9	0	1	13	12
CENTROPE	**404**	**722**	**234**	**405**	**131**	**223**	**769**	**1,350**
	Per 100 enterprises interviewed							
Gyor-Moson-Sopron	3.8	1.7	24.7	11.6	14.7	4.1	43.2	17.5
Vas	7.9	1.4	8.4	1.4	7.0	2.8	23.4	5.6
Vienna	11.9	29.0	5.0	15.3	2.9	7.5	19.7	51.8
Burgenland	1.4	12.6	0.7	2.8	0.7	2.8	2.8	18.2
South Moravia	11.8	5.3	2.3	3.6	1.7	1.9	15.8	10.9
Lower Austria	7.3	63.2	9.7	29.6	4.0	21.9	21.1	114.6
Bratislava	10.6	11.4	3.3	3.0	0.0	3.3	13.9	17.7
Trnava	1.7	0.5	1.5	2.2	0.0	0.2	3.2	3.0
CENTROPE	**9.4**	**16.8**	**5.5**	**9.4**	**3.1**	**5.2**	**17.9**	**31.5**

Source: FAMO/AFLA Data, own calculations, Note: CENTROPE – country = co-operation with a partner from another CENTROPE country than the own, Other country = co-operation with a partner from the rest of the world.

The results (*Table 21*) once more re-confirm the large degree of openness of the CENTROPE region in terms of exports and FDI projects. Over 20% of the enterprises interviewed (and more than 34% of the manufacturing enterprises) stated that they were currently exporting and 10.2% stated that they had at least one co-operation (either in the form of ownership, subcontracting/franchising or other co-operations) with an international partner. The 439 enterprises with some form of co-operation held a total of slightly more than 2,100 individual co-operation relationships so that the average enterprise active in international co-operation has between 5 to 6 such relationships. Per enterprise in the

sample (including those without co-operation) about 0.5 such relationships were registered.

Table 22: Purpose of the most important co-operation (in % of all co-operating enterprises)

	Production	Marketing/Sales	R&D	Servicing Customers
	Owner			
Domestic	44.0	29.8	8.5	17.7
Foreign	37.5	51.8	0.0	10.7
Both/Joint venture	56.0	20.0	4.0	20.0
	Organisation			
Single Company	46.1	32.0	7.1	14.9
Headquarter	32.1	33.9	8.9	25.0
Branch office	45.2	38.7	0.0	16.1
	Age of Enterprise (in years)			
1 to 4	57.1	14.3	0.0	28.6
5 to 9	45.2	28.6	9.5	16.7
10 or more	43.1	33.8	6.7	16.4
	Size (No. of employed)			
0 to 9	47.6	33.6	5.6	13.3
10 to 49	38.6	33.3	8.8	19.3
50 to 249	44.9	34.7	4.1	16.3
250 or more	43.5	21.7	8.7	26.1
	Sector			
Agriculture	20.0	20.0	0.0	60.0
Manufacturing	63.2	31.6	0.0	5.3
Construction	52.6	31.6	5.3	10.5
market services	38.3	36.4	6.7	18.7
non market services	50.0	32.4	2.1	15.5
	Part of CENTROPE			
Austrian CENTROPE	36.3	29.7	9.9	24.2
Czech CENTROPE	31.6	35.8	1.0	31.6
Hungarian CENTROPE	55.9	41.2	2.9	0.0
Slovak CENTROPE	56.7	31.7	3.3	8.3
Total	43.8	32.8	6.7	16.7

Source: FAMO/AFLA Data, own calculations.

Ownership relationships (either in the form of sole proprietorship or as a joint venture with other enterprises) are the most important form of co-operation in the region. 6.5% of the enterprises had at least one foreign affiliate or joint venture and in total 1,126 such relationships were reported. Subcontracting and franchising as well as other forms of co-operation, by contrast, are of a lesser importance. 3.9% of the enterprises had at least one franchising or subcontracting relationship with a foreign partner and 2.4% had at least one

other co-operation. The number of co-operations reported was 637 for franchising and 354 for other co-operations with international partners.[13]

While this reconfirms previous evidence of the high degree of openness in the CENTROPE region, evidence on the strength of internal ties is somewhat more mixed. In particular the majority of co-operation ties in the region go to countries outside the CENTROPE region. In total 1,350 of the reported 2,119 co-operation relationships (or around 63%) are directed outside the CENTROPE countries, with this share differing only very little among the different forms of co-operation (ranging from slightly more than 64% for ownership co-operation to somewhat less than 63% for subcontracting and franchising). The inter-enterprise networks of CENTROPE are therefore of a rather large geographical scale – at least in aggregate – co-operation within the region is of a lesser importance for the enterprises of CENTROPE than the integration of CENTROPE into the European economy.

In addition, the response to the question on the purpose of the most important co-operation also suggests that the relative majority of the relationships (43.8%) serve the purpose of production, followed by sales and marketing co-operations (32.8%). By contrast only 6.7% of all co-operating enterprises in the CENTROPE region (and only between 1% and 3.3% of those in the new member state parts of the CENTROPE region) stated that the most important of their co-operations serves research and development.

3.3. Structure of inter-enterprise co-operation

3.3.1. Enterprise characteristics and co-operation

The FAMO/AFLA enterprise survey therefore suggests that while the CENTROPE region is a highly open region in terms of the export and international co-operation activities, for the majority of the enterprises a deep integration into European and world markets is more important than co-operation within the CENTROPE region. In addition inter-enterprise networks are still rather hierarchical in this region, with ownership based relationships being of a much larger importance than other, less hierarchical forms of co-operation. Finally, co-operations are rarely based on an endeavour to access R&D capacities but focus very strongly on the more traditional forms of sales and production co-operation. Thus inter-

[13] Note that the sum of the share of enterprises co-operating in different forms does not add up to the total share of enterprises co-operating on account of many enterprises co-operating in more than one form.

enterprise networks in CENTROPE are still far away from the closely knit, unhierarchical intra-regional networks focused on technology and knowledge exchange, that have often been seen as the determinants of regional success in the case study literature on regions such as e.g. Silicon Valley (*Saxenian,* 1996) or also the Little Italy (*Boschma,* 2002).

Table 23: Structure of the intensity of co-operation (total number of co-operations per 100 enterprises interviewed) by enterprise characteristics, form of co-operation and location of the partner

	Foreign affiliate Joint Venture		Subcontracting Franchising		Other Cooperation		**Total**	
	CEN-TROPE Country	other Region	CEN-TROPE country	Other region	CEN-TROPE Country	Other region	CEN-TROPE Country	Other region
	Owner							
Domestic	5.4	12.6	4.6	9.1	2.3	4.4	12.3	26.1
Foreign	33.6	44.6	10.4	12.4	7.3	9.6	51.3	66.6
Both/Joint venture	27.3	25.2	10.8	8.6	6.5	10.8	44.6	44.6
	Organisation							
Single Company	5.4	7.4	4.7	7.6	2.4	3.9	12.4	18.9
Headquarter	21.3	45.9	4.8	11.2	4.8	5.7	31.0	62.9
Branch office	46.1	99.6	18.0	33.1	9.4	23.3	73.5	155.9
	Age of Enterprise (in years)							
1 to 4	14.0	4.0	1.0	1.0	1.3	3.0	16.3	8.0
5 to 9	6.3	11.1	3.7	8.1	3.6	2.0	13.7	21.2
10 or more	9.3	18.4	6.1	10.6	3.0	6.1	18.4	35.2
	Size (No. of employed)							
0 to 9	4.3	5.5	4.8	8.4	3.5	4.6	12.6	18.5
10 to 49	12.0	20.0	4.9	8.8	2.8	4.3	19.7	33.1
50 to 249	17.4	39.1	7.4	8.7	2.2	4.9	26.9	52.6
250 or more	14.8	31.6	8.1	19.4	3.2	12.8	26.1	63.8
	Sector							
Agriculture	5.0	5.0	10.0	11.7	0.0	1.7	15.0	18.3
Manufacturing	11.1	23.7	8.4	17.2	5.8	9.0	25.3	49.9
Construction	10.5	6.1	5.4	2.2	3.2	1.6	19.1	9.9
Market services	9.0	19.6	6.0	9.1	3.1	6.0	18.1	34.7
Non market services	9.6	11.8	2.9	9.0	1.9	3.1	14.4	23.9

Source: FAMO/AFLA Data, own calculations.

This should, however, have been expected given that a by now quite substantial body of research (see e.g. *Glotz and Braun,* 1997, *Grabher,* 1993) shows that these spectacular cases are exceptional and difficult to imitate by regional policy makers. What is, however, more important is that while this is true on "average" it is definitely not true for all enter-

prises in all parts of CENTROPE. For instance as can be seen from *Table 22* the share of enterprises that consider an R&D co-operation as their most important form of co-operation is substantially above average for enterprises in domestic ownership, for headquarters, for enterprises that are of a medium size (i.e. have between 10-49 employees) as well as for enterprises in the age between 5-9 years and enterprises located in the Austrian CENTROPE. Such enterprises should therefore be seen as the major addressee's of policies aimed at increasing enterprise level R&D co-operation in the CENTROPE region.

Similarly, as evidenced by *Table 23*, which shows the intensity of co-operation (as measured by the number of co-operations reported per 100 enterprises), the geographical extent of enterprise co-operation varies substantially among different types of enterprises. Young enterprises that have existed for less than five years as well as construction enterprises (in all areas of co-operation) tend to co-operate more often with partners from another CENTROPE country than with a partner from other countries. Furthermore, for very small enterprises (with less than 10 employees), enterprises that are single establishment enterprises, but also – due to a large share of regional headquarters among foreign owned enterprises - for enterprises that are either partially or completely foreign owned co-operation within the CENTROPE region has a much larger relative importance than for the other enterprises.

The CENTROPE region is therefore a relevant "co-operation space" primarily for enterprises whose internationalization is limited on account of resources (such as small and young enterprises) and/or technological factors (such as the limited tradability of construction output). The CENTROPE region is, however, also relevant for multinational enterprises, when designing regional supply and sales channels, since enterprises with joint national and foreign ownership co-operate in the forms of ownership and franchising\subcontracting with other CENTROPE countries.

Table 24: Structure of the most important cooperation partners of enterprises in CENTROPE by enterprise characteristics

	Size of most important partner			Age of cooperation with most important partner		
	Small[1)]	Medium[2)]	Large[3)]	1 to 4 years	5 to 9 years	10 or more years
	Owner					
Domestic	54.2	23.3	22.5	34.3	29.0	36.7
Foreign	42.1	35.1	22.8	13.5	27.0	59.5
Both/Joint venture	44.0	48.0	8.0	42.1	15.8	42.1
	Organisation					
Single Company	51.9	24.9	23.2	34.1	25.2	40.7
Headquarter	64.3	25.0	10.7	27.0	29.7	43.2
Branch office	25.0	46.9	28.1	19.1	42.9	38.1
	Enterprise age (in years)					
1 to 4	50.0	35.7	14.3	66.7	25.0	8.3
5 to 9	40.0	25.0	35.0	36.1	52.8	11.1
10 or more	53.1	27.1	19.9	28.3	22.6	49.2
	Enterprise size (No. of employed)					
0 to 9	59.2	21.1	19.7	34.3	27.3	38.4
10 to 49	52.2	28.3	19.5	32.5	22.1	45.5
50 to 249	27.7	42.6	29.8	15.6	43.8	40.6
250 or more	45.0	30.0	25.0	41.2	23.5	35.3
	Sector					
Agriculture	20.0	20.0	60.0	66.7	0.0	33.3
Manufacturing	37.8	32.4	29.7	26.9	38.5	34.6
Construction	47.4	31.6	21.1	31.3	37.5	31.3
Market services	52.5	27.7	19.8	30.7	24.3	45.0
Non market services	59.3	22.0	18.6	35.0	30.0	35.0
	Part of CENTROPE					
Austrian CENTROPE	56.0	28.0	16.0	29.1	25.6	45.4
Czech CENTROPE	57.9	26.3	15.8	17.7	29.4	52.9
Hungarian CENTROPE	38.2	29.4	32.4	34.9	22.7	42.4
Slovak CENTROPE	50.0	23.3	26.7	35.7	35.7	28.6
	Age of co-operation (in years)					
1 to 4	62.0	15.5	22.5			
5 to 9	45.9	34.4	19.7			
10 or more	46.6	22.7	30.7			
Total	51.2	27.3	21.4	31.6	27.6	40.9

Source: FAMO/AFLA Data, own calculations Notes 1) 1-49 employed, 2) 50-249 employed 3) 250 or more employed

Finally, there are also differences in the form of co-operation chosen by different types of enterprises. The high share of ownership relationships in CENTROPE is due to the large share of ownership relations among foreign owned companies, enterprises that are head-

quarters, enterprises with more than 10 employees and also young enterprises[14]. These all have a share of ownership relations among all relations that exceeds 50%. By contrast, franchising and subcontracting but also other forms of co-operation are much more popular among very small enterprises (with less than 9 employees), who have a share of 43% of the co-operations in franchising and 26% of co-operations in the form of other co-operations. Thus – as also found by other studies on the region (e.g. Huber and Kletzan, 2000) - small enterprise-networks seem to be substantially less hierarchical than large enterprise networks.

3.3.2. Structure of the most important partner

These differences among enterprises also apply when the enterprise size of the most important partner and the duration of the co-operation relationship[15] are considered as in *Table 24*. This table shows that – following the general structure of CENTROPE, where the majority of enterprises are small – the absolute majority of enterprises co-operate with small enterprises (51.2%), while the relative majority of relationships is also 10 years or older (40.9%), with very recent co-operations (with an "age" of less than 5 years) – following on second place (31.6%).

Aside from this both foreign owned enterprises as well as Joint Ventures are more likely to co-operate with medium sized enterprises. Very small enterprises (with 0 to 9 employees) often co-operate with other small enterprises, while medium sized enterprises often co-operate with medium or large enterprises. Large enterprises rarely co-operate with small enterprises. Also young co-operations are usually those among small enterprises while long standing relationships are largely among large enterprises. The small enterprise segment is therefore also characterized by relatively new relationships that change more frequently, while large enterprise segment often have more stable relationships.

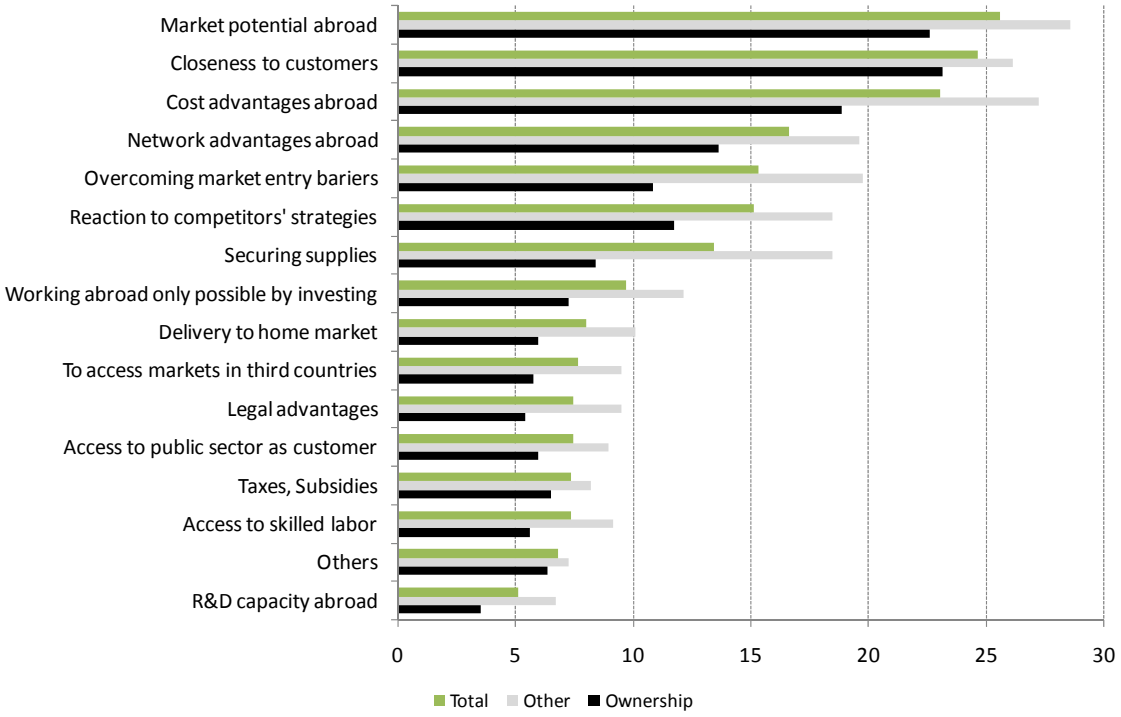
[14] One explanation for this is that a large number of the young enterprises in our sample are often recently founded affiliates of larger enterprises.

[15] In the course of the interview enterprises were asked whether the partner enterprise in the most important relationship is a small enterprise with less than 50 employees) a medium sized enterprise with 50 to 249 employees) or a large enterprise (250 or more employees) and when this most important co-operation started (from which we calculate the age of the co-operation)

3.4. Motives and Problems faced in Co-operation

This large heterogeneity in the patterns of co-operation among different types of enterprises suggests that the addressees of policies aiming at increasing R&D co-operation in the region are primarily domestic owned enterprises, headquarters and enterprises of a medium size and that efforts to increase cross-border co-operation primarily affect small and young enterprises. In this section we thus consider the overall motives and problems reported by co-operating enterprises, and analyze how these differ among the parts of CENTROPE in which these enterprises reside and how they vary with enterprise size, age, ownership form and form of co-operation (ownership and for others).

Figure 5: Motives for co-operations by form of co-operation (co-operation within and outside CENTROPE)

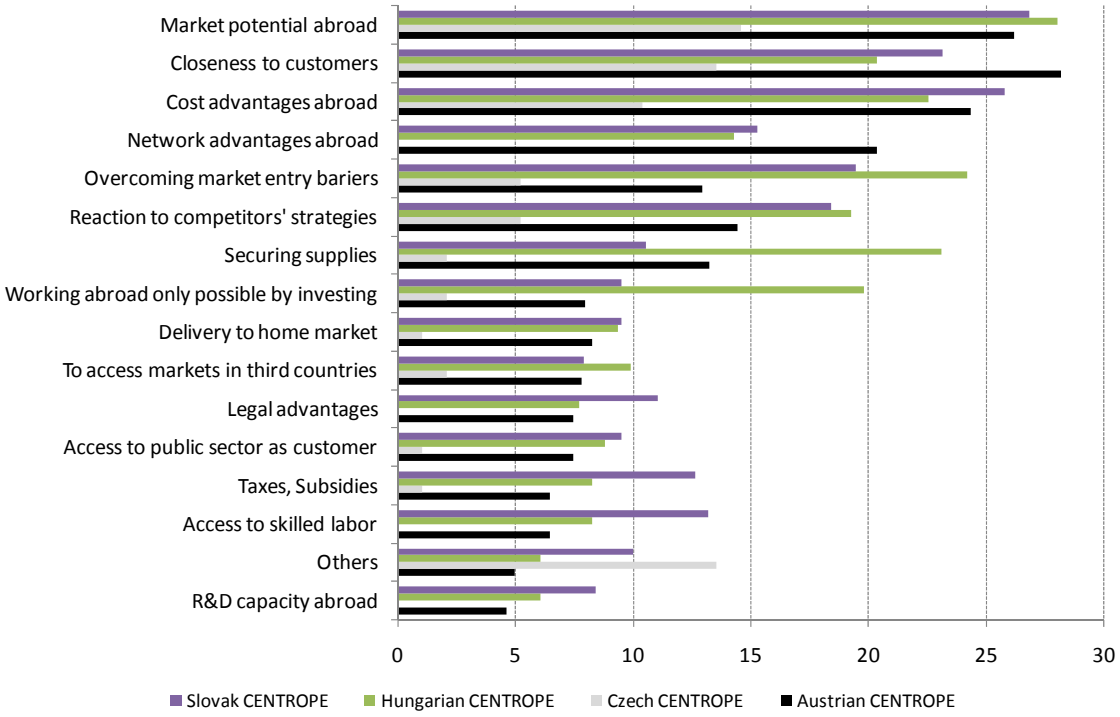


Source: FAMO/AFLA Data, own calculations. Note figure reports share of enterprises reporting category as important motive, answers are not mutually exclusive.

3.4.1. Motives for Co-operation

Considering the reasons for engaging in an ownership based relationship we see in Figure 5 that in aggregate the two most important reasons for entering such a co-operation are associated with motives of acquiring market access (proximity to customers and the market potential abroad). Thus as also found in much of the research on FDI in the new member states (see for example *Altomonte and Guagliano,* 2003) investments made by foreign enterprises in CENTROPE can be mostly classified as market seeking. On the third place (and with some distance to the two most important motives) we already find the cost advantages of the region. Motives such as network advantages abroad, reactions to competitor's strategies and also overcoming market entry barriers follow at some distance. Thus market access and cost advantages are the most important reasons for choosing an ownership based form of co-operation in CENTROPE.

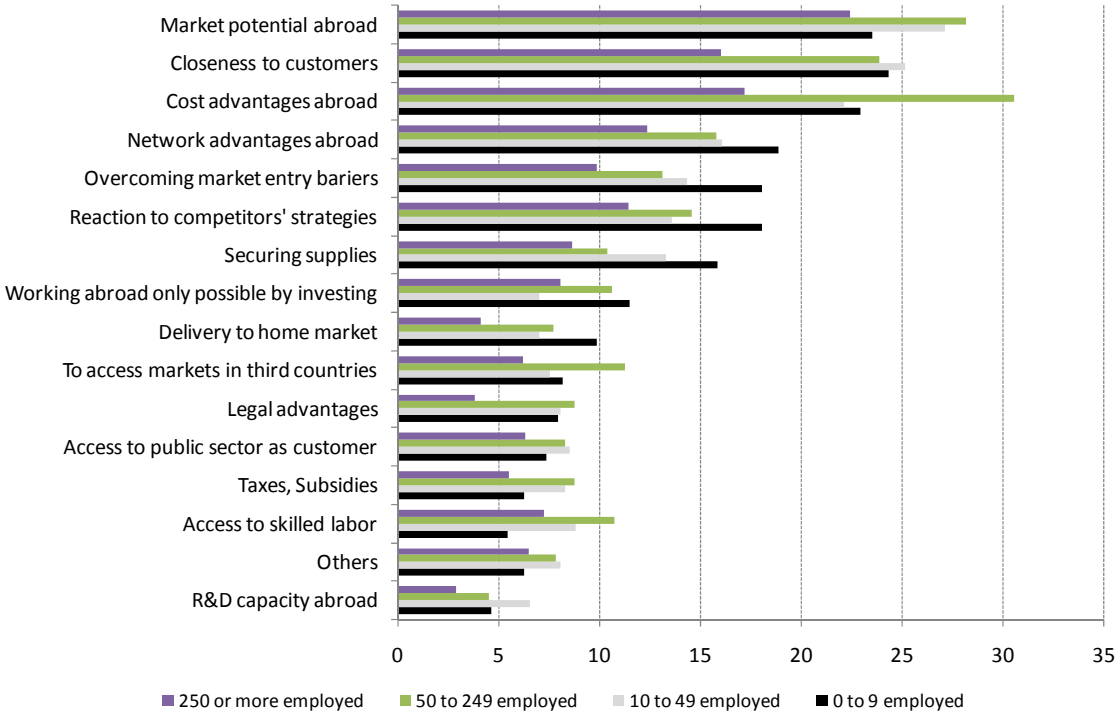
Figure 6: Motives for co-operations by region of enterprises (co-operation within and outside CENTROPE)



Source: FAMO/AFLA Data, own calculations. Note figure reports share of enterprises reporting category as important motive, in %, answers are not mutually exclusive.

These motives are also the most important motives for other forms of co-operation (such as subcontracting and franchising). The only difference here is that cost advantages are the second most important reason for entering such a co-operation, while closeness to customers is the third most important, and that some of the less important reasons for cross-border co-operation (e.g. overcoming market entry barriers and securing supplies) are slightly more important for these other forms of co-operation.

Figure 7: Motives for co-operations by enterprise size (co-operation within and outside CENTROPE)

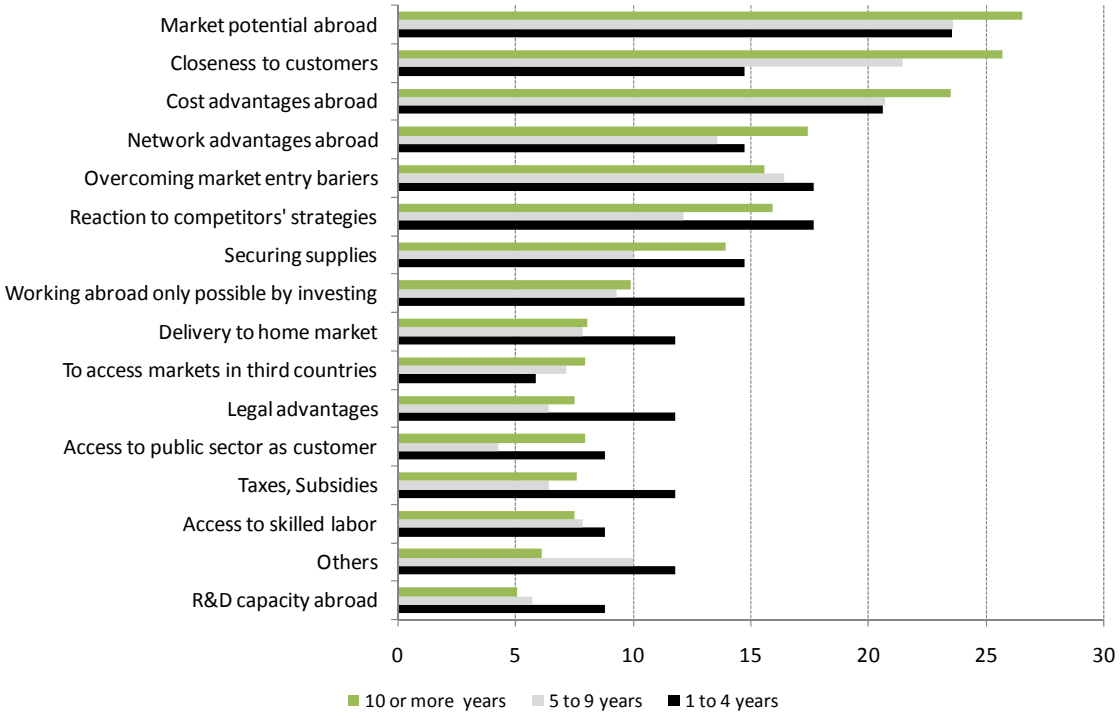


Source: FAMO/AFLA Data, own calculations. Note figure reports share of enterprises reporting category as important motive, in %, answers are not mutually exclusive.

More technologically or human capital based motives for co-operation by contrast are found at the end of the list both for ownership as well as other co-operations. "Access to skilled labour" is the third least important motive and the R&D capacity abroad the least important in both cases. This reconfirms our earlier conjecture with respect to the unimportant role of more technologically based co-operations for the CENTROPE region.

The motivations of the enterprises for entering ownership based relations, however, differ depending on the location of the enterprise as well as enterprise size and age. In particular for enterprises that reside in the Austrian CENTROPE the closeness to customers and network advantages abroad are slightly more important motives for co-operating while for enterprises located in the Hungarian CENTROPE closeness to customers is less important, and Czech enterprises often mention unspecified "other reasons" for co-operation.

Figure 8: Motives for co-operations by enterprise age (co-operation within and outside CENTROPE)

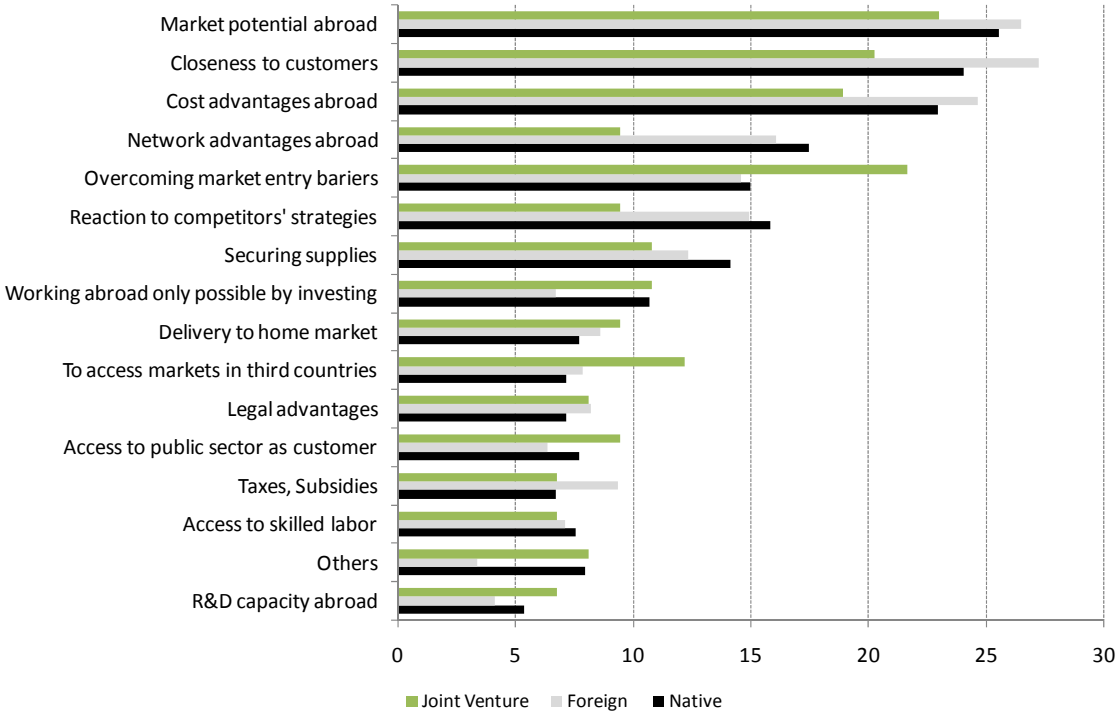


Source: FAMO/AFLA Data, own calculations. Note figure reports share of enterprises reporting category as important motive, in %, answers are not mutually exclusive.

More important differences, however, exist among enterprises of different size groups (Figure 7). Here in particular large enterprises attach much less importance to factors that are associated with market access and a higher importance to cost motives. For them market potential abroad and closeness to customers rank only behind the cost advantages in the motives for co-operation. These enterprises are thus, more concerned about the cost structure when investing abroad. They, however, also attach a larger weight to the

access to skilled labour. In addition for small enterprises also network advantages abroad (i.e. the vicinity to suppliers and related producers abroad) are an important reason to co-operate. The R&D capacity abroad is, however, an unimportant reason for co-operation among enterprises of all size groups.

Figure 9: Motives for co-operations by ownership (co-operation within and outside CENTROPE)

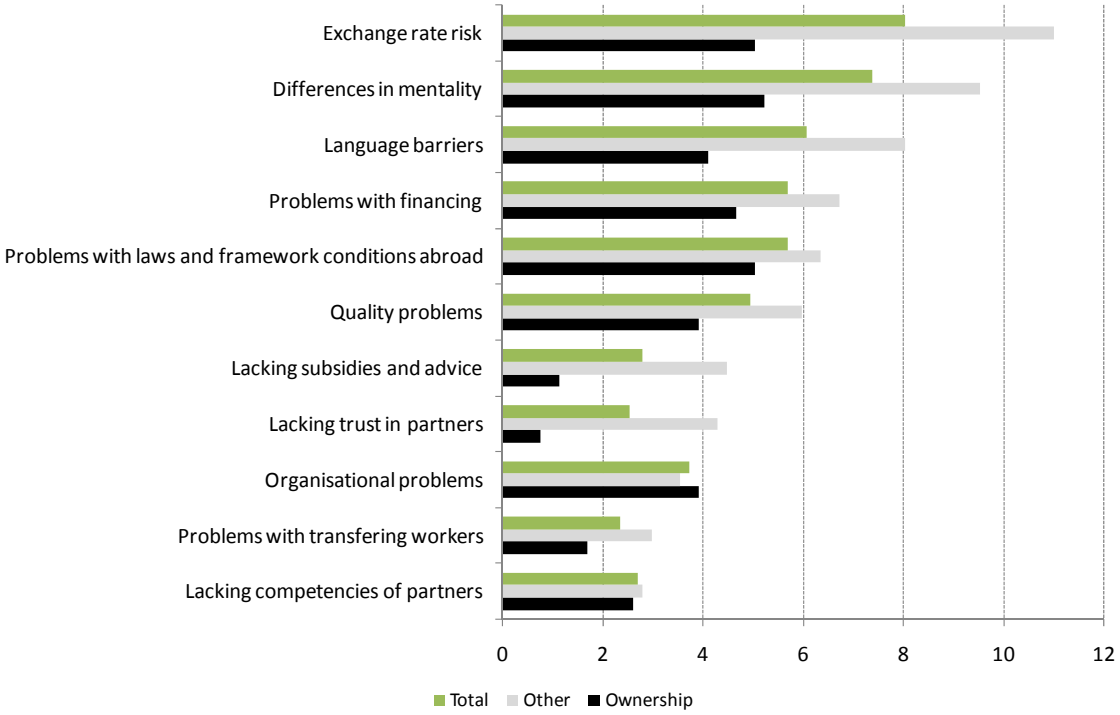


Source: FAMO/AFLA Data, own calculations. Note figure reports share of enterprises reporting category as important motive, in %, answers are not mutually exclusive.

Similarly there are also some important differences in the reasons for co-operating among enterprises of different age groups (Figure 8). While the reasons for co-operation among older enterprises in general follow the overall structure, younger enterprises (with 1 to 4 years of existence) differ substantially from this pattern. They put substantially more emphasis on overcoming entry barriers, securing supplies and legal advantages but also on the R&D capacities abroad. They are therefore the only group of enterprises for whom R&D capacities abroad are of some importance.

Finally, with respect to the ownership structure (Figure 9) the motives for co-operation follow the general patterns for both domestically and foreign owned enterprises. Joint Ventures, however, are often founded to overcome market entry barriers. For them this is the second most important reason to co-operate.

Figure 10: Problems of co-operations by form of co-operation (co-operation within and outside CENTROPE)



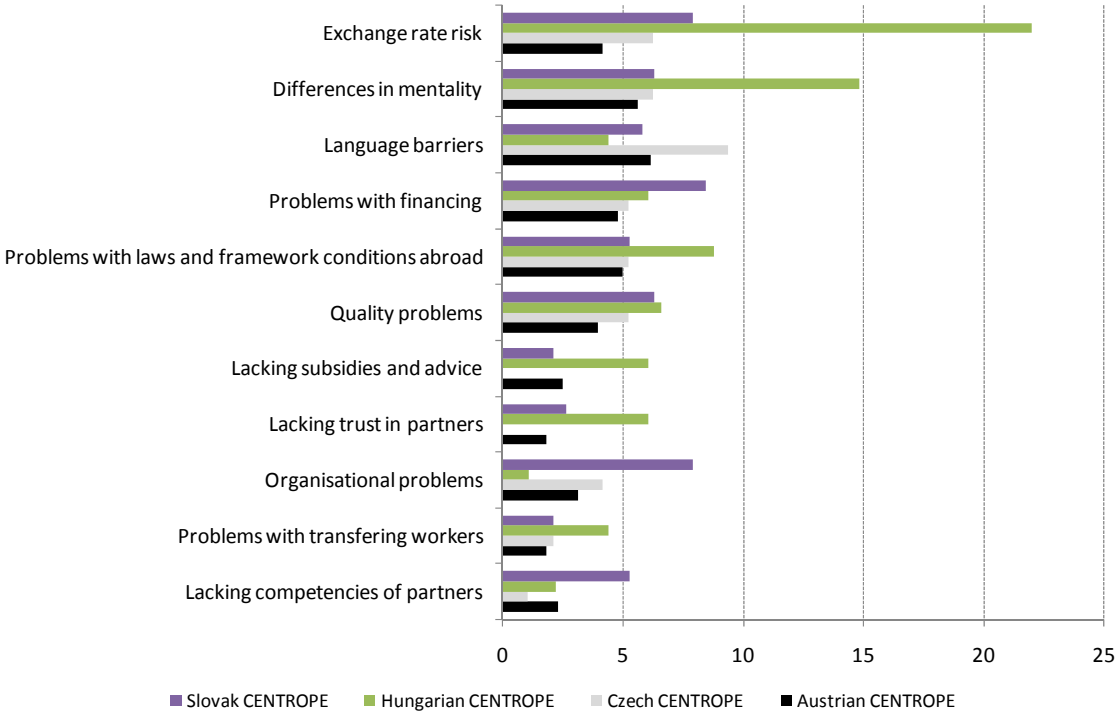
Source: FAMO/AFLA Data, own calculations. Note figure reports share of enterprises reporting to have problems with the respective category, in %, answers are not mutually exclusive.

3.4.2. Problems of Co-operation

When considering the problems of co-operations reported by the enterprises interviewed a first finding is that even for the most important problems reported, which are exchange rate risks and differences in mentality, only very few enterprises report problems. As can be seen from Figure 10 in total only around 8.0% of the enterprises with some form of co-operation report that they currently have problems with exchange rate risks and 7.4% currently have problems with cultural differences. For all other categories even fewer enterprises report problems.

Exchange rate risks, differences in mentality and language barriers thus belong to the three most important problems encountered by co-operating enterprises. The importance of exchange rate risks stands in contrast to the finding of much of the literature (e.g. *Huber and Kletzan,* 2000) on cross-border co-operation. This may be due to the turbulences on exchange rate markets at the time of the interviews which seem to have impacted heavily on the problems experienced by the co-operating enterprises.

Figure 11: Problems of co-operations by country (co-operation within and outside CENTROPE)

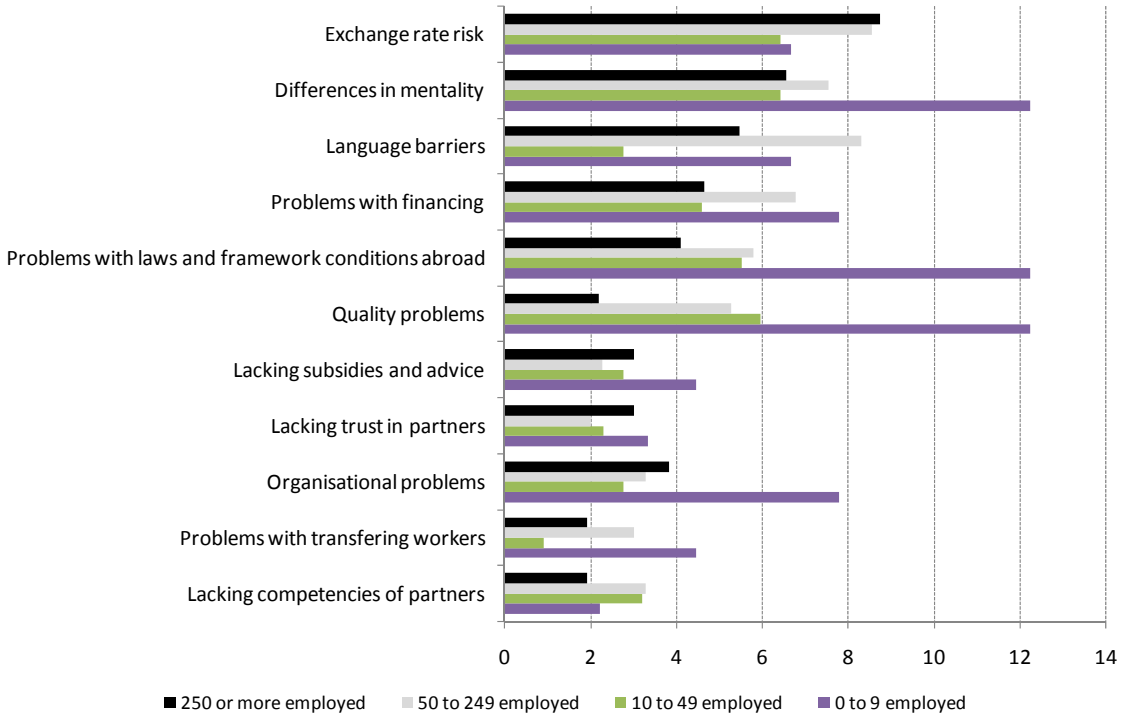


Source: FAMO/AFLA Data, own calculations. Note figure reports share of enterprises reporting to have problems with the respective category, in %, answers are not mutually exclusive.

Interestingly, these problems – both with exchange rate risks but also with language barriers and differences in mentality – seem to be slightly larger for co-operations based on subcontracting, franchising or other forms of co-operation, than for ownership based forms of co-operation, since 11.0% of the enterprises in these forms of co-operation (as opposed to 5.0% in ownership co-operation) report problems with exchange rate risks and 9.5% (as opposed to 5.2% for ownership based co-operations) report problems with differences in

mentality. 8% (as opposed to 4.1% of ownership based co-operations) are experiencing language problems. This suggests that ownership based forms of co-operation, where many of the potential conflicts arising during the relationship can be solved by hierarchical decision making, are somewhat less likely to suffer from problems than contractual forms of co-operation, where a solution by hierarchy is not possible.

Figure 12: Problems of co-operations by enterprise size (co-operation within and outside CENTROPE)



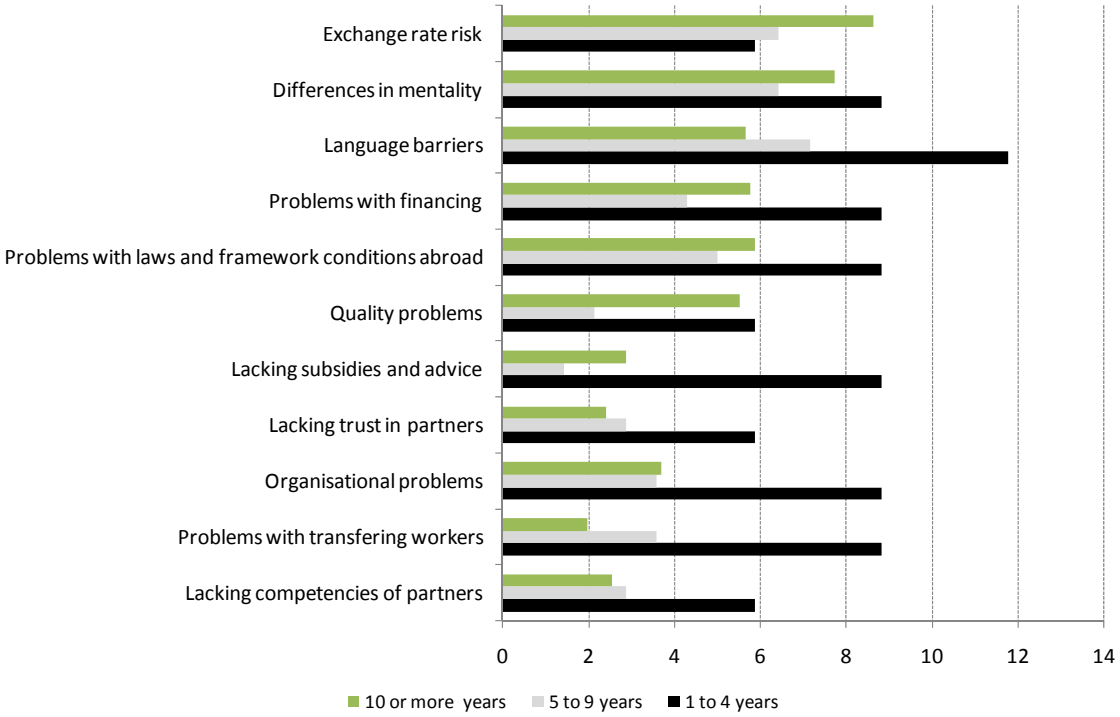
Source: FAMO/AFLA Data, own calculations. Note figure reports share of enterprises reporting to have problems with the respective category, in %, answers are not mutually exclusive.

Hungarian enterprises report substantially higher shares of enterprises (22.0%) that are facing problems with exchange rate risks, but also substantially higher shares of enterprises facing other problems. This indicates that the economic turbulences faced in Hungary at the time of interview have caused exchange rate risks to be particularly preponderant in the co-operations of this country and have put the relationships under substantial additional stress, causing problems also in domains where problems are often felt due to

ascription of cultural differences to partners or where trust in partners is shaken to some degree (Figure 11).

Differences in terms of the problems in co-operation reported by enterprises between the other CENTROPE regions were rather small and apply mostly to the less important reasons (for which the number of observations of enterprises reporting these problems is too small to draw firm conclusions). The only significant difference is that for Czech enterprises language barriers are the single most important problem reported, while for the enterprises of the Austrian CENTROPE exchange rate risks are substantially less important than for the enterprises in the other CENTROPE regions.

Figure 13: Problems of co-operations by enterprise age (co-operation within and outside CENTROPE)



Source: FAMO/AFLA Data, own calculations. Note figure reports share of enterprises reporting to have problems with the respective category, in %, answers are not mutually exclusive.

Again differences in the problems encountered by enterprises of different sizes and ages are much larger than national differences. In particular, large enterprises (with more than 250 employees) encounter quite different problems in co-operation than small enterprises

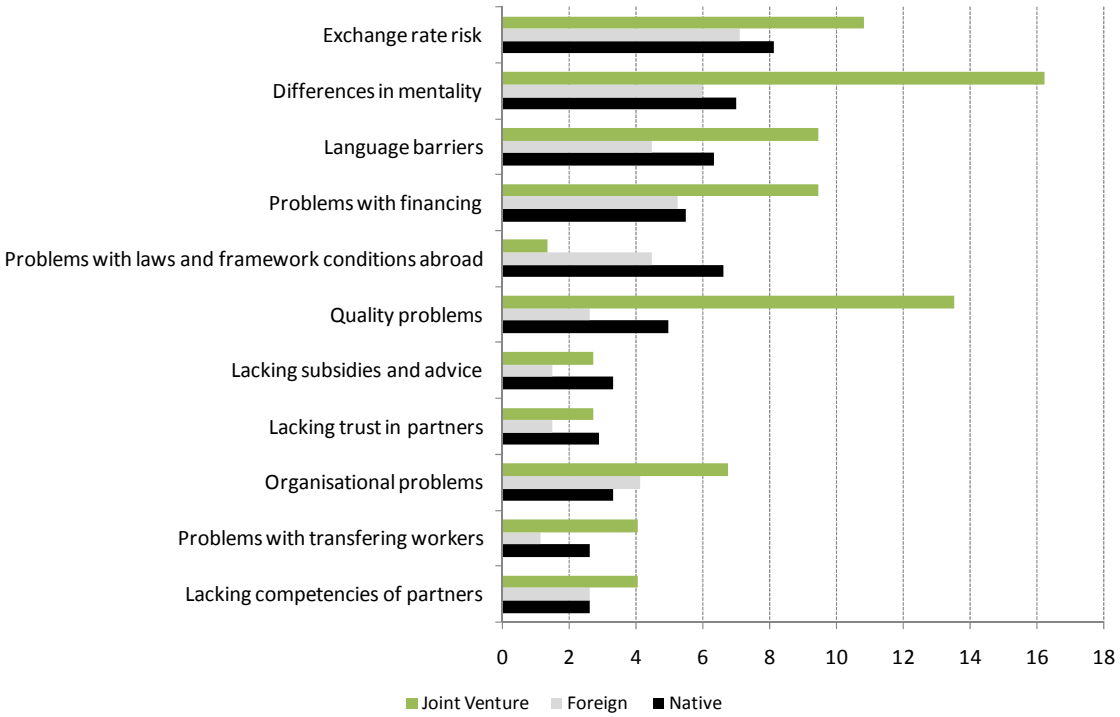
(Figure 12). Over 12% of the small enterprises (with less than 10 employees) report to currently have problems with cultural differences, the framework conditions in the receiving countries and quality problems with their co-operation partners and almost 8% of these enterprises have organizational problems. The high share of enterprises that has problems with exchange rate risks is thus also primarily due to the large share (more than 8%) of small enterprises that have problems with exchange rate risks.

Similarly, younger enterprises (which have existed for less than 5 years) also have significantly more problems with almost all aspects of cross border co-operation than other enterprises (Figure 13). This applies to problems with language barriers, financing, laws and framework conditions, organizational problems, lacking subsidies and consultations as well as to problems with transferring workers. This thus implies that in particular for young enterprises cross-border co-operation is often associated with larger problems.

The high share of enterprises reporting problems with exchange rate risks in our sample, however, seems to be primarily due to older enterprises (that have existed for more than 10 years). Among them 8.6% currently report to be currently facing problems with exchange rate risks.

In contrast to the results on the motivation for co-operation, results on the problems encountered suggest that the ownership form of an enterprise has an impact on the problems faced during co-operation. In particular, in almost all categories a larger share of Joint Venture enterprises report to currently have problems in co-operation, which implies that the dual ownership implied by this organizational form is often particularly prone to conflict.

Figure 14: Problems of co-operations by ownership (co-operation within and outside CENTROPE)



Source: FAMO/AFLA Data, own calculations. Note figure reports share of enterprises reporting to have problems with the respective category, in %, answers are not mutually exclusive.

3.5. Plans for Co-operation

Our results therefore suggest that the motivations for cross-border co-operation among enterprises in the CENTROPE region remain to be primarily driven by the attempt of enterprises to secure market access and to save costs, while more technologically and know-how based problems are of a lesser importance. They, however, also suggest that rather few enterprises are actually facing problems in co-operation, with (on account of the high turbulence in exchange rate markets at the time) exchange rate risks as well as cultural and language problems causing most of the problems. In addition, the evidence also suggests that while these problems differ between countries, and enterprises of different sizes, the largest problems in cross-border co-operation are faced by young and small enterprises, which report above average shares of problems in many groups.

Table 25: Structure of enterprises with plans for cross-border co-operation in the next five years in CENTROPE by enterprise characteristics (in % of all enterprises)

	Type of Co-operation planned			
	Both ownership and other	Only other co-operation	Only direct investment	None
Total	1.8	5.0	2.4	81.0
	Owner			
Domestic	1.6	5.0	2.0	83.0
Foreign	1.6	4.5	3.9	69.7
Both/Joint venture	5.8	7.2	6.5	67.6
	Organisation			
Single Company	1.7	5.0	2.0	83.1
Headquarter	1.8	5.1	3.7	72.8
Branch office	2.5	4.5	5.7	64.1
	Enterprise age (years)			
1 to 4	3.0	4.3	3.7	80.1
5 to 9	1.9	5.3	4.0	75.1
10 or more	1.6	5.0	2.0	82.3
	Enterprise size (No. of employees)			
0 to 9	1.8	5.3	1.8	86.9
10 to 49	1.6	4.7	2.7	79.7
50 to 249	1.6	5.6	3.6	68.7
250 or more	2.6	3.2	2.9	72.2
	Sector			
Manufacturing	2.3	7.0	1.4	79.1
Construction	3.2	6.1	2.6	81.5
Market services	1.9	5.2	2.3	80.4
Non market services	0.8	3.2	3.2	83.0
	Part of CENTROPE			
Austrian CENTROPE	1.3	3.2	0.8	85.5
Czech CENTROPE	2.5	3.0	4.8	73.0
Hungarian CENTROPE	4.7	6.4	1.4	76.1
Slovak CENTROPE	1.1	3.9	4.1	78.9

Source: FAMO/AFLA Data, own calculations. Note differences in row sums to 100% are due to non-response of the interviewed

Despite these problems, however, a large share of the enterprises interviewed, also plan to intensify their cross-border co-operation activities in the next 5 years. When asked whether the respective enterprise intends to enter (further) cross-border co-operations in the CENTROPE in the next 5 years, 9.2% of the enterprises interviewed in our sample respond that they have concrete plans to do so, with in particular more than 5% of the en-

terprises planning to enter some form of contractual co-operation (such as franchising or subcontracting) in the next 5 years.

(Additional) cross-border co-operations are more frequently planned by enterprises that are jointly owned by domestic and foreign owners and branch offices (among both of which the number of enterprises planning to co-operate in the next five years exceeds the 12% mark) as well as Hungarian enterprises, younger enterprises (which exist since less than 10 years), construction enterprises and enterprises with 50 to 249 employees[16]. Among all these enterprises (as well as all others) contractual relationships are most popular. This latter result indicates that the strongly ownership based co-operation structure in the CENTROPE region, may be slowly shifting to less hierarchical, contractual relationships.

3.6. Conclusions

In sum, based on a large scale enterprise survey we find that that the CENTROPE region is a highly open region in terms of export and international co-operation activities. For the majority of the enterprises a deep integration into European and world markets is, however, more important than co-operation within CENTROPE and inter-enterprise networks in CENTROPE are still far away from the closely knit, horizontal intra-regional networks focused on technology and knowledge exchange, that have often been seen as the determinants of regional success in the case study literature. This should, however, have been expected given a substantial body of research into suggests that such network structures emerge in exceptional cases only and are difficult to imitate by regional policy makers.

Also we find that in aggregate the two most important reasons for entering a co-operation in CENTROPE are associated with the aim of acquiring market access (closeness to customers and the market potential abroad), while the cost advantages of the region follow on the third place. Motives such as network advantages abroad, reactions to competitor's strategies and also overcoming market entry barriers follow at some distance. Technologically or human capital based motives for co-operations are found at the end of the list both, for ownership as well as other co-operations. "Access to skilled labour" is the third least important motive and the R&D capacity abroad the lowest in both cases.

[16] Among these types of enterprises the share of those planning to enter an (additional) co-operation in the next 5 years exceeds 10.5% throughout.

Only few enterprises seem to have problems in co-operation, however. Even for the most important problems reported, which are exchange rate risks and differences in mentality, only around 8.0% of the enterprises with some form of co-operation currently have problems.

We, however, also find that there is substantial heterogeneity between different types of enterprises in terms of the type of co-operations entered by enterprises, their motivations for doing so and the problems encountered. In particular:

1. The share of enterprises that consider an R&D co-operation as their most important form of co-operation is substantially above average for domestically owned enterprises, for headquarters, for enterprises that have between 10 and 49 employees as well as for enterprises in the age between 5-9 years and enterprises located in the Austrian CENTROPE.
2. Young enterprises that have existed for less than five years as well as construction enterprises tend to co-operate more often with partners from another CENTROPE country than with a partner from other countries. For small enterprises, single establishment enterprises and Joint Ventures as well as foreign owned enterprises co-operation within the CENTROPE region has a larger relative importance.
3. Large enterprises attach much less importance to motives that are associated with market access and a much higher importance to cost motives for co-operation. They, however, also attach a much larger weight to the access to skilled labour.
4. Young enterprises are the only enterprises that put a higher emphasis on the securing R&D capacities abroad for their co-operation abroad.

From a policy perspective these results therefore suggest that the integration of CENTROPE into the international division of labour through (primarily vertical) ownership based forms of co-operation is far progressed and also seems to be rather unproblematic at least from the point of view of the enterprises involved in such forms of internationalization. The only group that is faced with larger problems here are joint ventures, where apparently the dual ownership often creates some potential problems.

There is also some room with respect to developing more locally based more vertically integrated enterprise networks in CENTROPE. Policies aiming at increased co-operation within CENTROPE and/or improving the integration into corporate R&D networks therefore have to take into account the heterogeneity of the enterprises. For instance the primary

target groups for cross-border enterprise co-operation – aside from foreign owned enterprises - would be young and small enterprises, since they have a high chance of co-operating in the region. Policies targeted at these enterprises would, however, have to follow quite different strategies. For example, young and small enterprises are likely to need substantial support both in the form of consulting services as well as with financing, since they face larger problems in cross-border co-operation than any of the other enterprise groups considered. For foreign owned enterprises, by contrast, a much narrower spectrum of measures focused on helping with finding potential partners may suffice, since they in general report only few problems when actually co-operating. Similarly, to increase integration into international R&D co-operations the target groups would be domestically owned headquarters of multi-establishment enterprises and potentially also newly founded enterprises, with again the young enterprises needing substantial support.

4. Regional foreign trade

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4.1. *Introduction*

Foreign trade of countries and even more so for the regions within a country (defining trade from one region to another – even in the same country – as "foreign trade") is a key element for economic development and growth. To illustrate one can assume an economy of a region to be divided in two parts. The first part consists of those activities that mainly satisfy the demand from outside the region, i.e. the "export base" of the region. This export base depends to a large extent on the region's characteristics and comparative advantages that in turn determine the pattern of industrial specialisation of the region. The second type of activities areactivities that are more or less common in all regions and basically supply goods and services to the region's inhabitants. Thus, for example West-transdanubia's economy consists on the one hand of basic services like restaurants, supermarkets, craftsmen etc. that serve mainly the local market. On the other hand West-transdanubia also has big car manufacturing plants that produce mostly for the European and global markets. According to one theory, i.e. the "base-multiplier" theory (*Fujita et al.,* 1999) the size and growth of the "non-export-base" activities depends on the performance of the economic or export base activities, whereby a relatively small export base can support much larger activities in the non-base sectors (because of a multiplying effect). In this respect *Fujita et al.* (1999) give the example of California, where it was estimated that California's export sector employs only 25% of the state's employment, whereas 75% were employed in non-base activities.

4.1.1. Theories

The nexus between foreign trade, integration and economic growth has long been recognised in economic theory. Thus, already in 1776 with Adam Smith and the birth of economics as a science foreign trade was a key element to understand why economies develop and why they might develop differently from each other. Hence the "classical economic theory" specialisation in the form of Adam Smith's 'division of labour' generates economies of scale and differences in productivity across nations or regions (*Smith,* 1776). For Smith, investment in capital (improved machinery) and trade (increasing the size of the market) facilitated this specialisation and raised productivity and output growth. Importantly, David

Ricardo (*Ricardo,* 1817) showed that gains from trade could be made when two countries or regions specialise in the production of goods for which they have a comparative advantage. Thus, differences in production technology across industries and across regions give rise to differences in comparative labour productivity, which is the basis of specialisation and foreign trade as certain goods can be produced more efficiently (at a relatively lower price) in one region while other goods can be produced more efficiently in the other region.

In contrast to the classical theory "neo-classical theory" does not build on technological differences but assumes differences in the regions' initial comparative advantages (due to factor endowments, or the state of institutions etc.) to be the main source of trade. However, given the rigid assumptions of the neo-classical theory these advantages will be arbitraged away as capital flows to places where labour is cheaper and as new technologies are transferred (*Barro and Sala-i-Martin,* 1990). Following this theory there will be a continuous process of convergence, and economic activity will be spread spatially. With respect to trade, the famous Heckscher-Ohlin (H-O) model, builds on the classical Ricardo model, but incorporates two factors of production, labour and capital (or high skilled and low skilled workers). The main assumption is that comparative advantages arise because of differences in the (relative) abundance of factors of production (factor endowments) between two regions. Different industries use these factors in different proportions and as a consequence, regions tend to specialise in the production of those goods that use more intensively the factor with which they are more abundantly endowed. As in the case of the classical models, the move from autarky to free trade provides an engine for economic growth (through gains in aggregate efficiency).

Both traditional trade theories imply that trade will occur between countries or regions with different technology/factor endowments. They are unable to explain why trade takes place between similar countries (or regions) and, by extension, why different production structures should occur in similar regions. Since production structures and factor endowments are expected to be relatively similar across industrialised countries, theories based on comparative advantage are insufficient to explain the pattern of intra-industry trade (differentiated goods in the same product categories) between industrialised countries or regions. To help explain this, new trade theories have focused on scale economies, product differentiation and imperfect competition as explanations of trade patterns between industrialised countries (*Barro and Martin,* 2004).

In new trade theory, increasing returns are a motive for specialisation and trade and can lead to even more trade even when comparative advantage is of negligible importance. New trade theories can also be seen in terms of a switch in emphasis from exchange efficiency to productive efficiency, where the latter is influenced by factors such as labour force skills, level of technology, increasing returns to scale, agglomeration economies, and strategic actions of economic agents in technological and institutional innovations. We can see therefore that new trade theories suggest that a comparative advantage can be acquired as opposed to being 'natural' or 'endowed' as assumed by traditional theory. Moreover, the speed at which economies of scale can be achieved can influence comparative advantage – first-mover type advantage – so that factors that enable the quick realisation of economies of scale can be important: skilled labour, specialised infrastructure, networks of suppliers, and localised technology that support industry.

Foreign trade is also a key element in the Keynesian framework, which ,in contrast to the classical and neo-calssical theories, is essentially a theory of the short-run dynamics of aggregate demand and employment in the economy, based on expectations. These influence investment and consumption behaviour. Aggregate output is taken as the sum of consumption, investment, government spending, and net exports. The drivers of the system are the consumption function and the investment accelerator, together with export demand. The latter gives rise to an export multiplier, in which aggregate output can be expressed as a derived function of export demand. The export base of a national economy thus plays a key element in the basic Keynesian model. While Keynesian theory and policy are essentially macro-economic, it nevertheless has important repercussions for regions; interventionist policy served as a basis for traditional regional policy that came into being in the 1950s and 1960s. It tried to achieve more equity between regions, e.g. by promoting public investments, by subsidizing firms and promoting transfers to poorer regions.

Another important model with export-led growth elements is the circular and cumulative causation model. A region's output growth is assumed to be driven by export demand which is dependent on growth in world demand as well as the rate of increase of the region's product prices relative to world prices. The latter in turn depends on the rate of wage growth minus the rate of productivity growth (i.e. the change in wages per unit produced), which itself will be higher the faster the growth of regional output (the 'Verdoorn effect') (*Greunz*, 2003). The key element in this circular and cumulative process lies in the way in which increased output leads to increased productivity. This is the essence of the

dynamic increasing returns assumption that underpins the model. Several different forms of dynamic increasing returns are postulated to follow from the (demand-led) expansion of output. Expansion of output is argued to induce technological change within and across firms in a region, both through the opportunities for increased task specialisation within firms, and through the accumulation of specific types of fixed capital within which technological advances and innovations are embodied.

Where classical economic theory presumes convergence in due time, core-periphery models provide an explanation for the persistent and growing international and inter-regional differences in development. Locations with good market access will inevitably become more attractive to firms which will push up wages. Skilled workers will be attracted to this expanding network which will further increase market size and facilitate innovative activity through knowledge spillovers (*Venables*, 2006). From the production side, firms producing intermediate goods also relocate to the 'centre' to be closer to their customers. Clusters of industrial and economic activity thus form as a result of this reinforcing feedback. That the firms' location decision is determined by proximity to complementary activities is the underlying premise of the centre-periphery model.

The centre-periphery pattern is most likely to evolve when transport or trade costs are low and factors of production are mobile. The subsequent agglomeration gives rise to increasing returns by means of localized technology spillovers. Firms increase their technological capacity through their own R&D and through the increasing sophistication of their use of intermediate goods. These technological capacities spill over to other companies in the same locality, thus raising the stock of technology and human capacity in the locality. (*Venables*, 2005). There is also a tendency for production to concentrate where accessible markets are large and growing. Conversely, the increasing concentration of production stimulates further growth in the accessible market (partly because of the importance of intra-industry trade). There is thus a self-strengthening circle, which brings further advantages to the locality.

At a certain point wage costs may be high enough to make it worthwhile to relocate some activities to a less expensive region. This is the way in which less prosperous regions become better off, even while other localities increase their absolute and comparative advantages. Hence, convergence is a very slow process.

4.1.2. Data

National trade data is taken from the Eurostat Comext database via the Research Centre International Economics (Kompetenzzentrum "Forschungsschwerpunkt Internationale Wirtschaft", http://www.fiw.ac.at) , which offers an easy to use, comprehensive access to highly detailed international statistics on foreign trade, balance of payments etc.

Regional trade, especially at cross-regional, data are not available and had therefore to be estimated using national trade data, input-output data and regional data on sectoral employment. As there is a background paper forthcoming on the detailed estimation of these data the estimation methodology is described only briefly. Basically national trade (exports) data by trade sectors was transformed into exports (and imports) by national NACE 2 sectors of economic activity using input-output tables for the CENTROPE countries. This foreign trade data by economic sectors of economic activity was then regionalised using detailed LFS employment data for the CENTROPE regions (corresponding to the NUTS 2 level regions in the EU).

Importantly it has to be stressed that the regional trade data is estimated. Therefore the results might well deviate from actual trade flows as even sophisticated estimation procedures do not capture all real world peculiarities and events fully. Hence the regional trade data presented here is intended to be indicative of likely patterns and trends in foreing trade of the CENTROPE regions, helping to identify certain strengths and weakness of the regions.

4.2. Foreign trade of CENTROPE countries

To put the analysis in a somewhat broader perspective, we start it with a brief overview of foreign trade at the country level. For this we analyse the trade relations (exports, imports and net exports) of the four CENTROPE countries with the EU 27 countries non EU countries ("Rest of the World" or "ROW") and with each other (as part of the EU 27 trade). We start looking at exports first, in terms of GDP for total exports of CENTROPE to evaluate the importance of foreign trade for the domestic economies and as shares in total exports for the trade with the EU 27, ROW and within CENTROPE.

Firstly, this analysis points to a quite differentiated situation as far as the importance of foreign trade for the CENTROPE economies is concerned. Comparing the exports to GDP ratios shows that on average Austria has a much lower export propensity (exports account

for approximately 40% of GDP) than the three other NMS CENTROPE countries over the period 1999-2009, as the latter have an export/GDP ratio of about 60%-70% over the latest years. To a larger extent these differences in trading propensities are a direct effect of the FDI flows the NMS countries received, which have been described earlier.

Secondly, the analysis shows that the importance of trade and hence the integration into the EU or global economy increased steadily from 1999 onwards, with a certain set back in 2009 as trade flows decreased much due to the global economic and financial crisis. Thus, throughout CENTROPE the export/GDP ratios increased strongly over the last decade, in the Czech Republic by more than 20 percentage points (from 44% to 67.5%), 18 percentage points in Hungary and almost 30 percentage points in Slovakia. This is almost a doubling of exports in terms of GDP over a ten years period. Only in Austria the increase was lower than in the other CENTROPE countries, but still the export to GDP ratio grew by 12 percentage points (from 31 to 43.5%).

The third point the analysis shows refers to the country structure of trade. All the CENTROPE countries export the vast majority of their goods and services to the EU 27. In numbers Austria exports over 70%, Hungary around 80% and the Czech Republic and Slovakia around 85% to the EU 27. Moreover around half of total exports go to the EU 15 (in the Czech Republic even 60%) and 15%-20% to the new member states of the EU (EU 12). The trade relations within CENTROPE are a bit more differentiated. While Austria's trade ties are relatively weak as it exports only around 8%-9% of total exports to other CENTROPE countries, they are stronger for the Czech Republic, Hungary and Slovakia. Hungary exports around 11-12% to CENTROPE countries, the Czech Republic around 16% to 17% and from Slovakia even more than a quarter of all exports go to CENTROPE countries.

Table 26: Exports of CENTROPE countries: total exports in % of GDP; exports to the EU, CENTROPE and ROW in % of total trade.

Austria											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Exports	*31.3*	*35.3*	*37.2*	*38.0*	*38.5*	*40.9*	*41.3*	*42.4*	*43.9*	*43.5*	*36.0*
	in % of total trade										
EU 27	76.3	74.7	74.9	74.9	75.3	73.5	71.8	72.0	72.6	72.2	71.8
EU 15	62.9	61.4	61.5	61.4	61.4	59.3	57.3	56.5	55.6	54.1	54.7
EU 12	13.4	13.4	13.4	13.5	13.8	14.2	14.5	15.4	17.0	18.1	17.0
CENTROPE	8.9	8.8	8.6	8.4	8.3	8.1	7.9	8.3	9.2	9.8	9.3
ROW	23.7	25.3	25.1	25.1	24.7	26.5	28.2	28.0	27.4	27.8	28.2
Czech Republic											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Exports	*44.2*	*51.2*	*53.9*	*50.9*	*53.2*	*62.8*	*62.7*	*66.5*	*70.2*	*67.5*	*59.0*
	in % of total trade										
EU 27	87.5	85.9	86.5	85.7	87.3	87.1	85.5	85.6	85.2	84.7	84.7
EU 15	69.4	68.5	69.0	68.4	69.8	68.7	66.0	65.6	64.4	63.2	65.0
EU 12	18.1	17.4	17.5	17.3	17.5	18.4	19.5	20.0	20.8	21.6	19.7
CENTROPE	16.4	15.5	15.7	15.7	16.5	16.8	17.0	16.6	16.4	16.7	16.0
ROW	12.5	14.1	13.5	14.3	12.7	12.9	14.5	14.4	14.8	15.3	15.3
Hungary											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Exports	*51.0*	*59.4*	*57.0*	*51.5*	*51.3*	*54.0*	*57.1*	*66.7*	*69.1*	*69.4*	*64.0*
	in % of total trade										
EU 27	84.5	83.6	83.8	84.5	84.2	83.1	80.9	79.2	79.0	78.2	78.7
EU 15	76.2	75.1	74.2	75.1	73.7	70.7	65.5	61.3	59.6	57.4	59.0
EU 12	8.2	8.5	9.5	9.3	10.5	12.4	15.4	17.9	19.3	20.8	19.7
CENTROPE	12.2	11.4	11.1	10.4	12.1	11.5	11.5	12.2	12.5	13.6	12.8
ROW	15.5	16.4	16.2	15.5	15.8	16.9	19.1	20.8	21.0	21.8	21.3
Slovakia											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Exports	*34.1*	*41.1*	*41.5*	*41.4*	*47.5*	*49.4*	*52.0*	*60.5*	*69.4*	*72.2*	*63.8*
	in % of total trade										
EU 27	89.4	89.8	90.6	89.5	85.9	86.7	87.1	86.8	86.7	85.3	85.9
EU 15	59.5	59.2	60.1	60.7	60.8	59.6	57.2	56.7	57.1	54.2	54.7
EU 12	30.0	30.5	30.5	28.8	25.1	27.0	29.9	30.1	29.7	31.1	31.1
CENTROPE	30.5	30.5	30.1	28.3	25.1	26.5	27.3	26.5	25.4	26.5	26.5
ROW	10.6	10.2	9.4	10.5	14.1	13.3	12.9	13.2	13.3	14.7	14.1

Source: Eurostat, own calculations.

Table 27: Imports of CENTROPE countries: total exports in % of GDP; exports to the EU, CENTROPE and ROW in % of total trade

Austria											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Imports	*33.8*	*37.8*	*39.2*	*37.8*	*39.4*	*41.4*	*42.0*	*42.5*	*43.7*	*44.3*	*37.5*
	in % of total trade										
EU 27	82.2	80.2	80.5	80.8	81.8	82.7	80.5	79.7	79.3	78.0	78.0
EU 15	72.3	68.8	68.2	67.3	67.3	69.9	69.0	68.5	68.5	66.5	66.7
EU 12	9.9	11.4	12.4	13.4	14.5	12.8	11.5	11.1	10.9	11.5	11.2
CENTROPE	7.3	8.5	9.1	9.9	10.6	8.8	7.5	7.2	7.5	8.0	7.8
ROW	17.8	19.8	19.5	19.2	18.2	17.3	19.5	20.3	20.7	22.0	22.0
Czech Republic											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Imports	*47.3*	*56.3*	*58.7*	*53.7*	*56.5*	*63.7*	*61.4*	*65.3*	*67.7*	*65.3*	*54.9*
	in % of total trade										
EU 27	76.5	75.2	74.6	72.5	71.4	80.2	81.4	80.5	80.0	76.4	77.6
EU 15	64.2	62.8	62.6	60.2	58.9	66.6	66.4	64.1	63.1	59.3	60.1
EU 12	12.3	12.4	12.0	12.3	12.5	13.6	14.9	16.4	16.9	17.1	17.4
CENTROPE	13.4	12.9	11.9	11.6	11.4	12.8	13.9	13.9	14.4	14.6	14.3
ROW	23.5	24.8	25.4	27.5	28.6	19.8	18.6	19.5	20.0	23.6	22.4
Hungary											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Imports	*57.1*	*67.8*	*62.9*	*56.3*	*56.9*	*58.8*	*60.4*	*69.4*	*69.2*	*69.6*	*60.0*
	in % of total trade										
EU 27	71.7	66.1	65.9	65.0	64.5	68.5	69.9	70.2	69.5	68.2	68.6
EU 15	64.4	58.4	57.8	56.2	55.0	57.8	57.7	56.3	55.6	53.6	53.4
EU 12	7.3	7.7	8.1	8.7	9.5	10.7	12.2	13.9	13.9	14.6	15.2
CENTROPE	12.5	11.2	11.3	11.0	10.6	11.3	11.7	12.0	12.6	13.5	14.1
ROW	28.3	33.9	34.1	35.0	35.5	31.5	30.1	29.8	30.5	31.8	31.4
Slovakia											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Imports	*37.8*	*44.3*	*48.6*	*47.6*	*49.1*	*53.2*	*56.5*	*65.0*	*71.9*	*75.0*	*63.3*
	in % of total trade										
EU 27	74.5	70.2	72.0	73.0	74.4	78.8	77.8	75.1	74.6	73.1	74.9
EU 15	51.7	49.1	49.9	50.5	51.5	50.8	47.6	44.6	43.7	40.9	41.1
EU 12	22.8	21.1	22.1	22.6	22.9	27.9	30.2	30.5	30.9	32.2	33.8
CENTROPE	23.9	21.0	22.0	22.3	22.2	28.1	30.4	29.7	29.7	30.2	31.8
ROW	25.5	29.8	28.0	27.0	25.6	21.2	22.2	24.9	25.4	26.9	25.1

Source: Eurostat, own calculations.

Remarkably, in contrast to the shares of the EU 27 or EU 15 trade in the CENTROPE countries' exports that are decreasing over time, the importance of within CENTROPE trade tends to be constant if not increasing over time. Therefore, on the one hand, all CENTROPE countries tend to become more integrated in the global economy (outside the EU 27), as the exports to the "rest of the world" increase, while the importance of EU 27 trade decreases on a relative basis, but not in absolute terms (i.e. trade volumes). In absolute terms, trade with the EU 27 increase less strongly than trade with other countries. On the other hand, the fact that export shares to CENTROPE remain stable indicates that in absolute terms exports from CENTROPE to CENTROPE grow fast than exports to the EU 27 in general, but slower than to the "rest of the world" countries.

As far as imports of the CENTROPE countries are concerned the situation reflects very much the situation in exports in terms of the importance of imports for the domestic economies, the change of the import/GDP ratio over time as well as the structure of imports by trading partners. That is, the size of imports is around 60%-70% of GDP, except for Austria where it is slightly more than 40%. Over time imports were growing steadily and within 10 years up to 2008 they grew by 11-13 percentage points in Austria and Hungary, 20 percentage points in the Czech Republic and around 35% in Slovakia. The main exporting countries to CENTROPE come from the EU 27 and cover around 70% to 80% of all CENTROPE imports. However, while as exporting market the EU 27 got less important over time, imports from the EU 27 stay more or less constant as imports from the "rest of the world" countries do not increase as much over time. This is not to say that import sources do not become more diversified, either. Rather the shifts in imports occurs within the EU 27 as in 2008-2009, with the exception of Austria, the Czech Republic, Hungary and Slovakia tend to import a lower fraction from the EU 15 than in 1999-2000. Instead trade integration of the new member states (and also of CENTROPE) increases strongly over time as imports from those countries increased significantly.

The final point in the analysis of foreign trade of the CENTROPE countries concerns the net trade position, i.e. whether the CENTROPE countries have a positive or negative balance in foreign trade. In part this analysis is also a reflection of the competitiveness of the countries as the net export position shows how successful countries operate in foreign markets.

Table 28: Net exports of CENTROPE countries, in % of GDP

Austria											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
TOTAL	–2.5	–2.4	–2.0	0.2	–0.9	–0.5	–0.7	–0.1	0.2	–0.7	–1.5
EU 27	–3.9	–3.9	–3.8	–2.1	–3.3	–4.2	–4.2	–3.4	–2.8	–3.1	–3.4
EU 15	–4.8	–4.3	–3.9	–2.1	–2.9	–4.7	–5.3	–5.2	–5.5	–5.9	–5.3
EU 12	0.8	0.4	0.1	0.1	–0.4	0.5	1.2	1.8	2.7	2.8	1.9
CENTROPE	0.3	–0.1	–0.4	–0.6	–1.0	–0.3	0.1	0.5	0.8	0.7	0.4
ROW	1.4	1.4	1.7	2.3	2.3	3.7	3.4	3.2	3.0	2.4	1.9
Czech Republic											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
TOTAL	–3.2	–5.1	–4.8	–2.9	–3.3	–0.9	1.3	1.2	2.5	2.2	4.1
EU 27	2.4	1.7	2.8	4.6	6.1	3.6	3.6	4.4	5.7	7.3	7.4
EU 15	0.2	–0.2	0.5	2.4	3.9	0.7	0.6	1.8	2.5	3.9	5.4
EU 12	2.2	1.9	2.4	2.2	2.2	2.9	3.1	2.6	3.1	3.4	2.1
CENTROPE	0.9	0.7	1.5	1.8	2.3	2.4	2.1	2.0	1.8	1.7	1.6
ROW	–5.6	–6.8	–7.6	–7.5	–9.4	–4.5	–2.3	–3.2	–3.2	–5.1	–3.3
Hungary											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
TOTAL	–6.1	–8.4	–6.0	–4.8	–5.6	–4.8	–3.3	–2.7	–0.1	–0.3	4.0
EU 27	2.1	4.9	6.2	6.9	6.5	4.6	4.0	4.1	6.5	6.7	9.2
EU 15	2.1	5.0	5.9	7.0	6.5	4.2	2.6	1.8	2.7	2.5	5.7
EU 12	0.0	–0.2	0.3	–0.1	0.0	0.4	1.4	2.3	3.7	4.3	3.5
CENTROPE	–0.9	–0.8	–0.8	–0.9	0.2	–0.4	–0.5	–0.2	–0.1	0.0	–0.3
ROW	–8.2	–13.2	–12.2	–11.7	–12.1	–9.4	–7.3	–6.8	–6.6	–7.0	–5.2
Slovakia											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
TOTAL	–3.7	–3.2	–7.1	–6.2	–1.5	–3.8	–4.5	–4.5	–2.5	–2.8	0.5
EU 27	2.3	5.8	2.6	2.3	4.3	0.9	1.4	3.7	6.5	6.8	7.4
EU 15	0.7	2.6	0.6	1.1	3.6	2.4	2.9	5.3	8.2	8.5	8.9
EU 12	1.6	3.2	1.9	1.2	0.7	–1.5	–1.5	–1.6	–1.6	–1.7	–1.6
CENTROPE	1.4	3.2	1.8	1.1	1.1	–1.9	–3.0	–3.3	–3.7	–3.5	–3.2
ROW	–6.0	–9.0	–9.7	–8.5	–5.9	–4.7	–5.9	–8.2	–9.0	–9.6	–6.9

Source: Eurostat, own calculations.

For this Table 28 presents the net trade position in percent of GDP for the CENTROPE countries. It shows that as far as overall trade is concerned the Czech Republic is the only country in CENTROPE with a positive trade balance – at least from 2005 onwards. For the other CENTROPE countries overall trade deficits tend to be small, especially in the later years, whereby especially during the crisis year 2009 the trade balance even turned positive due to lower import demand in Hungary and Slovakia. Interestingly the three NMS CENTROPE countries have partly large trade surpluses with the EU 27 and especially the EU 15. Certainly a good deal thereof is the high cost-competitiveness of these three coun-

tries, which led in many cases to the shift of production from the EU 15 to the three NMS CENTROPE by multinationals, which now re-export the goods formerly produced in the EU 15 from CENTROPE to their old markets. As far as within CENTROPE trade is concerned only the Czech Republic has a constantly positive trade balance vis-à-vis the other CENTROPE countries, while Austria's balance becomes positive only in later years. Especially if the three NMS CENTROPE countries are concerned this might be less a sign of differences in competitiveness of the CENTROPE countries, because here they are assumed to be more or less even, but rather might be due to differences in types of goods and services produced.[17]

4.3. Regional trade

Turning to results of the estimation of foreign trade in the CENTROPE regions, we start the analysis with a look at the overall export activity of the regions. Given that the majority of trade of the CENTROPE countries is with the EU 27 and data limitations export activity will be indicated by the exports to the EU 27 (disregarding imports for the moment). Furthermore exports to the CENTROPE countries will be analysed, to give a measure of how important trade with the immediate neighbour countries is for the CENTROPE regions.

The estimation shows a clear distinction in CENTROPE between regions relying heavily on trade and those with lesser activities in foreign markets. The CENTROPE regions with highest trading activity are West-transdanubia and West Slovakia, notably also those regions that received the highest number of foreign investment in the manufacturing sector. In both regions the exports of goods and services to the EU 27 reach around 60% to over 80% of the regions' GDP. The Czech Southeast region also has a high export propensity to the EU of about 60%. Contrastingly in Bratislava, Burgenland, Lower Austria and Vienna the exports to GDP ratios are lower, and around 30% in the first three regions and around 16% in the latter. These differences basically reflect the differences in the sectoral structure of the regions, as the three regions with highest export shares are also those relying most on manufacturing industry, while the more agricultural and services oriented regions export less. Still to some extent it is remarkable that Bratislava has an export share which is almost twice as high as Vienna's export share, which apart from geographical features,

[17] It should, however, be noted that in this respect national sources do not agree with EUROSTAT data, since according to EUROSTAT data exports are registered in the country of shipping. According to national statistics, which are based on the country of origin, Austria had a trade surplus vis-a-vis the NMS CENTROPE countries

(as the Vienna region more or less covers the urbanized areas only, while the Bratislava region also covers the capital cities hinterland,) is again due to the high presence of FDI, especially in the manufacturing sector. Though manufacturing FDI is lower in Bratislava than in more industrial regions, it can be taken as high considering that the region is majorly a densely populated urban area and classified as a capital city region.

Table 29: Exports of CENTROPE regions to EU 27 and CENTROPE countries, in % of GDP

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Burgenland											
EU 27	26.9	28.9	30.3	30.1	30.8	31.9	32.5	32.9	33.9	35.3	28.7
CZE	0.9	1.0	1.1	1.1	1.2	1.2	1.3	1.4	1.6	1.9	1.5
HUN	1.7	1.9	1.8	1.7	1.6	1.5	1.4	1.5	1.6	1.8	1.3
SVK	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.8	0.9	1.0	0.8
Lower Austria											
EU 27	26.2	29.0	31.3	32.1	32.1	33.0	32.5	33.5	34.0	36.4	28.6
CZE	1.0	1.2	1.2	1.2	1.3	1.4	1.5	1.6	1.8	2.2	1.7
HUN	1.9	2.1	2.1	2.0	1.8	1.8	1.7	1.8	1.8	2.1	1.5
SVK	0.4	0.5	0.6	0.6	0.6	0.7	0.9	0.8	1.0	1.2	0.9
Vienna											
EU 27	11.5	13.1	13.7	14.2	14.6	15.4	15.2	15.1	15.4	16.3	13.3
CZE	0.5	0.6	0.6	0.5	0.6	0.7	0.7	0.7	0.8	1.1	0.9
HUN	0.9	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	0.7
SVK	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.6	0.4
Czech Southeast											
EU 27	40.7	46.4	48.2	45.5	48.5	57.4	56.9	59.6	62.6	68.7	56.0
AUT	2.9	3.2	3.2	3.0	3.5	3.9	3.6	3.5	3.4	3.8	3.1
HUN	0.7	0.9	0.9	1.2	1.1	1.6	1.7	1.9	2.1	2.1	1.6
SVK	3.8	4.1	4.4	4.1	4.4	5.3	5.7	5.7	6.3	7.4	5.8
West–transdanubia											
EU 27	71.0	81.3	85.4	80.4	64.9	73.6	83.3	94.1	95.9	98.8	81.1
AUT	7.3	7.3	6.5	5.6	5.6	4.9	4.5	4.6	4.2	5.0	3.9
CZE	1.0	1.4	1.7	1.7	1.7	2.1	3.3	4.4	5.1	5.4	3.2
SVK	0.7	0.7	1.0	1.1	1.5	1.5	2.8	4.4	5.4	6.1	5.2
Bratislava											
EU 27	23.0	30.0	29.6	27.7	30.5	30.2	27.4	30.6	31.5	34.3	27.0
AUT	2.7	3.8	3.6	3.4	3.3	4.4	3.7	3.6	3.6	4.5	3.6
CZE	5.7	7.3	7.2	6.1	6.1	5.9	5.7	6.0	5.6	6.5	5.1
HUN	1.6	2.2	2.1	2.1	1.7	1.7	2.1	2.6	2.5	3.0	2.2
West Slovakia											
EU 27	52.6	60.7	64.3	65.9	70.8	68.5	70.0	73.5	78.8	86.4	74.0
AUT	4.4	5.2	5.4	5.2	5.7	5.3	5.1	4.1	4.6	5.0	4.4
CZE	9.2	9.6	9.7	9.4	8.5	8.4	9.3	10.0	9.8	11.5	10.2
HUN	2.2	2.7	3.3	3.5	3.6	3.7	4.3	4.7	5.3	6.3	5.6

Source: Eurostat, own calculations.

According to the estimates, the importance of the CENTROPE countries for the CENTROPE regions as export markets differs a lot. The CENTROPE countries are generally less important for the Austrian regions as well as for West-transdanubia. Only around 10% to 15% of Austrian EU 27 exports go to other CENTROPE countries. For the Czech Southeast regions the importance is a bit higher, i.e. 18% of the EU 27 exports go to CENTROPE countries while for the Slovak regions CENTROPE is of high importance. Thus of all the goods and services exported from West Slovakia more than a quarter are estimated to go to other CENTROPE countries while this share is even above 40% for the Bratislava region. Importantly, the importance of within CENTROPE trade tends to increase over time, and though the increase in integration tends to differ across regions, i.e. weaker in the Austrian regions and stronger for the NMS CENTROPE regions, it is growing for all regions in CENTROPE.

The next step in the analysis is the estimation of foreign trade of CENTROPE regions with other CENTROPE regions. The analysis concentrates firstly on aggregate trade between the regions and in a second step this aggregate trade is broken down to trade by economic activities. For convenience and brevity the main part focuses on the export side, as imports tend to reflect the trends in exports very closely. Moreover from an estimation point of view, the exports of one region to another are at the same time the imports of the latter from the former region. Nevertheless for completeness results for imports are given in the annex.

Table 30 shows the numbers for the CENTROPE regions total exports in terms of GDP to the CENTROPE regions that are not in the same country, as well as the shares of the individual regions. Quite generally the picture that is presented here is very much in line with the above analysis. Thus, exports of Austrian CENTROPE regions to other CENTROPE regions tend to be small in comparison with the exports of the NMS CENTROPE regions. Overall exports to CENTROPE account for approximately 1% of GDP in Burgenland and Lower Austria and only 0.5% of GDP in Vienna. In Bratislava exports to the CENTROPE regions are at around 2.5% of GDP, while the more manufacturing oriented regions Czech Southeast, West Transdanubia and West Slovakia exporting acitivity is much higher at around 4% to 6% of the respective region’s GDP.

The numbers in Table 30 once more confirm the recurrent story that trade relations amongst the CENTROPE regions tend to become stronger over time, as the share of exports to GDP increases.

Table 30: Exports of CENTROPE regions to CENTROPE regions (total trade in % of GDP, % of total trade for regional shares)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Burgenland											
CENTROPE	**0.61**	**0.66**	**0.70**	**0.70**	**0.72**	**0.74**	**0.76**	**0.84**	**0.92**	**1.06**	**0.83**
Czech Southeast	24.5	24.8	24.6	24.8	25.5	26.1	26.1	27.0	27.7	27.8	28.1
West Transdanubia	38.5	38.9	34.8	33.0	29.4	26.9	24.2	23.9	22.1	21.5	20.2
Bratislava	11.4	11.2	12.5	13.1	13.9	14.3	15.1	14.9	15.3	15.5	15.9
West Slovakia	25.6	25.1	28.0	29.1	31.3	32.7	34.6	34.1	34.9	35.1	35.8
Lower Austria											
CENTROPE	**0.66**	**0.73**	**0.79**	**0.80**	**0.78**	**0.85**	**0.92**	**0.94**	**1.03**	**1.26**	**0.96**
Czech Southeast	24.9	25.7	25.0	24.0	25.8	26.2	25.6	27.0	27.4	27.8	27.7
West Transdanubia	40.0	40.5	36.4	34.2	30.4	28.1	24.4	24.4	22.3	21.5	20.3
Bratislava	10.5	10.2	11.7	12.7	13.2	13.7	15.0	14.5	15.0	15.1	15.5
West Slovakia	24.6	23.5	26.9	29.1	30.6	32.0	35.1	34.1	35.3	35.6	36.5
Vienna											
CENTROPE	**0.32**	**0.35**	**0.37**	**0.37**	**0.38**	**0.42**	**0.46**	**0.47**	**0.53**	**0.64**	**0.48**
Czech Southeast	23.8	25.0	24.2	22.9	24.9	25.6	23.8	24.3	25.4	28.3	29.3
West Transdanubia	38.0	39.5	35.5	33.1	30.3	27.8	25.2	25.4	22.1	21.1	20.3
Bratislava	11.5	10.8	12.3	13.5	13.6	14.0	15.2	15.1	15.9	15.3	15.3
West Slovakia	26.7	24.6	28.0	30.5	31.2	32.6	35.8	35.2	36.6	35.3	35.1
Czech Southeast											
CENTROPE	**3.32**	**3.60**	**3.81**	**3.57**	**3.89**	**4.69**	**4.76**	**4.80**	**5.06**	**5.79**	**4.62**
Burgenland	2.4	2.4	2.3	2.3	2.5	2.3	2.1	2.0	1.8	1.8	1.9
Lower Austria	14.9	14.9	14.2	13.9	14.9	14.2	12.8	12.5	11.3	11.0	11.4
Vienna	17.7	17.8	17.0	16.8	17.8	16.9	15.3	15.0	13.5	13.1	13.8
West Transdanubia	2.7	3.1	3.1	4.4	3.8	4.4	4.7	5.2	5.5	4.8	4.5
Bratislava	19.4	19.2	19.7	19.5	18.9	19.1	20.2	20.2	21.0	21.4	21.2
West Slovakia	42.8	42.5	43.7	43.2	42.1	43.0	44.9	45.1	46.8	47.9	47.2
West Transdanubia											
CENTROPE	**3.6**	**3.6**	**3.5**	**3.2**	**3.4**	**3.2**	**3.9**	**5.0**	**5.5**	**6.2**	**4.9**
Burgenland	5.4	5.3	4.8	4.6	4.3	4.1	3.1	2.5	2.1	2.2	2.1
Lower Austria	34.3	33.7	31.2	29.8	27.7	26.0	19.6	15.7	13.1	13.5	13.3
Vienna	45.2	44.3	40.1	38.0	35.6	32.8	24.2	19.0	15.9	16.3	16.2
Czech Southeast	4.6	6.1	7.7	8.7	7.7	10.5	13.6	13.9	14.7	13.7	10.3
Bratislava	3.2	3.3	5.0	5.8	7.7	8.2	12.0	15.0	16.6	16.8	18.3
West Slovakia	7.3	7.4	11.1	13.0	17.0	18.5	27.5	33.9	37.7	37.5	39.8
Bratislava											
CENTROPE	**2.1**	**2.9**	**2.8**	**2.5**	**2.4**	**2.8**	**2.6**	**2.6**	**2.6**	**3.1**	**2.4**
Burgenland	3.7	3.9	3.8	4.0	4.0	4.7	4.3	4.1	4.2	4.4	4.4
Lower Austria	21.8	23.0	22.8	23.5	23.6	27.4	25.1	23.8	24.4	25.5	25.7
Vienna	22.6	23.4	23.3	23.9	24.2	27.1	24.9	23.6	24.5	25.4	25.7
Czech Southeast	42.7	40.1	40.8	38.4	39.4	33.3	35.2	36.2	34.6	32.6	32.8
West Transdanubia	9.3	9.5	9.3	10.1	8.8	7.4	10.5	12.3	12.3	12.1	11.3
West Slovakia											
CENTROPE	**3.5**	**4.0**	**4.1**	**4.0**	**4.1**	**3.9**	**4.0**	**3.8**	**4.1**	**4.7**	**4.1**
Burgenland	3.4	3.6	3.6	3.5	3.8	3.7	3.4	2.9	3.1	2.9	2.9
Lower Austria	21.2	22.4	22.4	21.9	23.7	23.1	21.2	18.4	19.1	18.3	18.1
Vienna	25.3	26.7	26.6	26.1	28.0	27.1	25.0	21.4	22.5	21.7	21.8
Czech Southeast	42.0	38.5	37.4	37.2	33.2	34.0	36.7	41.5	38.3	39.3	39.1
West Transdanubia	8.2	8.9	10.1	11.2	11.2	12.0	13.6	15.7	17.0	17.7	18.1

Source: Eurostat, own calculations.

Table 31: Imports of CENTROPE regions to CENTROPE regions (total trade in % of GDP, % of total trade for regional shares)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Burgenland											
CENTROPE	**0.63**	**0.76**	**0.78**	**0.76**	**0.87**	**0.97**	**0.97**	**0.99**	**1.11**	**1.28**	**1.06**
Czech Southeast	23.8	22.1	24.5	25.1	25.3	26.3	26.5	27.9	25.2	24.5	24.7
West Transdanubia	35.9	31.3	28.5	27.5	25.8	21.1	19.6	19.5	16.7	17.1	16.0
Bratislava	13.1	17.5	16.9	17.2	16.0	21.6	21.5	22.2	23.4	25.9	24.6
West Slovakia	27.1	29.1	30.1	30.2	32.9	31.0	32.5	30.4	34.6	32.5	34.7
Lower Austria											
CENTROPE	**0.57**	**0.67**	**0.70**	**0.71**	**0.81**	**0.89**	**0.87**	**0.88**	**0.97**	**1.12**	**0.93**
Czech Southeast	23.4	21.8	23.9	24.4	24.6	26.2	26.5	28.0	25.3	24.4	24.5
West Transdanubia	36.8	32.1	29.6	28.8	27.0	22.0	20.1	20.0	17.2	17.5	16.4
Bratislava	12.5	16.7	16.1	16.4	15.3	20.4	20.5	21.1	22.3	24.8	23.6
West Slovakia	27.2	29.4	30.4	30.5	33.1	31.4	32.9	30.9	35.2	33.3	35.5
Vienna											
CENTROPE	**0.39**	**0.46**	**0.47**	**0.46**	**0.54**	**0.59**	**0.58**	**0.58**	**0.65**	**0.75**	**0.63**
Czech Southeast	22.9	21.7	24.0	24.7	24.8	26.9	27.5	29.2	26.4	25.5	25.5
West Transdanubia	39.9	35.1	31.9	30.8	29.2	23.9	21.4	21.2	18.1	18.4	17.3
Bratislava	10.6	14.1	13.8	14.0	13.2	17.4	17.6	18.2	19.4	21.5	20.3
West Slovakia	26.6	29.1	30.3	30.5	32.9	31.8	33.5	31.4	36.1	34.6	36.8
Czech Southeast											
CENTROPE	**2.95**	**3.43**	**3.19**	**2.83**	**3.03**	**3.28**	**3.48**	**3.75**	**4.02**	**4.79**	**3.83**
Burgenland	2.7	2.5	2.5	2.6	2.6	2.5	2.2	2.1	2.1	2.1	2.0
Lower Austria	20.8	20.1	19.8	19.4	19.4	19.4	17.8	16.6	16.4	16.9	16.1
Vienna	16.9	16.4	16.0	15.7	16.3	16.2	14.5	12.9	13.2	15.2	14.6
West Transdanubia	3.5	4.1	5.2	6.0	5.8	6.9	9.1	10.2	10.9	9.7	7.1
Bratislava	17.5	20.7	20.4	19.2	19.8	19.2	18.9	18.3	17.8	17.2	16.9
West Slovakia	38.5	36.2	36.0	37.0	36.1	35.8	37.4	39.9	39.6	39.0	43.1
West Transdanubia											
CENTROPE	**3.7**	**4.2**	**3.9**	**3.5**	**3.0**	**3.1**	**3.5**	**4.0**	**4.3**	**4.9**	**3.9**
Burgenland	5.4	5.0	4.8	4.6	4.5	4.0	3.4	3.2	2.9	2.8	2.7
Lower Austria	42.2	40.6	38.9	36.6	34.0	32.4	28.1	25.7	23.2	23.5	21.6
Vienna	34.2	33.2	31.8	30.0	29.5	27.4	25.6	23.1	20.1	20.3	18.6
Czech Southeast	3.9	4.2	5.0	7.3	7.3	9.9	10.6	11.5	12.1	10.4	9.9
Bratislava	4.8	6.3	6.3	6.7	6.6	6.6	9.4	10.6	11.0	11.5	10.7
West Slovakia	9.5	10.7	13.2	14.8	18.2	19.6	23.1	25.8	30.6	31.5	36.5
Bratislava											
CENTROPE	**2.2**	**2.2**	**2.6**	**2.5**	**2.4**	**2.6**	**2.7**	**2.9**	**2.8**	**3.3**	**2.7**
Burgenland	2.9	2.9	2.8	2.8	2.8	2.6	2.3	2.1	2.1	2.0	2.0
Lower Austria	20.7	20.6	20.3	20.8	19.8	19.1	18.3	16.2	15.8	16.4	16.1
Vienna	19.2	18.4	17.9	18.6	17.7	16.7	16.4	14.7	14.6	14.5	13.6
Czech Southeast	51.3	52.3	51.5	49.6	48.1	51.5	48.7	47.0	46.2	46.0	45.6
West Transdanubia	5.8	5.8	7.4	8.2	11.6	10.1	14.2	20.0	21.4	21.0	22.6
West Slovakia											
CENTROPE	**3.6**	**3.7**	**4.4**	**4.4**	**4.2**	**4.5**	**5.1**	**5.0**	**5.1**	**6.0**	**4.7**
Burgenland	2.9	2.9	2.8	2.8	2.8	2.6	2.3	2.2	2.1	2.0	2.1
Lower Austria	21.4	21.2	20.8	21.3	20.3	19.6	18.9	16.8	16.3	17.0	16.8
Vienna	19.8	18.6	18.2	18.8	17.9	17.0	16.9	15.0	14.7	14.8	13.9
Czech Southeast	50.1	51.5	50.9	49.0	47.6	50.8	47.6	46.2	45.4	45.4	45.2
West Transdanubia	5.8	5.8	7.3	8.1	11.3	10.0	14.4	19.9	21.5	20.7	22.0

Source: Eurostat, own calculations.

The estimation of cross-regional trade also allows some insights on the importance of regional trading partners. In this respect the numbers show that as far as exports are concerned, Burgenland is the least important exporting market for the CENTROPE regions (mainly because of its small economy). However, what is more surprising is that West Transdanubia tends to have a relatively low weight in the exports of Austrian, Czech and Slovak CENTROPE regions. Thus trade seems to be more pronounced between Austrian and Czech and Slovak and especially between the Slovakia and Czech CENTROPE regions than with the Hungarian CENTROPE.

The final step of the analysis is a look at the structure of within CENTROPE trade, i.e. analysing trade flows by groups of commodities. To keep the analysis and results manageable the goods and services that are in principle available in the trade statistics have been aggregated to nine commodity groups, covering: Agriculture, Energy, High technology intensive manufacturing industry, Low technology intensive manufacturing industry, Medium high technology intensive manufacturing industry, Medium low technology intensive manufacturing industry, Market Services, Other Services and Raw materials (see Annex for a detailed definition). Usually in the trade statistics services trade is not fully covered, also given the difficulties in measuring services and services trade. Moreover per se services account only for a small fraction of cross-border trade so that main trading activities occur predominantly in the manufacturing industry sector. As the CENTROPE regions also possess no major natural resources trade in raw materials is also low, if existent at all.

From this and given the regions' structures of economic activity it is no surprise that trade occurs mainly in the four manufacturing sectors. Thereby the main traded (exported) commodity group is the medium high technology intensive industry goods. Independently of the importance of foreign trade in the regions this group carries the bulk of exports, except for Bratislava, which to some extent specialises in the medium low technology intensive goods. Explicitly low technology goods are less important for exports, except for the Czech Southeast region, while high technology exports mainly stem from West Transdanubia.

Table 32: Exports of CENTROPE regions to CENTROPE regions, by type of goods and services (total trade in % of GDP, % of total trade for regional shares)

	Agriculture	Energy	High tech-nology intensive	Low tech-nology intensive	Medium high tech-nology intensive	Medium low tech-nology intensive	Market Services	Other Services	Raw materials	TOTAL
Burgenland										
CENTROPE	**0.01**	**0.01**	**0.10**	**0.20**	**0.32**	**0.24**	**0.00**	**0.00**	**0.00**	**0.89**
Czech Southeast	25.9	16.3	21.4	29.7	26.5	29.6	31.0	27.5	43.7	27.4
West Transdanubia	31.0	18.6	24.3	23.0	21.4	21.5	28.9	35.6	30.6	22.3
Bratislava	12.3	18.5	17.6	16.8	15.9	12.6	12.8	15.5	6.2	15.4
West Slovakia	30.8	46.6	36.7	30.5	36.2	36.3	27.3	21.4	19.5	34.9
Lower Austria										
CENTROPE	**0.01**	**0.00**	**0.15**	**0.14**	**0.36**	**0.35**	**0.00**	**0.00**	**0.00**	**1.03**
Czech Southeast	25.1	16.3	19.0	30.2	27.4	29.3	31.0	27.5	43.7	27.2
West Transdanubia	31.7	18.6	25.0	22.4	22.1	21.3	28.8	35.6	30.6	22.4
Bratislava	12.3	18.5	18.1	16.8	15.4	12.8	12.8	15.5	6.2	15.0
West Slovakia	30.9	46.6	37.9	30.6	35.1	36.6	27.4	21.4	19.5	35.4
Vienna										
CENTROPE	**0.00**	**0.00**	**0.11**	**0.08**	**0.18**	**0.15**	**0.00**	**0.00**	**0.00**	**0.52**
Czech Southeast	25.5	16.3	25.0	28.6	26.2	26.7	31.0	27.5	43.7	26.4
West Transdanubia	31.4	18.6	23.9	24.2	21.5	22.0	28.9	35.6	30.6	22.6
Bratislava	12.3	18.5	16.5	16.7	15.9	13.2	12.8	15.5	6.2	15.4
West Slovakia	30.8	46.6	34.5	30.4	36.4	38.0	27.3	21.4	19.5	35.6
Czech Southeast										
CENTROPE	**0.22**	**0.16**	**0.49**	**1.30**	**1.83**	**0.97**	**0.01**	**0.01**	**0.04**	**5.02**
Burgenland	3.2	1.6	1.3	1.6	1.9	2.3	2.8	1.9	5.5	1.9
Lower Austria	19.0	3.7	9.4	9.4	12.9	13.0	18.5	11.3	22.2	11.7
Vienna	22.5	7.0	13.7	13.2	15.2	12.1	26.1	13.5	20.1	14.0
West Transdanubia	2.2	0.5	9.7	3.6	5.6	4.7	3.8	3.7	1.4	4.9
Bratislava	15.1	24.8	21.3	25.6	19.6	17.6	15.6	29.2	12.2	20.9
West Slovakia	38.0	62.5	44.5	46.6	44.8	50.4	33.2	40.3	38.6	46.5
West Transdanubia										
CENTROPE	**0.3**	**0.0**	**1.1**	**0.7**	**2.4**	**0.5**	**0.0**	**0.0**	**0.1**	**5.1**
Burgenland	4.3	5.9	1.1	3.4	1.9	4.5	3.0	1.1	0.1	2.3
Lower Austria	25.6	13.7	7.8	20.8	13.0	25.7	19.7	6.7	0.3	14.6
Vienna	30.3	26.0	11.3	29.2	15.4	23.9	27.9	8.0	0.3	17.8
Czech Southeast	6.0	3.3	12.2	10.1	16.9	8.8	14.0	4.5	0.0	13.3
Bratislava	9.6	14.5	21.9	12.9	16.1	9.6	11.3	33.5	23.8	16.0
West Slovakia	24.1	36.6	45.6	23.5	36.7	27.5	24.0	46.2	75.4	35.9

continued

	Agriculture	Energy	High tech-nology intensive	Low tech-nology intensive	Medium high tech-nology intensive	Medium low tech-nology intensive	Market Services	Other Services	Raw materials	TOTAL
Bratislava										
CENTROPE	**0.0**	**0.0**	**0.1**	**0.2**	**0.4**	**1.9**	**0.0**	**0.0**	**0.0**	**2.7**
Burgenland	4.2	0.0	2.2	1.9	3.0	5.0	1.8	0.2	6.6	4.3
Lower Austria	24.5	0.0	15.2	11.6	20.4	28.2	11.6	0.9	26.8	25.0
Vienna	29.1	0.0	22.1	16.2	24.2	26.3	16.5	1.1	24.3	24.9
Czech Southeast	26.7	11.5	37.2	49.1	36.0	31.9	59.3	58.8	36.1	34.1
West Transdanubia	15.5	88.5	23.4	21.2	16.4	8.6	10.8	39.1	6.2	11.8
West Slovakia										
CENTROPE	**0.3**	**0.0**	**0.6**	**0.9**	**1.4**	**0.9**	**0.0**	**0.0**	**0.0**	**4.2**
Burgenland	4.2	0.0	2.2	2.5	3.0	3.7	1.7	0.2	3.3	3.0
Lower Austria	24.6	0.0	15.4	15.0	19.9	21.1	10.8	0.9	13.5	18.9
Vienna	29.2	0.0	22.3	21.1	23.6	19.7	15.3	1.1	12.2	22.3
Czech Southeast	26.7	11.5	37.0	42.6	38.2	42.8	62.7	58.8	56.3	39.0
West Transdanubia	15.3	88.5	23.1	18.8	15.4	12.6	9.6	39.1	14.7	16.7

Source: Eurostat, own calculations.

Table 33: Imports of CENTROPE regions to CENTROPE regions, by type of goods and services (total trade in % of GDP, % of total trade for regional shares)

	Agriculture	Energy	High tech-nology intensive	Low tech-nology intensive	Medium high tech-nology intensive	Medium low tech-nology intensive	Market Services	Other Services	Raw materials	TOTAL
Burgenland										
CENTROPE	**0.09**	**0.01**	**0.08**	**0.16**	**0.33**	**0.41**	**0.00**	**0.00**	**0.01**	**1.08**
Czech Southeast	23.9	73.7	24.4	35.5	30.9	15.6	77.3	91.0	77.8	**25.6**
West Transdanubia	22.7	26.3	25.7	22.2	23.2	9.1	2.0	2.2	1.1	**17.7**
Bratislava	5.1	0.0	5.9	5.5	9.1	51.0	13.8	3.7	3.9	**23.7**
West Slovakia	48.3	0.0	44.0	36.8	36.9	24.3	6.9	3.1	17.2	**33.0**
Lower Austria										
CENTROPE	**0.07**	**0.00**	**0.08**	**0.14**	**0.32**	**0.34**	**0.00**	**0.00**	**0.00**	**0.96**
Czech Southeast	23.9	73.7	24.4	35.5	30.9	15.6	77.3	91.0	77.8	**25.6**
West Transdanubia	22.7	26.3	25.7	22.2	23.2	9.1	2.0	2.2	1.1	**18.1**
Bratislava	5.1	0.0	5.9	5.5	9.1	51.0	13.8	3.7	3.9	**22.6**
West Slovakia	48.3	0.0	44.0	36.8	36.9	24.3	6.9	3.1	17.2	**33.6**
Vienna										
CENTROPE	**0.05**	**0.00**	**0.07**	**0.12**	**0.22**	**0.18**	**0.00**	**0.00**	**0.00**	**0.64**
Czech Southeast	23.9	73.7	24.4	35.5	30.9	15.6	77.3	91.0	77.8	**26.7**
West Transdanubia	22.7	26.3	25.7	22.2	23.2	9.1	2.0	2.2	1.1	**19.1**
Bratislava	5.1	0.0	5.9	5.5	9.1	51.0	13.8	3.7	3.9	**19.6**
West Slovakia	48.3	0.0	44.0	36.8	36.9	24.3	6.9	3.1	17.2	**34.6**
Czech Southeast										
CENTROPE	**0.12**	**0.00**	**0.49**	**0.69**	**1.35**	**1.32**	**0.00**	**0.01**	**0.01**	**4.00**
Burgenland	0.9	6.2	1.5	3.1	2.2	1.8	1.3	0.7	1.2	**2.1**
Lower Austria	6.2	15.8	14.1	14.8	17.7	18.7	13.0	10.3	7.5	**16.7**
Vienna	0.6	30.3	22.5	13.1	14.3	12.7	21.0	14.0	2.5	**14.2**
West Transdanubia	7.7	10.2	15.5	5.4	16.9	1.9	0.8	0.2	0.1	**9.4**
Bratislava	8.1	11.2	5.6	11.7	9.0	35.1	40.6	40.7	6.1	**17.7**
West Slovakia	76.5	26.2	40.8	51.9	39.8	29.9	23.2	34.0	82.6	**39.9**
West Transdanubia										
CENTROPE	**0.1**	**0.0**	**0.7**	**0.7**	**1.4**	**1.1**	**0.0**	**0.0**	**0.0**	**4.1**
Burgenland	1.7	1.9	2.2	4.0	3.2	2.8	2.2	1.1	2.3	**3.0**
Lower Austria	12.6	5.0	23.1	18.6	25.8	28.7	22.9	15.3	14.6	**24.2**
Vienna	1.1	9.5	26.8	18.8	21.2	22.2	37.0	20.9	4.9	**21.2**
Czech Southeast	6.6	4.1	12.0	11.5	13.5	7.3	17.2	5.6	15.6	**10.9**
Bratislava	7.6	23.8	4.4	8.5	7.4	20.1	14.0	31.1	2.9	**10.7**
West Slovakia	70.5	55.7	31.6	38.7	28.9	18.8	6.7	25.9	59.7	**29.9**

continued

	Agriculture	Energy	High tech-nology intensive	Low tech-nology intensive	Medium high tech-nology intensive	Medium low tech-nology intensive	Market Services	Other Services	Raw materials	TOTAL
Bratislava										
CENTROPE	**0.1**	**0.1**	**0.5**	**0.6**	**1.1**	**0.5**	**0.0**	**0.0**	**0.0**	**2.9**
Burgenland	0.9	0.8	1.6	2.4	2.1	2.6	1.0	0.8	0.1	**2.1**
Lower Austria	6.9	2.0	17.1	11.4	15.9	27.0	10.2	10.6	0.7	**16.4**
Vienna	0.6	3.8	18.9	10.6	13.9	20.9	16.4	14.5	0.2	**14.6**
Czech Southeast	63.3	88.5	27.0	66.3	42.3	42.7	71.2	70.8	33.4	**46.6**
West Transdanubia	28.3	5.0	35.3	9.4	25.8	6.8	1.3	3.3	65.6	**20.3**
West Slovakia										
CENTROPE	**0.1**	**0.1**	**0.8**	**0.9**	**2.0**	**1.2**	**0.0**	**0.0**	**0.0**	**5.2**
Burgenland	0.9	0.8	1.6	2.4	2.1	2.6	1.0	0.8	0.1	**2.1**
Lower Austria	6.9	2.0	17.1	11.4	15.9	27.0	10.2	10.6	0.7	**17.1**
Vienna	0.6	3.8	18.9	10.6	13.9	20.9	16.4	14.5	0.2	**15.0**
Czech Southeast	63.3	88.5	27.0	66.3	42.3	42.7	71.2	70.8	33.4	**45.8**
West Transdanubia	28.3	5.0	35.3	9.4	25.8	6.8	1.3	3.3	65.6	**20.0**

Source: Eurostat, own calculations.

Still, overall, by broad categories trade seems to have a fairly similar structure across all CENTROPE regions. It is however influenced again by the regions specialization, and shows that regions that are the main locations for multinationals investing in the manufacturing industries are also the main exporters of this type of goods. In so far the exporting structure tends to depend largely on the presence and the type of multinationals located in a region.

4.4. Summary and Conclusions

Foreign trade is an important cornerstone for the economic development of a country or region as – following various economic theories – the expansion to foreign markets not only increases the demand for one region's good and services, thereby increasing income and employment in this region, but also leads through learning effects to technological change and innovation, not only in the trading sectors but economy wide. At the same time theories tell us that regions or countries trade along their comparative advantages, which may come in different forms, like specific natural endowments, wage and production costs, skill endowment, geographic location etc. In this respect it is no surprise that the trading patterns and structures of the CENTROPE regions differ quite substantially.

Thus, CENTROPE consists on the one hand of regions that are highly export oriented, i.e. Czech Southeast, West Transdanubia and West Slovakia and on the other hand of regions with less activity in foreign trade, either because they are more services oriented regions like Bratislava or Vienna or less industrialised and a bit more agricultural like Burgenland and Lower Austria. In total, the trading patterns and the extent of foreign trade has a direct relation to the amount and type of FDI flows the CENTROPE regions received. All three export-oriented regions received predominantly FDI in the manufacturing industry sector. The engagement of multinationals in those regions was clearly influenced by the favourable production conditions in the three regions, given their proximity to Western markets and relatively low wage and production costs amongst other factors. Hence most of the goods produced in the FDI firms are in fact exported Europe wide or even globally and this finds its reflection in the trade statistics of Czech Southeast, West Transdanubia and West Slovakia. To a minor extent this also holds for Bratislava, though being a capital city region, it nevertheless received a comparatively high amount of manufacturing FDI.

Overall foreign trade of the CENTROPE regions is mainly with medium high and medium low skilled manufactured goods, again corresponding to FDI flows; West-transdanubia also exports a considerable amount of high technology intensive goods.

Table 34: Comparison average export shares by CENTROPE regions to CENTROPE countries and share in EU 27 GDP, (average 1999-2009)

	Exports in % of exports EU 27 (export share)			GDP in % of EU 27 total GDP (market share)
	Exports by:			
Exports to:	Burgenland	Lower Austria	Vienna	
EU 27	100.0	100.0	100.0	100
Czech Republic	4.2	4.7	5.0	0.9
Hungary	5.2	5.8	6.2	0.7
Slovakia	2.2	2.4	2.7	0.4
	Czech Southeast			
EU 27	100.0			100
Austria	6.1			2.2
Hungary	2.8			0.7
Slovakia	9.8			0.4
	West Transdanubia			
EU 27	100.0			100
Austria	6.2			2.2
CZE	3.7			0.9
Slovakia	3.7			0.4
	Bratislava	West Slovakia		
EU 27	100.0	100.0		100
Austria	12.5	6.7		2.2
Czech Republic	20.1	13.5		0.9
Hungary	7.6	6.3		0.7

Source: Eurostat, own calculations.

As far as trade integration within CENTROPE is concerned it can be considered to be relatively high at European standards, as trade flows between the CENTROPE countries and regions are over-proportionally high. That is from a market size point of view each CENTROPE country is, if compared to the EU 27 as a whole, very small. In terms of GDP (in EUR) the CENTROPE countries account for 0.4 to around 2.2 percent of the EU 27 GDP. Yet in terms of foreign trade the CENTROPE countries are much more important for each other than GDP numbers suggest, as the CENTROPE regions export around 12% to over 40% of their EU 27 exports to other CENTROPE regions (Table 34). Certainly geographic proximity plays an important role here, just as historic ties do or an almost common lan-

guage like in the case of Slovakia and the Czech Republic where trade integration seems to be stronger than elsewhere in CENTROPE.

Table 35: Comparison average export shares by CENTROPE regions to CENTROPE regions and share in total CENTROPE GDP, (average 1999-2009)

	Exports in % of exports to CENTROPE (export share)			GDP in % of CENTROPE total GDP (market share)
	Exports by:			
Exports to:	Burgenland	Lower Austria	Vienna	
Czech Southeast	26.4	26.4	25.6	31.8
West–transdanubia	27.0	27.5	27.2	19.4
Bratislava	14.3	13.8	14.3	21.4
West Slovakia	32.3	32.3	32.9	27.4
	Czech Southeast			
Burgenland	2.1			4.0
Lower Austria	12.7			27.3
Vienna	15.2			48.1
West–transdanubia	4.5			5.8
Bratislava	20.3			6.4
West Slovakia	45.2			8.3
	West Transdanubia			
Burgenland	3.2			3.9
Lower Austria	20.2			26.3
Vienna	25.4			46.4
Czech Southeast	11.3			9.3
Bratislava	12.3			6.2
West Slovakia	27.6			8.0
	Bratislava	West Slovakia		
Burgenland	4.2	3.2		4.2
Lower Austria	24.6	20.2		28.8
Vienna	24.7	24.0		50.7
Czech Southeast	35.7	38.1		10.1
West Transdanubia	10.7	14.5		6.2

Source: Eurostat, own calculations.

In general it has to be said that trade integration patterns are a bit peculiar in CENTROPE (Table 35). Looking only at market potential one could assume that Vienna and Lower Austria are the main export markets for the other CENTROPE regions. However they are not. They are of course important in terms of absolute trade flows, because both regions are high income regions with a corresponding import demand. Yet, exports from the NMS CENTROPE only flow under-proportionally to both regions, while trade amongst the NMS CENTROPE regions is higher than expected if their market potential is considered. One

reason for this is that a lot of this trade between the NMS CENTROPE regions is inter-industry trade, as all these regions in one way or another are part of a production chain, whereby the goods produced in on NMS CENTROPE might be inputs for the production in others.

The CENTROPE is to a large extent a highly open economic area. As such it is highly integrated with European and global markets. This is not to say that within CENTROPE trade is unimportant. In fact foreign trade within CENTROPE is well developed, though overall the outside CENTROPE area, especially the EU 27, is by far more important. Adding to this that foreign trade is an important factor for economic development and becomes the more important the more the regions are engaged in it, hints to certain conclusions that are on the one hand general conclusions for economically open regions and some specific conclusions as far as CENTROPE integration is concerned.

A recent study by the EU Commission has shown (*EU Commission,* 2008) that globalised regions, in order to succeed on foreign markets and benefit economically from foreign trade and also FDI, have to be aware of the following points:

- Globalised region benefit the more from trade the more the regional exporters, which in many cases are FDI firms, are strongly embedded in the region's economy. This increases their positive impact on the region.
- The creation of completely new cluster structures is extremely difficult, as such structures are generally the result of long historical evolutions. Therefore, if possible, policy aiming at supporting existing clusters in the development of more technological innovation might be more rewarding.
- Education, notably basic secondary education, is important for the capacity of a region to profit of opportunities, be it in the form of large foreign firms or cluster structures.

A second study by the Commission (*EU Commission*, 2009) raises one more important point in the context of CENTROPE:

- Increasing or keeping existing competitiveness on European and global markets (e.g. through an increase in productivity) can be achieved through local policies supporting innovation. Thereby it is not merely the degree of R&D expenditure and of technological development that is linked to successful policies. Rather innovation is to be understood as all efforts devoted to increasing knowledge, develop local capabilities to co-

operate with other regions to exploit synergies, and invent new organizational solutions at both the firm and public governance levels.

The conclusions that arise in the light of these arguments and our results correspond to a large extent to the conclusions drawn in the chapter on FDI and enterprise co-operation. Accordingly, a key policy issue is enterprise co-operation in CENTROPE. Strengthening and facilitating the establishment of cross-border enterprise relations might not only lead to an increase in trade within CENTROPE and allow the companies on either side of the borders to benefit from the different comparative advantages in the CENTROPE regions, which over the longer run is conducive to economic development in the whole CENTROPE. Much more than this, strengthening enterprise co-operation might also be a tool to embed big exporting (FDI) companies in CENTROPE into the local economies, by increasing the number of up- and downstream ties through a network of local suppliers of intermediate inputs. Importantly, enterprise co-operation, finding its expression – inter alia – in trade between enterprises is also one of the key factors in the innovation process of firms.

A recent study by *Verspagen et al*. (2008) analysing innovation behaviour of firms, found a significant heterogeneity in the firms' innovation strategies that to a large extent are independent of the sector of economic activity as well as the country they are operating in. *Verspagen et al.* identify three important types of innovation strategies. The "classical" type of firm engages in R&D activities to innovate, whereby here enterprise co-operation is also a key element in the innovation process. However, also firms with less (or even no) R&D activities innovate through:

a) "user" related activities, that are geared toward product effects, and involve innovation activities aimed at improving design and a smooth introduction of new products on the market. Notably this requires some sensitivity to signals from clients, consumers and firms.
b) "external" activities that exploit opportunities for innovation from diffusion of technology embodied in new capital goods and products, as well as the acquisition of existing technology from other firms, e.g. through purchasing of rights to use patents, licenses or software. An important element is the high importance attached to the various sources of information that are required to benefit from the knowledge and innovation created by other firms. Major channels of transmission are the firms' supplier as well as events like trade exhibitions.

This shows that the importance of strengthening foreign trade and enterprise co-operation is more far-reaching than just increasing the trade in of goods and services as it has not only short run benefits on incomes and employment but also long run effects making CENTROPE more resilient and more competitive in a globalised world.

5. Labour Mobility in the CENTROPE region

Aside from trade and foreign direct investments the spatial integration of regions can also be measured in terms of labour mobility. Indeed in particular commuting flows across regional entities' borders are often used to define functional labour market areas (such as for instance travel to work areas).[18] In this chapter we therefore analyse the extent and structure of cross-border labour mobility in CENTROPE, by focusing on commuting – which is defined as situation where a person works in one region and lives in another, – and migration – which refers to a situation in which a person transfers their place of residence (with or without changing place of work) across borders.[19] Our primary interest is to assess the extent of cross-border labour mobility in CENTROPE and to compare this to other European regions. Our hypothesis is that given the unique geographical features of this region, as the location of two large capital cities and a number of further larger towns, and its large economic differences[20] cross-border labour mobility is of a larger importance than in most other regions of the European Union.

There are, however, also factors that limit the extent of cross-border labour mobility in CENTROPE and thus work against this hypothesis. In particular aside from language barriers and institutional differences between the CENTROPE countries, cross-border labour mobility in this region was at the time of writing this report hampered by the derogation periods with respect to the freedom of movement of labour that were still applied by Austria. While these restrictions applied only to labour mobility from the new member state parts of the CENTROPE region to the Austrian part and ended on 1st of May 2011, their impact on currently observed mobility patterns may be sizeable since they also restrict mobility to the city of Vienna, which as the largest city of the region should be a major basin of attraction for migrants and commuters.

[18] See *Rouyela* (2007), *Calafati and Veneri* (2010) for recent applications of the concept of travel to work areas to European data and for example *Feng* (2009), *Ball* (1980) for discussions of some of the methodological issues involved in defining them.

[19] Note that according to this definition commuting and migration may either be complements (if for instance a person moves to the suburbs of a city without changing place of work and thus commutes back to the city) or substitutes (when a person changes location of place of work and has to decide whether to also change place of residence) – see: *Zax* (1994) for a description of these relationships.

[20] See: *Rozmahel et al.* (2011) for a description of the economic disparities and development of the region.

A second question we thus pose in this chapter is how migration and commuting patterns in the CENTROPE region could be affected by the end of derogation periods. Since with the data at our hands we are unable to assess the exact extent of potential cross-border commuting and migration in the region and since previous attempts to forecast post-integration migration have been burdened by formidable methodological problems leading to volatile and often unreliable forecasts,[21] our primary focus is on the plans and wishes of the population of CENTROPE with respect to future mobility. Using data from three waves of a large scale questionnaire we ask to what extent the cross-border commuting and migration wishes of the residents of the CENTROPE region reflect already existing patterns and to what extent the end of derogation periods can therefore be expected to lead to a major regime shift in cross-border commuting and migration. Furthermore, we also analyse the factors motivating and/or restraining labour mobility in the region by differentiating between potential commuters and migrants as well as countries of residence of respondents.

5.1. Data

5.1.1. The European Labour Force Survey

The data we use to answer these questions comes from two sources. The first is a special sample drawn from the European Labour Force Survey (ELFS) of the year 2007.[22] This quarterly survey conducted in all of the EU 27 countries presents information on the place of residence (on a NUTS 2 level), place of work and country of birth and a large number of socio-economic characteristics (such as age, gender, highest completed education, occupation and duration of stay in the country of residence) of a representative sample of the population of each EU 27 country. Thus from this questionnaire it is possible to calculate the number of foreign born (migrants) residing in a NUTS 2 region as well as the number of out commuters. Furthermore, the data can also be used to obtain information on the country of birth of the foreign born as well as the region of work of commuters.

[21] See *Huber (*2001 and 2009) for surveys of the migration forecasts applied to the most recent waves of enlargement of the EU and *Brücker and Siliverstovs* (2006) for a detailed discussion of the methodological issues involved.

[22] Note that for aggregate migration and commuting data we are able to use more recent data official EUROSTAT data but that to conduct data for place to place level of commuting and migration analysis is not provided by EUROSTAT on a regular basis. Thus for place to place considerations 2007 data is the most recently available.

Unfortunately, while having obvious strengths ELFS data also has a number of drawbacks. In particular the survey represents a sample of the population only. This implies that it is subject to sampling error. EUROSTAT thus suggests that observations based on a small number of cases only should either (if the number of cases is very low) not be reported at all or (if the number of cases is small) be presented only with special emphasis to highlight the high uncertainty of the information. Furthermore, EUROSTAT also presents upper and lower confidence bounds specific to each country for which these reporting rules should apply.[23] We follow these conventions by presenting numbers lower than the upper confidence bound in brackets and suppressing all figures that are below the lower confidence bounds.

A further weakness of the ELFS is the representation of both cross-border commuting and migration flows. Here, since the data is based on a quarterly sample of the households in the EU, temporary and irregular as well as seasonal labour mobility is underrepresented, so that in general estimates of migration derived from the ELFS is a lower bound to actual labour mobility. In addition, in the ELFS data on the country of birth is presented only on a country, not a regional level and all data is available on a NUTS 2 level only. Thus here we have to analyse CENTROPE on a NUTS 2 level definition and – rather than on persons born in a CENTROPE region – have to focus on the migrants born in CENTROPE countries when considering emigration. Similar observations apply to cross-border commuters. Here in many instances we can only identify the country (but not the region) of work of cross-border commuters.

5.1.2. Data on migration and commuting intentions

The second dataset which we use to address the issue of migration and commuting intentions in CENTROPE was collected within the scope of the Austrian "Labour Market Monitoring" (LAMO) project (see *Hudler-Seitzberger and Bittner,* 2005; *Huber, et al.,* 2007). The aim of this project was to gain information on the willingness to commute and migrate in the CENTROPE region. We have available three waves of this survey (with the first one taking place between November 2004 and February 2005, the second between November

[23] For Austria for instance they are 3,000 and 6,000 predicted persons respectively, in the Czech Republic by contrast only 700 predicted cases are required, Slovakia requires 2,000 and 3,000 predicted persons and Hungary 2,000 or 3,500.

2006 and February 2007 and the last in December 2010) so that we are able to report on the evolution of migration and commuting intentions over a period for more than 5 years.[24]

Table 36: Sample size of the LAMO household survey by waves and sub-regions

	Year of Observation			
NUTS 3	2004/05	2006/07	2010	Total
	Absolute			
South Moravia	629	1,314	1,120	3,063
Győr	514	463	662	1,639
Vas	326	270	400	996
Vienna	1,044		1,561	2,605
Lower Austria	1,392			1,392
Burgenland	290			290
Bratislava region	793	749	787	2,329
Trnava region	746	707	715	2,168
CENTROPE	3,008	3,503	3,684	10,195
Total	5,734	3,503	5,245	14,482

Source: LAMO household surveys 2004-2005 and 2006-2007, 2010.

These data were collected by personal face-to-face interviews in the Hungarian, Slovak and Czech regions of "CENTROPE" and in the first wave also in the Austrian CENTROPE. In the 3rd wave also residents in Vienna were interviewed. In these waves, 14,482 individuals were interviewed, 10,195 of them living in the CENTROPE regions of the new member states (Table 36). According to the sampling plan, random quota sampling was applied to the working-age population of age 15 and older. Quotas were set by municipalities following a spatial analysis of the region. Municipalities were chosen based on characteristics such as municipality size, population growth and structure, employment growth and unemployment rates as well as accessibility. Within the municipalities, random sampling was applied.[25]

[24] A fourth wave was conducted in 2008/09 but only included Vienna, Bratislava region and Trnava region. We do not report results for this wave; results are available in *Nowotny – Hierländer* (2009).
[25] The underlying sampling plan was designed on the basis of an in-depth background analysis of the regional structure (*Krajasits et al.*, 2005). The survey is representative of the CENTROPE population over 15 years of age.

These data are especially suitable for our analysis because they consist not only of information on the willingness to migrate and commute, but also include a large set of personal characteristics which allows us to analyse mobility decisions based on individual characteristics as well as the structure of those willing to be mobile. In addition to socio-economic characteristics respondents were also asked questions concerning their previous migration and commuting experiences, their plans for future cross-border mobility, their expectations concerning a workplace abroad and their motives for wishing to stay at home or to be mobile. This allows us to differentiate between intended migration and commuting and also to analyse the difference in structure between these two groups.

The data too, however, have some drawbacks. These result primarily from the sample size. Although the data were collected in such a way that they should be representative of the CENTROPE region, as with the ELFS the small sample size implies rather large confidence intervals when drawing conclusions on the overall population of the CENTROPE regions. Furthermore, as will be shown below the share of persons, who have rather concrete mobility intentions in CENTROPE is rather low, this implies that statements referring to structure of those willing to be mobile based on an individual wave will by necessity be based on few observations only. To deal with these issues, we thus merge data from the three waves to increase the number of observations and make reference to changes over time only where this is absolutely necessary for understanding the developments of the region and focus strongly on the motives and plans of the commuters in the region.

5.2. Previous Immigration in CENTROPE

5.2.1. The Extent of Migration

Focusing first on migration data from the ELFS, suggests rather large differences between the CENTROPE regions in terms of the foreign born living in the region. In particular while the share of foreign born living in the Austrian CENTROPE is rather high, it is substantially lower in the new member state CENTROPE regions (Table 37 and Figure 15). In total nearly 21% of the population living in the Austrian CENTROPE are foreign born, with in particular Vienna having a very high share of foreign born of nearly 32%. But even in Burgenland – which is the region in the Austrian CENTROPE where this share is lowest – the share of foreign born is substantially higher than in the CENTROPE regions of the new member states. In these the share of foreign born is lower than 1% of the resident population in aggregate, with the share reaching a maximum of 1.4% in the Czech Southeast and

a minimum of 0.5% in Western Slovakia. These low shares of the foreign born in the CENTROPE regions of the new member states also limit the possibility to analyse structure of migration in these regions, since for many groups there are so few observations that data is highly unreliable.

Table 37: Resident working age population by country of birth in NUTS 2 level CENTROPE regions in %

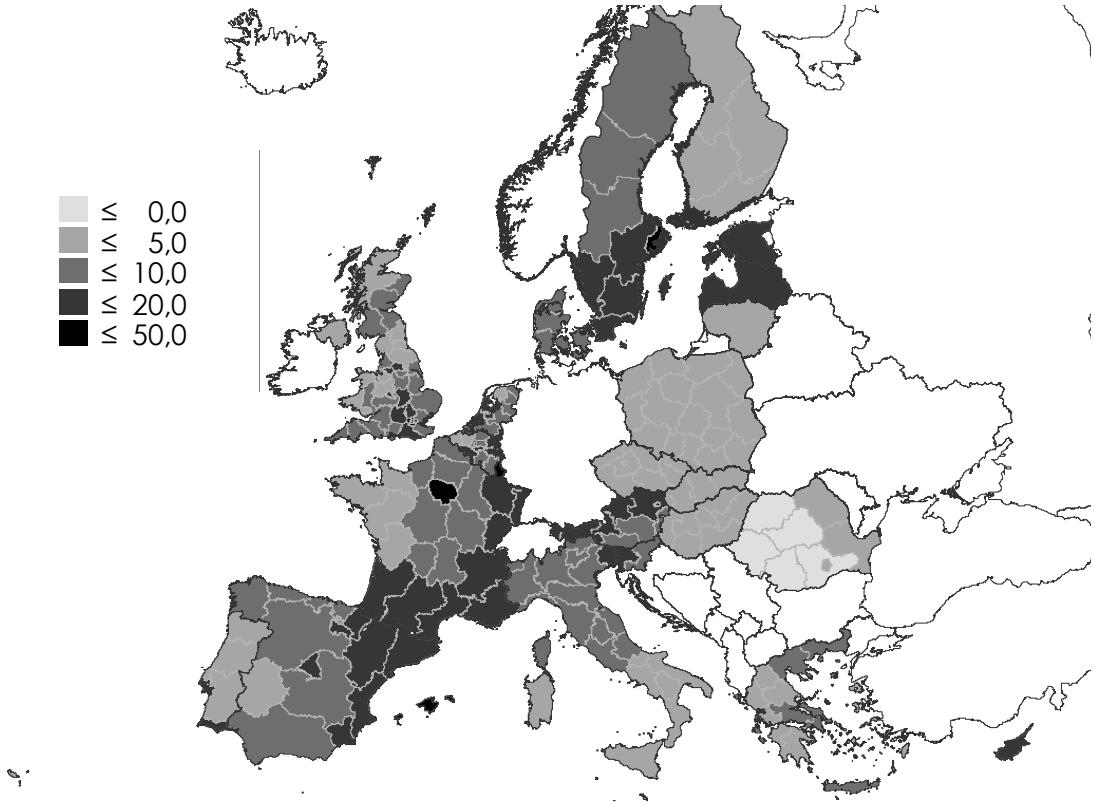
	Country of birth			
Region of residence	Same country	Other CENTROPE–country	Other EU country	Outside the EU
Burgenland	92.3	(1.9)	(1.8)	4.0
Lower Austria	88.9	1.7	2.5	7.0
Vienna	68.1	2.6	6.1	23.2
Austrian CENTROPE	79.3	2.1	4.1	14.4
Czech South–East	98.6	1.0	0.1	0.4
West Transdanubia	98.9	(0.2)	–	0.8
Bratislava	98.7	0.9	–	–
Western Slovakia	99.5	0.5	–	–
Slovak CENTROPE	99.3	0.6	–	(0.1)
CENTROPE	91.9	1.2	1.5	5.4

Source: European Labour Force Survey 2007. Values in brackets = number of observations have high variance due to low sample size - = sample size too low to allow reporting, working age population = population aged 14 to 64.

Form a European perspective (Figure 15), however, CENTROPE due to the high share of foreign born residing in the Austrian part, is a region with about an intermediate openness toward migrants. In total 8.1% of the total working age population residing in CENTROPE was born abroad. This is only slightly lower than the 8.6% average of the 25 EU countries for which we have reliable data, and is slightly lower than the share of foreign born in Denmark,[26] which ranks on the 11th place in terms of the share of the foreign born among the EU countries.[27] Thus from a European perspective the Austrian CENTROPE region is marked by high openness to migrants and CENTROPE in aggregate has an about average openness in this respect.

[26] We have to omit Germany and Ireland from our data on account of missing data problems.
[27] Given that the CENTROPE on NUTS 2-level has 8.3 million inhabitants, we think that comparing this region to EU countries is more appropriate than comparing it to smaller regional aggregates.

Figure 15: Share of working age foreign born residing in NUTS 2 regions of the EU 27 (in % of working age population, 2007)

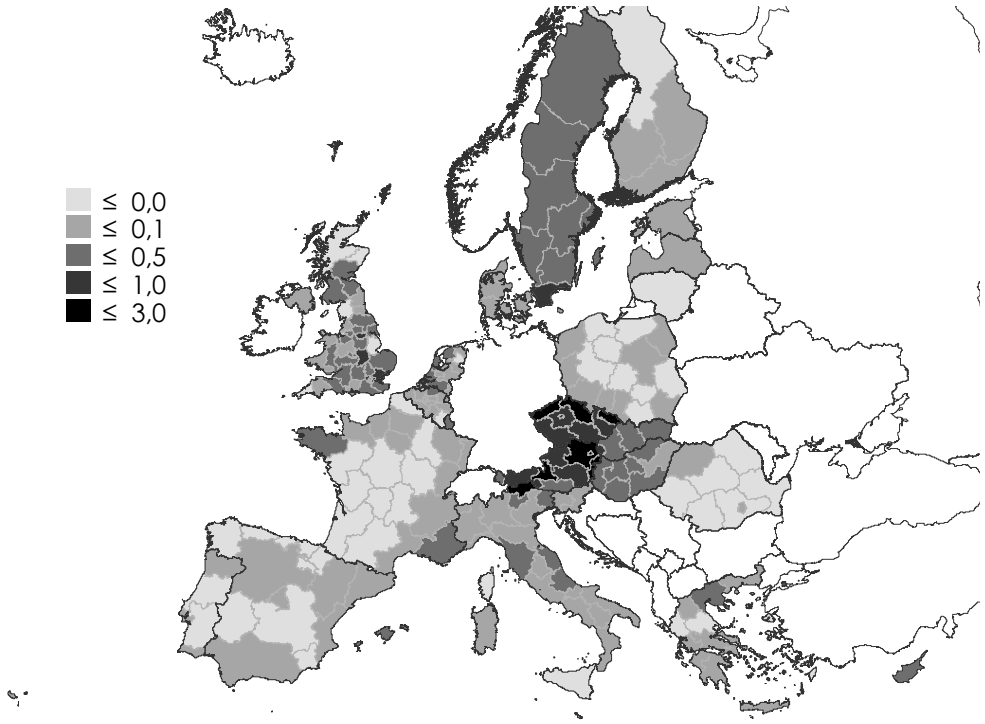


Source: ELFS, 2007. Note: Germany and Ireland omitted due to missing data problems, working age population = population aged 14 to 64.

From the point of view of internal spatial integration of CENTROPE, however, the shares of persons born in CENTROPE countries residing in CENTROPE regions of countries other than they were born in, is a more relevant indicator for cross-border labour market flows within the region. Here the indicators – given the vicinity of the regions and even more historic experience – suggest rather low migration levels within the region, both in the Austrian as well as the new member state parts. In total only 1.2% of the population residing in the NUTS 2 regions of CENTROPE were born in another CENTROPE country than they lived in (Table 37). Even in Vienna, which as the largest city on the territory is the main basin of attraction for migrants, this share is only 2.6% of the population, and in the new member state parts this share is below 1% of the population in the Czech and

Slovak Republics despite the joint history of the two countries.[28] This is still lower than for instance the share of persons born in CENTROPE residing in the Italian region of Bolzano and most northern Czech regions. In West Transdanubia, where migration data is not influenced by historic experiences of a common country with another CENTROPE country as in the Czech and Slovak case, this share attains only 0.2%, which is only slightly above the average of the EU of 0.1%.

Figure 16: Share of working age foreign born from CENTROPE Countries residing in NUTS 2 regions of the EU 27 (in% of working age population, 2007)



Source: ELFS, 2007. Note: Germany and Ireland omitted due to missing data problems, working age population = population aged 14 to 64.

Thus while CENTROPE on account of a high share of migrants in the Austrian part is characterised by an about average share of foreign born from the rest of the world, it is also a region where internal cross-border migration has been rather low in the past. Even in countries that formed a common country until recently (such as Slovakia and the Czech

[28] The vast majority of the foreign born from other CENTROPE countries in the Czech Republic were born in Slovakia, and in Slovakia the structure strongly focused on native Czechs.

Republic) the share of foreign born stemming from other CENTROPE countries is less than 1%. In terms of migration the CENTROPE regions are internally much less strongly linked amongst each other than to regions outside CENTROPE.

In addition, migration patterns also follow a clear "East-West" mobility within CENTROPE. The shares of migrants from CENTROPE countries in the total population are clearly higher in the Austrian parts of CENTROPE and there are only very few Austrian born residents living in the new member state regions of CENTROPE. Thus migration patterns are highly unidirectional and therefore resemble the patterns typically found in centre-periphery migration, rather than the more bilateral structure that could be expected from poly-centric urban spaces that characterize much of the CENTROPE region.

Table 38: Structure of working age population by country of birth in the NUTS 2 level CENTROPE regions (share in %)

	Born in same country				Born in other country			
	Austria	Czech Republic.	Hungary	Slovakia	Austria	Czech Republic.	Hungary	Slovakia
Gender								
Female	48.1	48.7	47.5	47.8	46.8	47.0	40.3	44.4
Male	51.9	51.3	52.5	52.2	53.2	53.0	59.7	55.6
Age in Years								
15–24	14.0	15.3	14.7	17.8	12.3	11.8	–	–
25–44	33.2	35.4	34.1	36.5	45.7	34.6	(23.7)	20.4
45 and more	52.8	49.3	51.2	45.8	42.0	53.6	67.2	73.9
Education								
Low Qualification	25.9	18.7	31.0	22.1	36.5	24.8	(26.7)	19.6
Medium Qualification	59.7	70.1	58.0	64.9	46.3	59.4	55.1	54.2
High Qualification	14.5	11.2	11.0	13.0	17.2	15.8	–	26.2
Employment status								
Non–Employed	43.5	43.9	48.6	43.8	42.1	45.7	57.7	52.0
Employed	56.5	56.1	51.4	56.2	57.9	54.3	42.3	48.0
Duration of Stay								
10 or more years					69.6	71.6	80.7	88.1
1 to 9 years					30.4	28.4	–	–

Source: European Labour Force Survey 2007. Values in brackets = number of observations have high variance due to low sample size, - = sample size too low to allow reporting. Low qualified = highest completed education of ISCED 2 or below. Medium qualified = highest completed education of ISCED 3 or 4. Highly qualified = highest completed education of ISCED 5 or above, working age population = population aged 14 to 64.

5.2.2. Structure of the foreign born

There are also substantial differences in the structure of the foreign born residing in the Austrian and in the new member state regions of CENTROPE (Table 38). While the for-

eign born residing in both the Austrian CENTROPE as well as in the new member state regions are mostly male, those in the Austrian CENTROPE are younger (on account of a shorter duration of stay in Austria) and are substantially less qualified (on account of a high share of low qualified among residents from third countries). In the new member state parts of CENTROPE, by contrast, the foreign born are more often medium skilled. In addition, in both the Austrian as well as the new member state parts of the CENTROPE region the share of highly (tertiary) qualified foreign born is higher than among natives. This implies that while the age and education structure of the foreign born residing in CENTROPE differs somewhat between Austria and the new member state parts, in both regions the share of tertiary educated among the foreign born is higher than among natives living in the region. This hints at the potential of migration to this region for improving its human capital base.

Table 39: Education structure of working age population by region of birth in the NUTS 2 level CENTROPE regions (share in %)

	From CENTROPE			From Rest of the World		
	Qualification level...					
	low	medium	high	Low	medium	high
Burgenland	22.5	61.8	15.7	38.1	51.2	10.7
Lower Austria	18.8	60.9	20.4	38.2	47.4	14.4
Vienna	13.4	64.2	22.4	39.2	43.2	17.7
Austrian CENTROPE	15.9	62.9	21.2	38.9	44.3	16.7
Czech South East	18.0	61.6	20.4	32.0	53.0	15.0
Hungarian CENTROPE	–	–	–	–	62.5	–
Slovak CENTROPE	20.5	57.4	22.1	–	–	–
CENTROPE Total	17.5	61.3	21.2	38.5	44.6	16.9
EU	21.2	60.7	18.1	37.3	44.3	18.4

Source: European Labour Force Survey 2007. Values in brackets = number of observations have high variance due to low sample size, - = sample size too low to allow reporting. Low qualified = highest completed education of ISCED 2 or below. Medium qualified = highest completed education of ISCED 3 or 4. Highly qualified = highest completed education of ISCED 5 or above, working age population = population aged 14 to 64.

Migration within CENTROPE is particularly highly skilled. While the CENTROPE region as a whole (on account of the unfavourable skill structure of migrants to Austria) tends to get in average worse qualified migrants from the rest of the world than the EU average (with the share of high skilled migrants from the rest of the world being lower than the EU-average and the share of low skilled migrants being higher), the opposite applies to intra CENTROPE migration. Here 21.2% of the migrants within CENTROPE are highly skilled

but only 18.1% of the migrants originating in CENTROPE but living in other EU 27 countries are highly skilled. In consequence CENTROPE gets a negative selection of the migrants from the rest of the world among the EU countries, within CENTROPE migrants are actually positively selected on education.

Table 40: Structure of working age population born in CENTROPE countries by country of birth and country of residence in the EU 27 (in %)

	Country of birth			
Country of residence	Austria	Czech R.	Hungary	Slovakia
Austria	90.2	0.4	0.4	0.4
Czech Republic	–	89.7	0.0	1.9
Hungary	–	–	91.1	0.2
Slovakia	–	0.2	–	82.1
Other countries	9.7	9.7	8.5	15.5
Total	100.0	100.0	100.0	100.0
Abroad total	9.8	10.3	8.9	17.9

Source: European Labour Force Survey 2007. Values in brackets = number of observations have high variance due to low sample size, - = sample size too low to allow reporting, working age population = population aged 14 to 64.

5.2.3. Previous emigration from CENTROPE countries to the EU

This structure of immigration should, however, be compared to emigration before drawing conclusions on whether the CENTROPE region in general benefits from a brain gain or suffers from brain drain due to migration. In this respect Table 40, which shows the share of persons born in one of the CENTROPE countries that reside in another EU 27 country, clearly indicates that emigration is of high quantitative importance for CENTROPE countries. According to the ELFS around 10% of the active aged population born in a CENTROPE country lives in another country of the EU 27. Among those born in Slovakia this share even amounted to 17.9% in 2007.[29]

However, here too bilateral migration between the CENTROPE countries is of second order importance relative to the emigration to countries that are further away. This reconfirms our previous finding of a relatively bad internal connectivity of CENTROPE in terms of labour mobility. Furthermore, the emigrants from the CENTROPE countries are – relative to those residing in their home country – a very highly qualified group (Table 41),

[29] Note that our data are from 2007, only. We would expect that this share has reduced slightly in the last years on account of the substantial return migration of Slovak citizen from the UK and Ireland and in the aftermath of the financial and economic crises of 2009.

among whom the share of tertiary educated is substantially higher than among those residing back home. Over one third of the emigrants from Austria living in another country of the EU 27 – as opposed to only 14.5% of those residing at home – have a tertiary education. Among the emigrants born in the Czech Republic this share is 27.5% relative to 15.2% of those residing at home. In Hungary the ratio is 30.6% to 11.0%. The only country to which this does not apply is Slovakia, where 12.0% of those born in Slovakia and residing abroad and 13.0% of those residing at home have tertiary education, so that these shares are about equal.[30] Furthermore, if the share of the highly educated emigrants is compared to the share of highly educated natives residing in their home country then the former is higher in all of the CENTROPE countries (including Slovakia).

Table 41: Demographic structure of working age emigrants from the CENTROPE countries living in the EU 27 (shares in %)

	Country of birth			
	Austria	Czech Republic	Hungary	Slovakia
Gender				
Female	38.3	37.7	40.5	41.2
Male	61.7	62.3	59.5	58.8
Age in years				
15–24	6.8	7.9	6.5	14.4
25–44	26.5	37.7	45.0	44.3
45 and more	66.6	54.4	48.5	41.3
Highest education				
Low Qualification	23.9	19.0	15.9	27.9
Medium Qualification	41.9	53.6	53.6	60.2
High Qualification	34.2	27.5	30.6	12.0
Employment				
Non employment	56.5	56.1	49.2	40.8
Employment	43.5	43.9	50.8	59.2
Duration of stay				
10 or more years	75.9	66.3	68.6	49.5
1 to 9 years	24.1	33.7	31.4	50.5

Source: European Labour Force Survey 2007. Values in brackets = number of observations have high variance due to low sample size, - = sample size too low to allow reporting. Low qualified = highest completed education of ISCED 2 or below. Medium qualified = highest completed education of ISCED 3 or 4. Highly qualified = highest completed education of ISCED 5 or above, working age population = population aged 14 to 64.

[30] Furthermore emigrants from CENTROPE countries are also more often male and older than 45 years and therefore often reside abroad for more than 10 years. The employment rate among these emigrants is, however, lower than among natives for those born in the Czech Republic and Austria, while it is higher among those born in Slovakia and Hungary. This points at least to some problems of emigrants born in CENTROPE in transferring their human capital across borders.

Aside from a low interconnectivity the CENTROPE region in total thus is also characterized by brain drain rather than brain gain through migration. This is of importance because as shown in the CENTROPE regional development report (*Rozmahel et al.,* 2011) and in a number of other studies, the share of tertiary educated residing in CENTROPE in the active aged population is in general lower than in the EU-average (in all regions but the capital cities of Vienna and Bratislava).

5.3. Commuting in CENTROPE

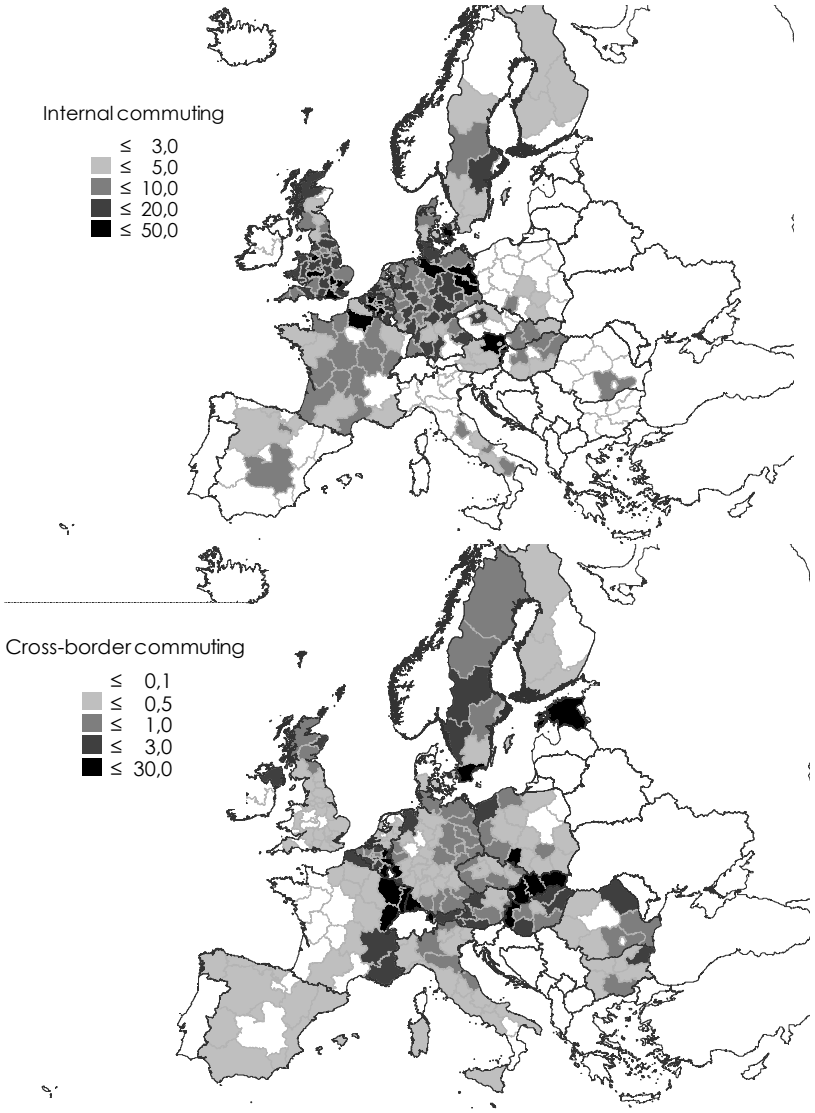
5.3.1. The extent of commuting

In terms of migration therefore the interconnectivity of the CENTROPE regions is low given the vicinity of the regions and the sizeable differences in income. The same does, however, not apply to cross-border commuting. The limited data on (cross-border) commuting available from official EUROSTAT sources suggests that both internal (within-country) and cross-border commuting rates (as a percentage of the employed at place of residence) are rather high in comparison to other EU 27 regions (

Table ***42*** and Figure 17). In total 9.6% of the employed in CENTROPE work in another NUTS 2 region in the same country. A further 1.8% of the employed at place of residence commute across borders. By comparison, among all NUTS 2 regions of the EU 27 these percentages are 6.4% and 0.7% respectively. In addition West Transdanubia and West Slovakia also belong to the 11 NUTS 2 regions in the EU 27 countries, where more than 3% of the employed commute across borders.[31]

[31] Also the extent of cross-border commuting has increased (by 0.5 percentage points of the employed) since enlargement in the CENTROPE, while internal commuting has reduced. These developments thus imply opposing trends in terms of internal commuting and a more rapid increase in cross-border commuting in the CENTROPE region relative to the EU average.

Figure 17: Out-commuting in the EU 27 by NUTS 2 regions (2007)



Source: Eurostat. ELFS Figure shows out-commuting in % of employed at place of residence.

Table 42: Commuting in the CENTROPE regions (in % of total employed at place of residence, NUTS 2 level)

	Working in another ...			
	country	region	country	region
	2009		2004	
Burgenland	0.6	32.1	0.2	35.0
Lower Austria	0.3	26.8	0.5	27.4
Vienna	0.9	6.8	0.3	8.5
Czech South East	0.5	2.6	0.5	2.7
West Transdanubia	3.3	2.5	1.8	2.0
Bratislava region	1.2	1.5	1.0	1.1
Western Slovakia	5.0	5.7	3.8	6.6
CENTROPE	1.8	9.6	1.3	10.1
EU 27	0.7	6.4	0.5	5.5

Source: EUROSTAT.

Judging from place to place data from 2007 available to us these high rates of commuting are strongly shaped by the region's geography as well as historic and institutional ties. For instance the high share of internal commuting is due primarily to Vienna's role as a major basin of attraction for commuters in Austria, which causes Lower Austria and Burgenland (where a substantial part of commuting is also to Styria and Lower Austria) to have very high out-commuting rates of about one quarter to one third of the employed at the place of residence. By contrast internal commuting rates in the new member state regions of CENTROPE are somewhat lower and exceed 5% only in Western Slovakia on account of substantial commuting to Bratislava region (

Table ***42***).

Similarly quantitatively important cross-border commuting flows can be found primarily in the Hungarian and Slovak CENTROPE. Here about 3.3% of the employed at the place of residence of West Transdanubia commute abroad, while from Western Slovakia this share is 5.0%. By contrast, cross-border commuting from the Austrian CENTROPE is almost irrelevant and only between 0.3% to 0.6% of the employed at place of residence commute across borders from the Czech CENTROPE (

Table ***42***). Furthermore, in the Slovak CENTROPE the high share of cross-border out-commuting is primarily due to high commuting rates to the Czech Republic, with which Slovakia formed a country until recently, and in Hungary the special institutional arrangements between Austria and Hungary (the so called Grenzgängerabkommen[32]) enhance cross-border commuting to Austria.

Cross-border commuting flows in CENTROPE currently are thus primarily among its new member state regions and in general by-pass the Austrian part. For instance in 2007 around 1.1% of the employed at place of residence of the Slovak CENTROPE worked in the Czech Republic and a further 1.2% in Hungary, while only 0.6% of the employed at place of residence worked in Austria (Table 43). The only quantitatively important flow of commuters to Austria is that from the Hungarian CENTROPE, from which 1.6% of the employed at place of residence commuted to Austria.

Table 43: Employed at place of residence of CENTROPE (NUT 2) regions by place of work (in %)

	From			
	Austrian CENTROPE	Czech CENTROPE	Hungarian CENTROPE	Slovak CENTROPE
To				
Austria	99.7	0.2	1.6	0.6
Czech Republic	–	99.4	–	1.1
Hungary	–	–	98.0	1.2
Slovakia	–	–	–	95.4
Other Countries	(0.2)	0.3	0.3	1.7
Total	99.9	100.0	100.0	100.0

Source: European Labour Force Survey 2007. Values in brackets = number of observations have high variance due to low sample size, - = sample size too low to allow reporting

This low importance of cross-border commuting from Austria is also confirmed by the analysis of cross-border in-commuting as a percentage of the employed at the place of work (*Table 44*). According to the data from the European Labour Force Survey, for 2007, which, however, has the important drawback that for a large number of cross-border com-

[32] In the framework of this agreement some 2500 workers living in the border regions of Hungary to Austria gained access to the Austrian labor market in the period from 1998 to 2008 (*Bock-Schappelwein et al.,* 2009).

muters only the receiving country (but not the receiving region) is asked for[33] around 0.4% of the employed in the Austrian CENTROPE were commuters from other CENTROPE countries. Here however the Hungarian commuters cannot be assigned to a particular region. In the Slovak CENTROPE this share was so low that no statistically reliable estimate can be given with ELFS data and only in Hungary and the Czech Republic did the share of inward commuting as a percentage of the employed at place of residence reach more than 1% (1.4% and 1.9%, respectively). Thus as for migration also cross-border commuting data indicates only low out mobility from the Austrian CENTROPE regions to the new member state parts and thus reconfirms the rather hierarchical pattern of labour mobility in the region.

Table 44: Employed by place of residence in CENTROPE NUTS 2 regions (in % of employed at workplace)

	Place of work			
	Austrian	Czech	Hungarian	Slovak
Place of Residence	CENTROPE			
Austrian CENTROPE	97.4	0.0	0.0	0.0
Other Austrian region	2.1	0.0	0.0	0.0
Czech CENTROPE	0.1	97.0	0.0	–
Other Czech region	–	1.6	0.0	–
Hungarian CENTROPE	0.0	0.0	98.1	0.0
Other Hungarian region	0.0	1.0	0.0	0.0
Slovak CENTROPE	0.2	0.2	0.9	99.8
Other Slovakia	–	–	1.0	(0.2)
From CENTROPE in total	99.9	100.0	100.0	100.0
From other CENTROPE countries	0.4	1.4	1.9	–
From other CENTROPE regions	0.3	0.2	0.9	–
Total	100.0	100.0	100.0	100.0

Source: European Labour Force Survey 2007. Values in brackets = number of observations have high variance due to low sample size, - = sample size too low to allow reporting.

[33] This inter alia leads to an impossibility of analyzing the receiving region structure of inward cross-border commuting from Hungary to Austria on account of severe missing data problems.

5.3.2. The structure of current commuting

Finally, when considering the structure of cross-border commuters relative to both internal commuters as well as region stayers (Table 45) cross-border commuters are substantially more often male and have intermediary qualification levels and also disproportionately often work in manufacturing industries. Relative to cross-border commuters commuting to regions outside CENTROPE, however, these commuters are also more often working in manufacturing but have a lower share of tertiary educated among them. Compared to these commuters, cross-border commuters in CENTROPE are also slightly older. This thus once more suggests that the CENROPE in aggregate is losing more highly qualified workers through labour mobility.

Table 45: Demographic structure of commuters in CENTROPE (2007, in %)

	Non–Commuters	Within–country commuters	Cross–border commuters outside CENTROPE	Cross–border commuters in CENTROPE
Gender				
Female	45.6	37.2	38.2	35.7
Male	54.4	62.8	61.8	64.3
Age in years				
15 – 19	1.8	2.1	–	–
20 – 29	19.9	24.3	53.7	32.6
30 – 39	26.9	29.0	23.2	30.8
40 – 49	27.5	25.5	(13.6)	21.5
50 – 59	21.0	17.7	–	13.5
60 and more	3.0	1.5	–	–
Education level				
Low qualification	10.7	8.3	–	(6.3)
Medium qualification	72.1	68.6	77.4	81.8
High qualification	17.3	23.1	(18.8)	(11.9)
Sectors				
Agriculture & mining	10.5	3.4	(9.2)	(6.7)
Manufacturing	28.8	27.9	28.5	53.5
Market services	42.0	52.0	43.3	33.0
Non–market services	18.7	16.7	(18.9)	(6.7)

Source: European Labour Force Survey 2007. Values in brackets = number of observations have high variance due to low sample size, - = sample size too low to allow reporting. Low qualified = highest completed education of ISCED 2 or below. Medium qualified = highest completed education of ISCED 3 or 4. Highly qualified = highest completed education of ISCED 5 or above.

5.4. Migration and Commuting Intentions in CENTROPE

In sum therefore the evidence collected from the ELFS points to four important stylized facts on labour mobility in CENTROPE: First the data suggests that relative to immigration as well as emigration to and from other regions, migration within CENTROPE are only of a second order magnitude. Second in the CENTROPE region migration follows a clear hierarchical pattern with many of the flows directed from the new member states to the Austrian CENTROPE and flows in the opposite direction and migration among new member states are rather rare. Third, while cross-border commuting is of some importance in the region relative to the low cross-border commuting rates achieved in most other EU regions, this has so far by-passed the Austrian CENTROPE, with the only exceptions being cases where special institutions eased the taking up of cross-border work. In terms of commuting the Austrian CENTROPE is thus less well integrated into the region than is the case for the new member states among each other. Finally, the data also suggest that the CENTROPE region runs the risk of suffering from brain drain arising from labour mobility since the share of highly skilled emigrating from the CENTROPE countries to other parts of the EU is substantially higher than the share of high skilled immigrating from other regions of the world.

In particular this last finding should be considered a worrying signal also from a long run perspective, since it has an impact on the human capital base of the region, which as shown in previous work (*Rozmahel et al.,* 2011), is strongly focused on the medium skill levels, with only Bratislava and Vienna holding above average shares of tertiary educated.

5.4.1. Intensity of Migration and Commuting Intentions

Clearly these findings are also influenced by the institutional restrictions on labour mobility in the CENTROPE region until May 1st 2011. It could therefore be argued that both commuting and migration patterns in the region will be subject to substantial change, once these restrictions are lifted on 1st of May 2011. To overcome this potential drawback of our analysis we augment our data with three waves of additional interview data on migration and commuting intentions available for the CENTROPE region, to ask to what degree the current patterns in migration and commuting data can be expected to persist also after the end of derogation periods and to analyse in detail the factors which motivate and impede on labour mobility in the CENTROPE region.

In the interviews respondents were asked a number of questions concerning their future cross-border mobility plans. In particular respondents were asked "Would it be conceivable for you to work abroad?" to which respondents could answer "yes" or "no". Furthermore, they were asked whether they would prefer (1) "daily commuting", (2) "weekly commuting", (3) "monthly commuting" or (4) "living and working abroad". In subsequent questions they were also asked which country they would prefer to work in and if they had already taken concrete steps towards working abroad. These data can thus be used to analyse the development of commuting and migration plans in the CENTROPE region.

Following *Fassmann and Hintermann* (1997) as well as the literature on questionnaire-based mobility surveys, progressively more narrow migration and commuting potentials can be defined by differentiating between:

1. "General mobility potentials" – which include all individuals, who do not currently work abroad, but consider seeking a job there.
2. "Expected mobility potentials" – consisting of those in the general potential, who have either already collected information about their respective target country, have taken training courses, learned the language, applied for a residence or work permit or for a job or who have a confirmed job offer or a place to live and
3. "Real mobility potentials" – which comprise only those in the expected potential, who have already applied for a residence or work permit or a job or have a confirmed job offer or a place to live abroad.

Furthermore, given these definitions each of the potentials can be divided into a commuting and migration potential depending on whether respondents said that they intend to commute from their current residence to their workplace abroad on a daily or weekly basis or whether they stated that they would migrate abroad returning at most once a month.[34]

When analysing this data (Table 46) we find that – despite substantial variation among the CENTROPE regions which is, however, often hard to interpret and may result from small sample problems – the general mobility potential in the 2010 wave of the interviews amounted to approximately 19.1% of the population aged 15 to 64 in the average of all new member state regions of CENTROPE, while the share of persons in the expected mobility potential is much smaller and amounts only to 5.4%. Finally the real mobility po-

[34] Note that in defining cross-border commuters as either daily or weekly commuters we follow the European Commission's definition of temporary cross-border workers.

tential amounts to 1.9% of the resident population. In the year 2010 thus all mobility potentials were lower in the average of new member state regions of CENTROPE than in Vienna, where the general mobility potential was at 32.2% of the population, the expected mobility potential was 9.5% of the population aged 15 to 64 and the real potential amounted to 3.1%.[35]

While these figures can be expected to be rather inappropriate estimates of realised migration and commuting, since the question posed focuses on plans, which may or may not be realised, this does suggest that meanwhile at least migration intentions in the new member state regions of the CENTROPE region of the EU are not higher than in Vienna any more – and thus are in the realms of the magnitudes that could also be expected from economically more advanced regions of the EU 15.

Furthermore, we can also see that – due to a substantial decrease in the Slovak CENTROPE (which was also the region with the most rapid economic growth in the time period considered) – all mobility potentials in the average of the new member state CENTROPE regions decreased between the 2004/05 and 2010 waves of this questionnaire with only the "general mobility potential" showing a very slight increase in the 2010 wave relative to the 2006/2007 wave. In particular the "general mobility potential" decreased by more than 10 percentage points, while the expected mobility potential declined by approximately 5.9 percentage points. The real mobility potential reduced to 0.8 percentage points.

Table 46: Mobility potentials in selected CENTROPE regions (% of population aged 15 to 64)

	General			Expected			Real		
	2004/05	2006/07	2010	2004/05	2006/07	2010	2004/05	2006/07	2010
	In % of total observations								
South Moravia	13.8	17.4	19.6	4.5	5.9	7.2	2.2	2.3	2.1
Györ	28.8	32.8	33.5	9.9	6.5	10.1	1.9	4.1	3.5
Vas	24.8	25.6	43.5	8.6	6.7	4.3	2.1	2.2	2.0
Vienna	13.2		32.2	1.5		9.5	1.1		3.1
Lower Austria	12.0			1.5			0.5		
Burgenland	14.5			1.7			0.3		
Bratislava region	39.6	13.1	6.0	17.0	5.1	1.5	3.9	1.6	1.1
Trnava region	33.5	16.7	5.9	13.3	7.4	3.1	3.2	3.1	1.0

[35] Note that these mobility potentials are directed to all parts of the world.

Total NMS	29.3	19.0	19.1	11.3	6.2	5.4	2.9	2.5	1.9
Hungarian CENTROPE	27.3	30.2	37.3	9.4	6.5	7.9	2.0	3.4	2.9
Slovak CENTROPE	36.6	14.8	5.9	15.2	6.2	2.3	3.6	2.3	1.1

Source: LAMO household surveys 2004-2005, 2006-2007, 2010. WIFO-calculation.

The LAMO household survey thus suggests a considerable but decreasing general potential for mobility in the new member state regions of CENTROPE that rapidly reduces as more concrete migration plans are asked. Furthermore a comparison with the Austrian sub-regions of CENTROPE also puts these figures into perspective. It suggests that the general mobility potential in Vienna was even higher than that in the new member state regions in 2010.

This last finding is, however, due to a marked difference in commuting and migration plans as well as the countries to which commuting and migration plans are directed between the Austrian CENTROPE and the new member state parts of the region (Table 47 and Table 48).[36] In particular while the expected migration potential in Vienna was substantially (by 4.8 percentage points) higher than in the new member state parts of CENTROPE, the commuting potential in the Austrian CENTROPE is substantially lower. Also among the Austrian population a much larger share (49% as opposed to 21% in the new member state parts) of the potential migrants would prefer working in countries outside the EU, while among the few persons with commuting intentions a larger share (43% as opposed to 19% in the new member state parts) would prefer to commute to EU 27 countries outside CENTROPE. This thus suggests that – as also indicated by data on realised migration – commuting or migrating to the new member state regions of CENTROPE will remain a rather rare event among residents of the Austrian CENTROPE, at least in the medium term.

Table 47: Expected migration and commuting in CENTROPE

	Expected Migration Potential (%)			**Expected Commuting Potential (%)**		
	2004/05	2006/07	2010	2004/05	2006/07	2010
Czech CENTROPE	3.5	4.4	5.8	1.0	1.5	1.4
Hungarian CENTROPE	3.0	2.3	2.8	6.4	4.2	5.1

[36] Note that in table 12 as in all further tables below, we only focus on the expected migration potential. Findings are, however, similar for both the general and the real migration potential.

Austrian CENTROPE*	1.4	n.a.	8.3	0.2	n.a.	1.2
Slovak CENTROPE	8.4	4.8	1.3	4.5	0.3	0.3
Total NMS	5.4	4.0	3.5	4.3	1.9	2.4

Source: LAMO household survey 2004-2005, 2006-2007, 2010. WIFO-calculations Base: Expected Mobility potential *Wave 2010 – only Vienna.

However, also the migration intentions among residents of the new member state regions of CENTROPE are more strongly focused on countries outside CENTROPE, so that migration patterns are likely to continue to be more strongly focused on other parts of the world and inter-linkage within CENTROPE is likely to remain weak. When asking which countries potential migrants would preferably work in, only 19% of the interviewed belonging to the expected migration potential in all three waves of the interviews in the ages between 15 and 64 residing in the new member state CENTROPE regions stated that they would prefer to work in Austria, 59% would like to go to other EU 27 countries (with Germany and the UK being the main countries of preferred destination) and 21% would like to work in countries outside the EU. The only part of CENTROPE where a sizable part of the migration intentions are directed towards Austria is the Hungarian CENTROPE, where 40% of those in the expected migration potential would prefer working in Austria.

Table 48: Expected migration and commuting potentials by sending and preferred receiving region (%)

	Czech CENTROPE	Slovak CENTROPE	Hungarian CENTROPE	Austrian CENTROPE	NMS Total	Total
	Expected Migration potential					
Other EU 27	63	62	44	50	59	57
Other CENTROPE	0	3	0	1	1	1
Austria	12	16	40	0	19	14
Non EU 27	26	19	15	49	21	28
Total	100	100	100	100	100	100
	Expected Commuting Potential					
Other EU 27	33	21	14	43	19	21
Other CENTROPE	2	7	0	35	3	5
Austria	62	64	85	0	74	68
Non EU 27	2	9	1	22	4	6
Total	100	100	100	100	100	100
	Expected Mobility Potential					
Other EU 27	56	50	24	49	44	45
Other CENTROPE	1	4	0	5	2	3
Austria	23	30	70	0	39	32

Non EU 27	20	16	6	46	14	21
Total	100	100	100	100	100	100

Source: Base expected mobility potential, Lamo Household Surveys, average over 3 waves.

Austria, however, remains to be by far the most popular target country for persons with cross-border commuting intentions: About 68% of the expected commuting potential from the new member state parts of CENTROPE is directed to Austria, with the commuting preference for Austria (measured as a share of the expected mobility potential) being highest in the Hungarian CENTROPE and lowest in the Czech CENTROPE (where commuting to Germany seems to be a viable alternative for cross-border commuters): Around 85% of the expected commuting potential in the Hungarian CENTROPE is directed to Austria. This is substantially higher than in the Czech Republic (62%), where almost a third of the commuters would like to work in EU 27 countries other than CENTROPE countries. Finally, the share of those with commuting intentions that would like to work in another new member state country of CENTROPE also remains low and reaches a maximum of 7% in the Slovak CENTROPE.

These results thus do not suggest a major regime shift in terms of the main patterns of labour mobility in the CENTROPE region. As for realised migration and commuting data also data on intended migration and commuting implies that for Austrians the new member states are unattractive locations for working and that thus migration is likely to remain rather uni-directional in the region. Furthermore – also in accordance with data on realized labour mobility – most of the migration intentions are directed outside the CENTROPE region, so that the low interconnectivity of the region in terms of migration is likely to remain. The only area where a slight change of patterns could be expected is cross-border commuting. Here in the new member state parts of the CENTROPE region commuting potentials to other new member state regions seem to have already largely eroded, while there is still some potential in terms of commuting to the Austrian CENTROPE. Given the small share of those willing to commute the likely quantitative impact of this change is, however, likely to be small too.

5.4.2. Structure of the Migration and Commuting Potential in the CENTROPE region

Apart from providing information on the intensity of commuting and migration plans in the CENTROPE region, the LAMO data can also be used to analyse the structure of those

willing to migrate or commute across borders with respect to education, age, gender, family status and other factors relevant to the migration or commuting decision (such as the presence of friends or family abroad, language knowledge and previous migration experience). Looking at the data in this way (Table 49) suggests that irrespective of whether we look at the overall expected mobility potential or on those that intend to move within CENTROPE only, the share of persons willing to be mobile (belonging to the expected mobility potential) is highest for younger workers, with those willing to migrate being even younger than those willing to commute. Less than 10% of those belonging to the expected mobility potential (both the commuting and the migration potential) are over 55 years old, while the share of this age group among those without mobility intentions (referred to as stayers in Table 49) is 21.0%. By contrast, the percentage among persons up to an age of 25 years in the expected migration potential is 44.3% and amounts to 24.9% in the expected commuting potential, although only 14.5% of the stayers belong to this age group. The willingness to migrate or commute hence reduces with age but this reduction is larger for potential commuters than potential migrants.

Similarly those belonging to the mobility potential are mostly male, single and have no kids. Among those willing to migrate 55.4% are male and among those willing to commute this percentage (with 66.4%) is even higher although among stayers the share of males is only 48%. In addition 75.6% of those willing to migrate have no kids and 73.9% live in a single household. These percentages (with 55.9% and 54.0%) are, however, substantially lower for those willing to commute, and data suggest that the share among those willing to commute who have kids is actually higher than among stayers. This thus confirms the result often found in the literature (see for example *White,* 1986; *Eliason*, 2003, *Huber and Nowotny*, 2011) that commuting is a form of mobility which allows household members to become mobile without having to dissolve the current household. This makes commuting particularly attractive for (mostly male) persons that have a family or are married.

Also those willing to migrate and commute in their overwhelming part have at least some foreign language knowledge or friends or family abroad and also disproportionately often have experience with working abroad. The overwhelming part of those willing to migrate (87.3%) and the vast majority of those willing to commute (62.1% relative to 59.8% of those staying) know a foreign language and almost ¾ of those willing to migrate and commute (71.4% for migrants and 74.8% for commuters) have friends or family (i.e. networks) abroad. In addition 31.6% of those willing to migrate and 29.1% of those willing to

commute in the CENTROPE region (as opposed to 8.7% of the stayers) have experience with working abroad. Those willing to migrate and commute in CENTROPE are therefore also those that are likely to have relatively good chances of integrating into host economies, since a substantial literature (e.g. *Entorf and Minoiu*, 2005, *Chiswick and Miller*, 2007) finds that persons with foreign language knowledge, friends in the host economy and previous experience of mobility are also those most likely to be successful at integrating in their host economy.[37]

Table 49: Mobility potentials by demographic characteristics (%)

	Overall			Within CENTROPE		From NMS to Austria	
	Stayer	Migrant	Commuter	Migrant	Commuter	Migrant	Commuter
	Age						
15–24	14.5	44.3	24.9	43.2	19.4	44.8	19.9
25–34	21.1	27.9	25.9	27.4	26.4	26.4	27.0
35–44	21.5	12.6	25.2	11.6	27.3	11.5	27.5
45–54	22.0	7.8	15.5	8.4	17.6	6.9	17.5
55+	21.0	7.4	8.4	9.5	9.3	10.3	8.1
	Education						
Compulsory	15.3	16.0	12.6	16.8	10.6	18.4	11.4
Vocational	40.6	25.9	49.5	33.7	53.7	31.0	53.1
Secondary	30.8	37.2	29.4	36.8	29.5	36.8	29.9
Tertiary	13.3	20.9	8.4	12.6	6.2	13.8	5.7
	Gender						
Male	48.0	55.4	64.4	57.9	60.8	56.3	62.1
Female	52.0	44.6	35.6	42.1	39.2	43.7	37.9
	Foreign language knowledge						
No	40.2	12.7	37.9	20.0	42.7	21.8	45.0
Yes	59.8	87.3	62.1	80.0	57.3	78.2	55.0
	Networks						
No	62.5	28.6	25.2	22.1	24.7	24.1	23.2
Yes	37.5	71.4	74.8	77.9	75.3	75.9	76.8
	Previous Mobility						
No	91.3	68.4	70.9	76.8	71.8	78.2	72.0
Yes	8.7	31.6	29.1	23.2	28.2	21.8	28.0
	Kids						
No	62.2	75.6	55.9	73.6	55.9	74.7	53.8

[37] Here there are, however, some differences with respect to the preferred choice of receiving country. In particular those that would like to move to other countries of the CENTROPE or from the new member states of the CENTROPE to Austria have a significantly lower share of persons among them, who have foreign language knowledge and/or experience with working abroad. None the less even for these groups more than ¾ of those willing to migrate have some foreign language knowledge and more than 1/5 has experience with working abroad, so that this group too is selected (albeit less strongly than potential commuters and migrants to more distant locations).

Yes	37.8	24.4	44.1	26.4	44.1	25.3	46.2
	Marital Status						
Married	60.3	26.1	46.0	24.2	47.6	20.7	47.9
Single	39.7	73.9	54.0	75.8	52.4	79.3	52.1
				Absolute			
Observations	13,536	637	309	95	227	87	211

Source: Base expected mobility potential Lamo Household Surveys, average over 3 waves.

Furthermore, reflecting the overall education structure of the region, up to two thirds of the mobility potential consists of persons with medium (vocational and secondary) education. However, comparing the expected willingness to migrate and commute across the educational groups to that of stayers, reveals rather different selection mechanisms among potential commuters and migrants. For potential migrants on the one hand, the share of those that completed only elementary education (with 16%) is slightly higher than among stayers (15.3%), but on the other hand, also the share those with tertiary education (20.9%) is higher than among stayers (13.3%). For potential commuters, by contrast, the shares of all education groups except for those with vocational training are lower than among stayers. In consequence, the expected migration potential in CENTROPE shows signs of a bipolar selection at the two extremes of the educational spectrum, while commuters disproportionately often have a vocational education.[38]

Both the potential migrants and the commuters that would prefer to work in one of the CENTROPE countries are, however, less qualified than persons that would like to work in other countries. Among the potential migrants that intend to stay in the CENTROPE region the share of tertiary educated is only 12.6% and thus even lower than that of stayers and the share of less educated is 16.8%. Among commuters intending to work in the CENTROPE region the share of those with a vocational education is 53.7% while the share of tertiary educated is only 6.2%. Among the prospective migrants residing in the CENTROPE region the other CENTROPE countries also seem to be likely to get a negative selection on educational criteria. This reinforces our rather worrying results from data on the qualification structure of migrants derived in the last section.

[38] This is consistent with results on overall cross-border commuting flows in Europe, which are also selected from among those with a vocational training (*Huber,* 2011).

5.5. Motives, expectations and preferences of potential migrants and commuters in the CENTROPE region

As a further important asset the LAMO/FAMO dataset also offers insights into the motives, preferences and expectations of potential migrants and commuters. This is of interest because before enlargement it was often argued that it is not only economic motives which drive cross-border mobility but also non-economic motives such as opportunities for education or training or networks abroad. In this respect the literature on migration typically distinguishes between pull factors, i.e. features of the recipient country (such as high wages or better living conditions), and push factors, i.e. characteristics of the sending country (such as the political or economic situation), with the relative importance of these factors for migration being under dispute. Data such as those obtained by the LAMO/FAMO project enable identification of the relative importance of these factors and can also help to obtain valuable information on the impediments to regional labour mobility.

5.5.1. Mobility Motives

Looking at the motives given by those willing to migrate or commute across borders, as reasons for being willing to migrate an commute (Figure 18 a and b) economic pull factors such as better earnings, good employment prospects and a higher standard of living or better working conditions abroad rank highest. Of the classical push factors, only the lack of improvement of the economic situation in the home country and the bad economic situation at home can be found among the main reasons given by individuals considering migration and commuting. Generally thus, traditional economic pull factors provide the main motives for mobility in CENTROPE. This is further confirmed by the fact that some of the traditional push factors, such as job loss, discrimination or a bad political situation, a deteriorating environmental situation at home, rank at the lower end of the scale.

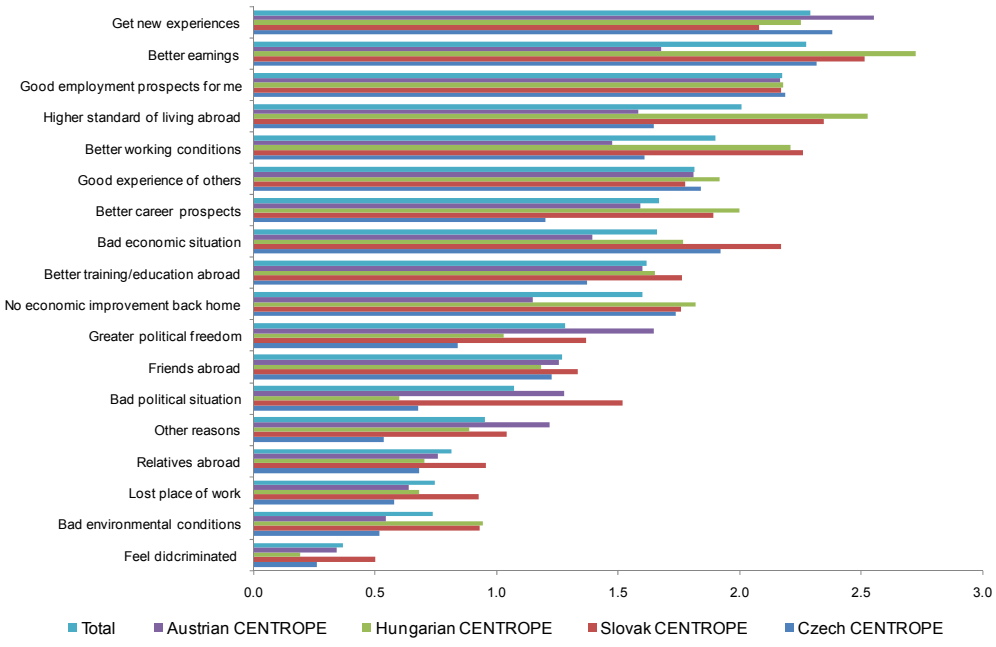
There is however, some interesting variation in the reasons given for mobility between those willing to migrate and those willing to commute. In particular among those willing to migrate the most important motive for moving abroad is to "seek new experiences abroad", followed by the traditional pull factors. This high rank is, however, solely due to the high priority given to this motive by the Austrian respondents to the questionnaire, while for migrants from the new member states (in particular from Hungary) economic pull factors such as better earnings and a higher living standard abroad are the most important moti-

vations, with "seeking new experiences abroad" only ranking fourth to fifth. By contrast the Austrian respondents give much less emphasis to such economic pull factors but in addition to the role given to seeking new experiences abroad also stress the importance of greater political freedom, the bad political situation at home and other reasons.

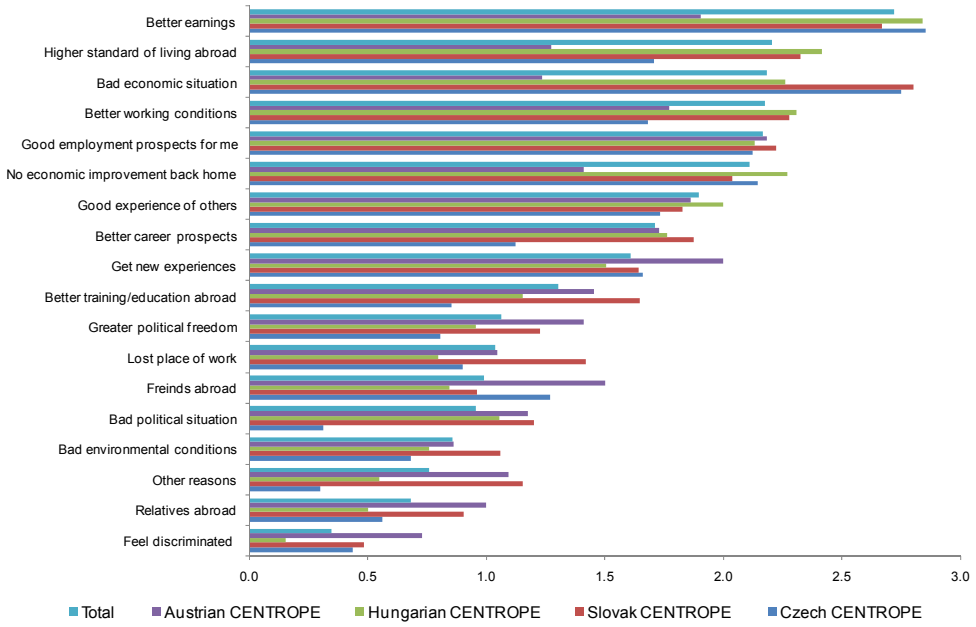
Similarly, among those willing to commute also respondents from the new member states of CENTROPE put more emphasis on economic push factors than respondents from Austria, while the Austrian respondents emphasize experiences abroad and political reasons. Relative to those willing to migrate, however, for those willing to commute also

Figure 18: Motives for moving abroad

a) Migrants



b) Commuters



Source: FAMO/LAMO, own caculations. Notes: Basis expected commuting and migration potentials, average of three waves, averages over those wiiling to migrate/commute 3=very important, 0 = unimportant.

some traditional economic push factors are more important in particular for respondents from the new member states. Here the bad economic environment back home is the third most important reason among the reasons to be willing to commute and the lack of economic development back home is the sixth most important reason.

In sum, therefore those willing to migrate in the CENTROPE regions of the new member states constitute a group that is strongly drawn by the better economic conditions in the recipient region, while getting new experience but also the political situation back home appear to exert a more important impact on the decision to be willing to migrate in particular for Austrian respondents. While these national differences in response patterns also apply to those willing to commute, for potential commuters also economic push factors such as the bad economic situation back home are of a larger importance than for those willing to migrate.

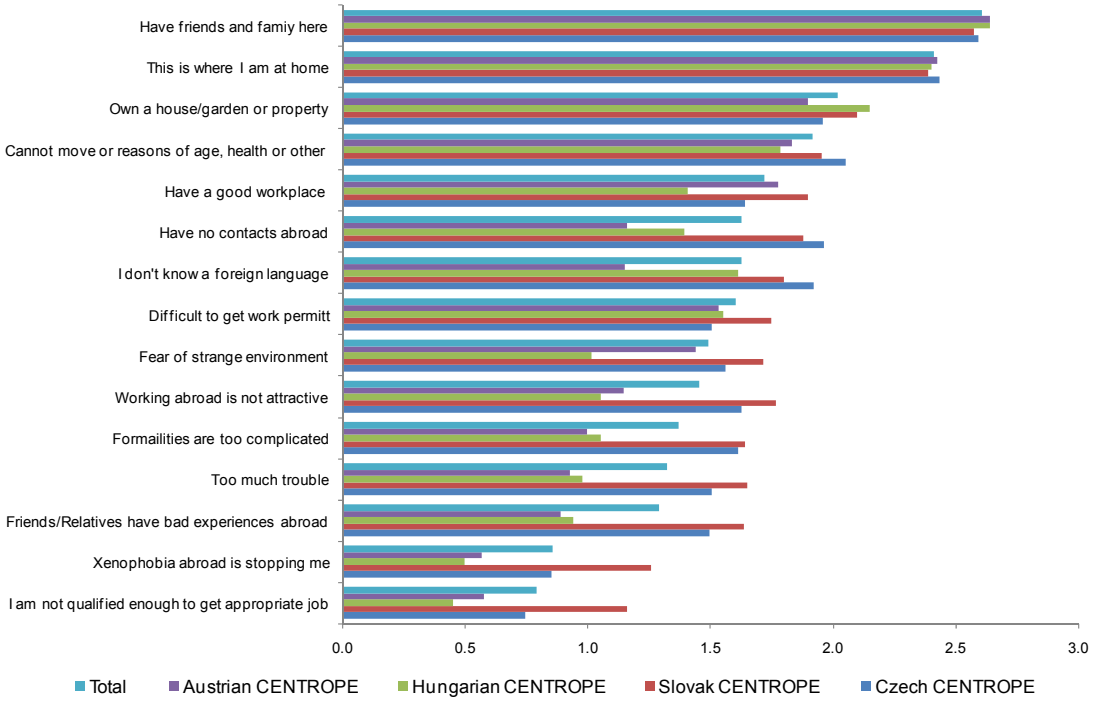
5.5.2. Immobility Motives

When considering those unwilling to move the motivational situation is entirely different. The key motives for non-mobility are personal factors and non-monetary costs of mobility,

such as the fear of losing family and personal networks, the feeling of affinity to one's home country and knowledge of relevant local factors. This highlights the importance of location-specific insider advantages as an explanation for non-mobility, as well as the relevance of uncertainty as a major barrier to mobility. Among the monetary factors identified were real estate assets (ownership of a house, home or garden. etc.) or the lack of investments in human capital, like foreign language skills. Personal factors are thus the greatest barrier to mobility in the CENTROPE regions.

In addition, this high importance of personal factors in preventing migration seems to apply irrespective of the country of residence of the respondents, so that differences in the importance of various factors affecting immobility are found only for reasons that are of a lesser importance in aggregate. Here in particular Czech and Slovak citizen seem to be more strongly deterred by the fear of a strange environment, the lacking attractiveness of working abroad, complicated formalities and bad experiences by friends and family. This suggests a somewhat more sceptical appraisal of the potential benefits of working abroad among the residents of the Czech and Slovak Republics relative to the others. For Hungarians by contrast, having a good workplace in the home country is of lesser importance in deterring from migration and Austrian’s less often report lacking foreign language skills and lacking contacts to foreigners to be a major deterrent to mobility.

Figure 19: Motives for staying in the home country



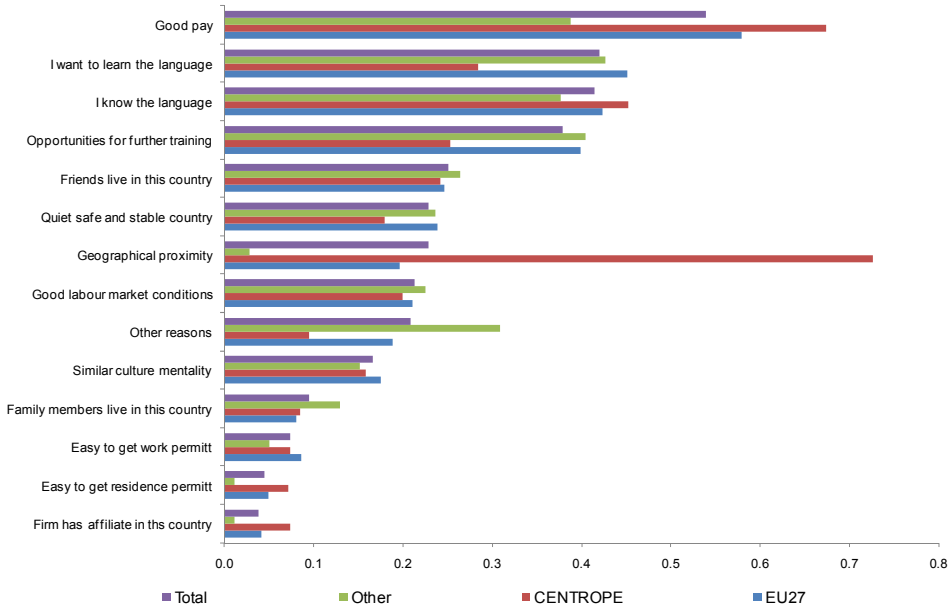
Source: FAMO/LAMO, own caculations. Notes: Basis expected commuting and migration potentials, average of three waves. averages over those unwiiling to migrate/commute 3=very important, 0 = unimportant.

5.5.3. Choice of country and region of work

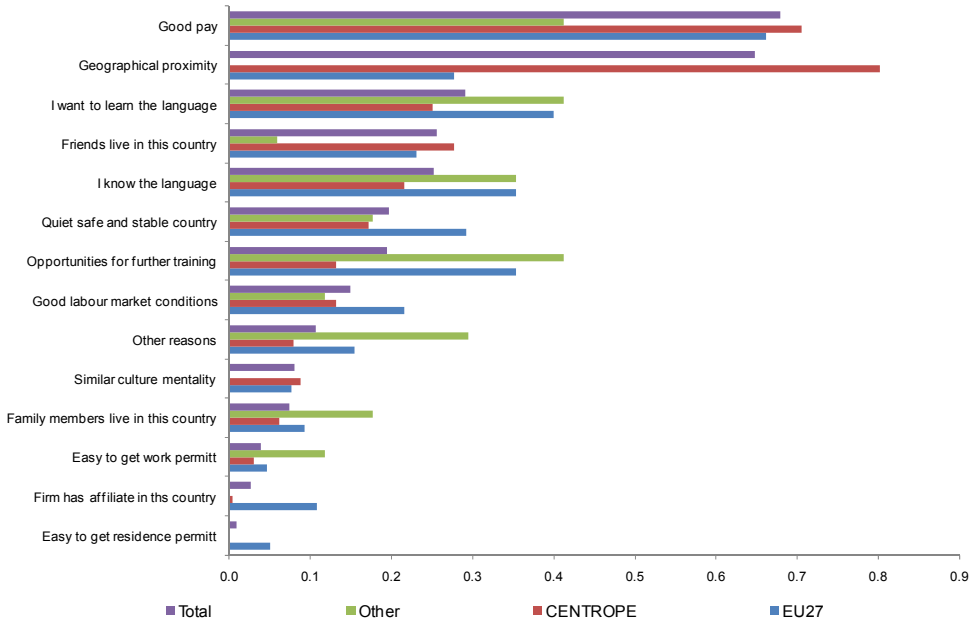
Finally, our data also provide information on the reasons for choosing a particular country for migration and mobility. Here there are large differences among both migrants and commuters depending on the choice of country given by respondents. Thus, a comparison of motives for choosing other CENTROPE countries and countries outside CENTROPE for those who are willing to migrate (see Figure 20). suggests that those who would prefer to move to other CENTROPE countries do so mainly because of its

Figure 20: Motives for choosing country of preference by recipient region

a) Migrants



b) Commuters



Source: FAMO/LAMO, own caculations. Notes: Basis expected commuting and migration potentials, average of three waves. Figure reports share of respondents naming the given reason as important in choosing a preferred county of residence, answers are not mutually exclusive.

geographical proximity and its high wage levels.[39] Many other important motives for choosing a particular country to migrate to, such as the language skills, resident family members and relatives or friends, however, are about of similar importance and all important motives that are associated with the acquisition of human capital such as the desire to learn the language and education or training opportunities speak for migrating to other countries. This thus once more suggests that for migrants that are primarily interested in acquiring human capital the CENTROPE countries are less attractive destinations than other EU 27 countries.

Similar observations apply to those who are willing to commute across borders. Here too the most important motives in aggregate (i.e. the vicinity to the country and the chances for receiving a good pay) clearly speak for choosing another CENTROPE country as a destination of commuting, while factors such as the desire to learn the language and the possibility to receive training are arguments in favour of commuting to other countries. Interestingly here, however, having friends and family in this country is a more important motive for choosing other CENTROPE countries, while knowledge of the foreign language speaks more strongly for choosing other countries.[40]

5.6. Conclusions

In sum the results collected in this chapter suggest that in terms of cross-border labour mobility the CENTROPE region although characterised by an average openness towards foreigners moving to the region, is also rather weakly internally linked in terms of labour migration. In 2007 according to the data available to us only around 1.2% of the population residing in one of the NUTS 2 regions of CENTROPE was born in another CENTROPE-country than they resided in and even in Vienna, which due to its size and wealth acts as the major basin of attraction for migrants in the region only 2.6% of the population was born in another CENTROPE country.

Although evidence of labour market integration is somewhat more pronounced in the field of commuting, here too the region is still far from deeply integrated. In total 1.8% of the

[39] Note that the vast majority of those willing to migrate to other CENTROPE countries want to move to Austria so that the importance of this motive for other CENTROPE regions essentially is an appraisal of the high pay in Austria.
[40] In interpreting these data it should, however, be noted that there are only very few persons who are willing to commute to countries outside the CENTROPE, so that here data suffers from rather low reliability.

employed in one of the NUTS 2 regions of CENTROPE commuted across borders in 2009. This is well above the average of 0.7% in the EU 27 and places some of the CENTROPE regions among the top 10 European NUTS 2 regions in terms of cross-border commuting. This share is, however, also well below the levels of commuting that could be expected from highly urbanised regions such as CENTROPE if they were located in the same country. Thus national borders still represent an important barrier to cross-border labour mobility in the CENTROPE region.

Furthermore cross-border commuting and migration in the region follow a rather hierarchical pattern. In particular with respect to cross-border migration the majority of moves in the past have been from the new member state regions to Austria, with only very little of the migration occurring between the new member state regions amongst each other and migration from Austria to the new member states being extremely low. Once more the situation is slightly different with respect to commuting. Here due to the historic linkages between some of the new member state regions cross-border commuting among the new member state regions of CENTROPE (in particular from Slovakia to the Czech Republic, but also to Hungary), were slightly more pronounced and Austria is less well integrated. Aside from commuting from the Hungarian CENTROPE to the Austrian parts, which was partially liberalised by special institutional arrangements, cross-border commuting to Austria is rather low and cross-border commuting from the Austrian CENTROPE to the new member state parts is almost unheard of.

These current patterns of labour mobility thus suggest that CENTROPE is still far away from the substantial bilateral commuting and migration flows based on models of circular and temporary labour mobility, that could be expected from deeply integrated poly-centric urban cross-border spaces such as CENTROPE and that have been found to be particularly conducive of regional development in many case studies (see *Saxenian*, 2006, *Florida*, 2002). Much rather, from the point of view of the region as a whole, emigration to other parts of Europe (as well as the rest of the world) seems to be quantitatively more important than internal migration and commuting. Around 10% of the persons born in one of the CENTROPE countries currently live in another EU 27 country.

While some of these results may have been expected given that until very recently there were still substantial institutional barriers to labour mobility in the region as well as wage differentials between the Austrian CENTROPE and its new member state parts (which makes mobility from the Austrian CENTROPE to the new member states rather unattrac-

tive from a financial point of view), one of the most worrying findings of this chapter is the high potential for brain drain in the region. Although the share of tertiary educated among the migrants to the CENTROPE region is higher than among natives, among all foreign, born residing in the EU 27, CENTROPE tends to get a below average share of tertiary educated. In addition also the share of highly educated among the emigrants from the CENTROPE countries is almost double as high as among immigrants. This thus suggests that in terms of the worldwide competition for talent the CENTROPE region is marked by low competitiveness only.

This fundamental fact is also unlikely to change on account of the institutional changes affecting cross-border labour mobility in the CENTROPE region on May 1st 2011. Evidence on the willingness to commute and migrate in the region suggests that migration potentials in the region are low, have reduced since 2004 and are often directed to countries outside CENTROPE. In particular in December 2010 wishes to become mobile across borders (which were held by 1.1% of the working age population) were already lower in the new member state parts of CENTROPE than in Vienna (where this wish was held by 3.1% of the population). Only about one third of those wishing to become mobile with some degree of concreteness want to move to Austria. The only area where some change to pre-existing patterns could be expected is that slightly more cross-border commuting to Austria may occur, so that also here the hierarchical structure of cross-border labour mobility found for migration could emerge.

What is, however, more important is that – as for actual migration – also those willing to migrate within CENTROPE represent a negative selection in terms of human capital relative to those wanting to migrate to other countries. Almost 21% of the potential migrants with somewhat concrete migration plans directed to countries outside CENTROPE have tertiary education; among those that want to migrate to other CENTROPE countries this share is only 13%.

In terms of labour mobility the CENTROPE region is thus faced with three closely related policy challenges: The first of these is to increase internal mobility. Aside from the institutional restrictions on cross-border labour mobility on the Austrian labour market (which has led cross-border commuting to Austria to be rather unimportant given the wage differences, but disappeared on 1st of May 2011), evidence suggests that cross-border worker mobility is also hampered by difficulties of mutual skill recognition (due to different educational systems), risks of over-qualified employment and difficulties in gaining information.

This suggests that as a first policy measure existing initiatives aimed at improving the comparability and cross-border transferability of qualifications, improving language training as well as providing information on labour market possibilities for workers should be strengthened, with the aim of making CENTROPE as a whole an integrated labour market.

One aspect in this endeavour is to strengthen the role and credibility of public employment services (PES) in cross-border labour market placements, since as shown by recent studies (e.g. *Nowotny et al.,* 2011) only a small number of persons wishing to look for work abroad consider using the services of the PES when searching for an employer across borders. Current systems of cross-border labour placement such as EURES are often criticised for being rather slow and excessively bureaucratic by those looking for work in other countries. This suggests that more flexible and less bureaucratic forms of cross-border placement through co-operation of regional public employment services should be considered.

In addition policy could also focus on establishing and strengthening existing channels for circular and temporary migration, with the aim of changing the current patterns of uni-directional labour mobility that often result in brain drain to patterns that resemble more bilateral relationships based on brain exchange since such migration processes are in general also perceived to be more conducive of mutual learning processes and regional development. In this respect, policy could attempt to address issues reported as impediments or motivations for mobility. The current study finds that aside from lacking language knowledge, which can be influenced by education policy, the most important impediments to migration are caused by non-pecuniary costs of emigration (such as the fear to lose contact to friends and family) or are often due to factors deeply rooted in the mentality and attitudes of people (such as the feeling of being at home at the current place of residence) and that the motives for migration (aside from pecuniary motives) are also strongly influenced by the desire to gain novel experiences. This suggests that the willingness to migrate or commute is difficult to influence in the short run by economic policy.

The study, however, also finds that those willing to move say that the advantage of mobility within CENTROPE is that it does not involve large distances (and thus reduces the risk of e.g. loosing friends and family), while the disadvantage is often seen in the few opportunities to learn in the region. One central instrument to achieve increased internal mobility could therefore be to focus strongly on increasing the human capital content of migration. In addition, since the majority of persons that are considering migration are rather young

focusing on different life-cycle phases of migration may be important. This suggests that programs focusing on increasing student exchange (at all levels of education starting from vocational to university education) and on early career mobility (of workers of all education groups) should receive a high priority in the attempt to increase cross-border mobility. In addition one could also think about activities to also increase temporary migration of persons on temporary leave or sabbaticals (as for instance in experts in residence programs).

The second policy challenge is to increase the competitiveness of CENTROPE in the worldwide competition for talent. In this respect a much larger spectrum of policy measures than just those in the hands of regional policy have to be addressed, to achieve fundamental improvements, since a substantial part of the migration decisions and choice of country of residence of highly skilled migrants is shaped by a number of rather heterogeneous factors that are mainly in the hands of national policy. For instance the mobility of students and academics is shaped by the performance of the university sector and the innovation system in a region, while that of engineers, industry researchers and managers is much more dependent on the performance of the business sector and entrepreneurs are often drawn to a country by financial facilities, bureaucratic efficiency as well as issues of tax policy (see *Mahroun*, 1999), all of which can at best be only partially influenced by regional policy.

Nonetheless, regional policy can contribute to increasing the attractiveness of a region for the highly skilled by a) improving the above conditions for high skilled mobility wherever possible and b) providing services that are geared towards the needs of migrants and reduce costs of integration (such as for instance wellcomming centres that provide help with bureaucratic procedures, finding schools for children, workplaces for spouses and other issues often relevant for the migration decision of highly skilled).

Furthermore, results from the migration literature (e.g. *Weizsäcker*, 2006) also suggest that small labour markets are less attractive for highly skilled migrants than large ones so that policy measures that aim at increasing cross-border labour mobility within CENTROPE (and thereby enlarge the current national labour markets) in particular when they are geared towards the needs of the highly skilled are complementary to the goal of increasing the attractiveness of the CENTROPE region as a place for immigration of highly skilled.

The third policy challenge finally is to avoid brain drain to other regions. This is obviously closely related to the aim of increasing competitiveness of CENTROPE in the worldwide

competition for talent, since any policy that increases the attractiveness of a region for highly skilled immigrants is also likely to reduce the incentives for highly skilled to emigrate. In addition, however, since as noted recently by *Gosh* (2005) the success of the return option for migrants depends on whether migrants have acquired skills abroad that are in demand and can be adopted back home, a number of further policy aspects could be considered here. In particular a number of regions and countries have recently organised special initiatives for high-skilled returnees which provide them with consultancy on job offers back home and (similar to welcome services) services to help with integrating family and children into the home economy.

In addition, given the substantial emigration of highly skilled, however, also the option of resourcing expatriates that are unwilling to return, by for instance using them as anchor persons for networks abroad (the so called Diaspora Option – see *Breinbauer*, 2007) could be a valuable complementary measure to foster regional development in the CENTROPE region. In this respect a number of recent policy initiatives (e.g. Austrian Scientists North America, Siss-List.com) have launched networks that aim at improving the links between and to researchers abroad and to intensify and maintain their connection to the sending country.

6. Summary and Conclusions

In sum while the scope of the topics covered in the study varies widely and results therefore show many facets and nuances for the individual flows (of goods, capital and labour) both within the region and also to other regions, a number of general results arise from this report. The first of these is that irrespective of the flow analysed the progress of CENTROPE as an aggregate in integrating into the world and EU economy in the last two decades has been rapid. Despite substantial variations among individual regions in terms of inward FDI, migration and also trade, CENTROPE as an aggregate has an intensity of integration above or at least similar to the EU average in terms of all cross-border flows analysed in this study, although large parts of the region in the new member states started integrating into the European economy only two decades ago.

The second result is that there are also immense differences within the region in the integration process followed, which reflect and sometimes even exceed the vast differences in income and economic conditions between regions. For instance the about average share of foreign born residing in CENTROPE in aggregate is solely due to the high share of foreign born residing in Austrian CENTROPE, while the high share of inward FDI's is mainly due to the substantial FDI's going to the new member state parts of CENTROPE and Vienna. Similarly, the high exposure to foreign trade arises from the export openness of the industrial regions in CENTROPE, while the same does not apply to more agricultural and service oriented regions.

The third result is that in many ways the linkages within CENTROPE follow a hierarchical pattern that is often found in centre-periphery relationships rather than the more equitable patterns that might be expected to be found in poly-centric spaces characterised by a multitude of urban agglomerations. This is best exemplified at the example of cross-border migration and investments flows within the region. Migration flows (when moving between CENTROPE regions) are strongly focused towards the Austrian parts of CENTROPE, while inward investment flows go from the Austrian CENTROPE towards the new member state parts but hardly in the opposite direction.

Finally, the fourth result is that while CENTROPE in aggregate is well integrated in the EU and also the world economy, its internal integration is much less strongly pronounced. This

applies to practically all flows except for trade (i.e. emigration, immigration, foreign direct investments).

These results could have been expected because until recently substantial institutional barriers to the freedom of movement of labour and services existed in CENTROPE. This hampered internal exchange, and because on the one hand CENTROPE is small relative to EU markets, which by necessity makes deep integration into the world economy more likely (and also more important) for the region than internal integration, while on the other hand the income differentials in the region also determine the structure of external relationships.

These results are, however, also a clear sign of the economic strength of the region since they provide evidence on the intact competitiveness of CENTROPE in the world economy, with individual regions clearly using their comparative advantages.

Yet, the low degree internal connectivity within CENTROPE raises issues as to whether policy should and could increase efforts to improve the internal integration of the region and (if this question can be answered affirmatively) in which areas such policy issues are most needed. Discussing this issue, requires a more detailed understanding of the different cross-border flows in CENTROPE, since, as already pointed out at the beginning, the structure of integration differs vastly according to the flow, sector and sub-region of the CENTROPE analysed.

6.1.1. Foreign direct investment – evidence from individual FDI projects

For instance comparing CENTROPE to other EU regions in terms of FDI inflows per million inhabitants shows that this region is one of the most attractive FDI destinations in the EU. This applies especially Bratislava region, Györ-Moson-Sopron and Vienna. In an EU-wide comparison of 261 NUTS 2 regions Bratislava region is the top location for FDI with 282.4 FDI projects per million inhabitants over the period from 2003 to early 2010 and Vienna is ranked 13th. Furthermore in a comparison of the 1303 EU NUTS 3 regions (Figure 1) 5 of the 16 CENTROPE NUTS 3 regions (Bratislava region, Györ-Moson-Sopron, Vienna, Vas and Trnava region) are ranked among the top 10% of the FDI receiving NUTS 3 regions in Europe, a further three (South Moravia, Vienna environs and St. Pölten) are ranked among the top 25% and only two (Waldviertel and Central Burgenland) rank below average.

This exceptional attractiveness of CENTROPE for FDI is, however, accompanied by rather different patterns of FDI across regions. This is a reflection of differences in functional specialisation. Dividing the FDI's in the region into five different sectors (i.e. construction and other services, headquarters and business services, retail trade and services and high and medium technology as well low technology intensive industries and electricity – Table 1), the largest number of projects was recorded in construction and other services (217 projects out of 793 in total from 2003 to early 2010). Slightly fewer projects (188) were established in retail trade and transport. Moreover in CENTROPE there were 178 investments made in the headquarters, business services and innovation sector, 144 projects in the high and medium high technology intensive industries and 76 in the low technology intensive manufacturing industry sector.

The distribution of these investments across CENTROPE regions was, however, far from uniform. The vast majority of service related FDI projects went into the two capital cities Bratislava and Vienna. This puts Vienna and Bratislava region – as the two capital cities in the region – among the top-ranked urban agglomerations in the various services sector FDI categories (Bratislava ranked 3rd, Vienna 13th in the construction and other services sector FDIs, Bratislava 7th and Vienna 8th in headquarter FDI, and Bratislava 1st and Vienna 12th in the retail and transport sector FDI). This thus underlines the strong service orientation and the important gateway function in terms of FDI of both capital cities.

By contrast manufacturing FDI projects, regardless of whether they refer to high or low technology intensive industries, went into the less urbanised but highly industrialised new member state regions of CENTROPE, (i.e. to Györ-Moson-Sopron, Vas, Trnava and South Moravia). Thus with respect to FDI in the manufacturing sectors, these regions are all ranked in the top 5% among 1303 NUTS 2 regions receiving FDI in the high technology intensive industries and among these regions only South Moravia does not belong to the top 5% among the low technology intensive FDI receiving regions.

Foreign direct investments are therefore an important source for economic development in CENTROPE. This is primarily due to a deep integration into the world economy: The main investing country in CENTROPE is Germany. In each of the CENTROPE regions Germany is either the most or second most important investing country, and overall almost one quarter of all FDI projects in CENTROPE has German origins. The second most important country in terms of individual FDI projects is the USA with 116 projects or 15% of

total FDI in CENTROPE. Moreover the USA is the most important investor in South Moravia.

Internal integration is, however, less pronounced and structurally quite hierarchical. Although Austria is the third most important investor in CENTROPE, FDI from the new member state CENTROPE countries to other CENTROPE regions is much rarer. The only significant investments undertaken are those by South Moravia.

6.1.2. Cross-border enterprise co-operation – evidence from interview data

These findings are also corroborated by a large scale enterprise survey on the co-operation activities in the CENTROPE-region. Also according to these data CENTROPE is a highly open region in terms of the export and international co-operation activities. Furthermore, also according to these data, deep integration into European and world markets is more important than co-operation within the CENTROPE for the majority of enterprises. These data, however, also augment previous findings by providing additional evidence on forms of co-operation other than foreign direct investments and on the motivations for investing and/or co-operating in the region.

We find that ownership relationships (either in the form of sole proprietorship or as a joint venture with other enterprises) are the most important form of co-operation in CENTROPE. 6.5% of the enterprises interviewed had at least one foreign affiliate or joint venture and in total 1,126 such relationships were reported. Subcontracting and franchising as well as other forms of co-operation, by contrast, are of a lesser importance. 3.9% of the enterprises had at least one franchising or subcontracting contract with a foreign partner and 2.4% had at least one other co-operation. The number of co-operations reported was 637 for franchising and 354 for other co-operations with international partners.

Also we find that in aggregate the two most important reasons for entering a co-operation (or investment) are associated with the aim of acquiring market access (closeness to customers and the market potential abroad), while the cost advantages of the region follow on the third place. Motives such as network advantages abroad, reactions to competitor's strategies and also overcoming market entry barriers by contrast follow at some distance. Technologically or human capital based motives for co-operations are found at the end of the list both for ownership as well as other co-operations. "Access to skilled labour" is the third least important motive and the R&D capacity abroad the lowest in both cases.

When considering the problems in co-operation only few enterprises seem to have problems. Even for the most important problems reported, which are exchange rate risks and differences in mentality, only around 8.0% of the enterprises with some form of co-operation report that they currently have problems with exchange rate risks and 7.4% currently have problems with cultural differences. Exchange rate risks, differences in mentality and language barriers thus belong to the three most important problems currently encountered by co-operating enterprises.

There is, however, also substantial heterogeneity between different types of enterprises in terms of the type of co-operations entered, their motivations for doing so and the problems encountered. In particular small and young firms are a somewhat special group when considering cross-border co-operation activities. Their co-operation activities are more often than in average focused on co-operation within CENTROPE and for them market access but also technological motives are more important in entering a co-operation than for other firms. They, however, also more often report to have problems with co-operation. In particular more than 12% of the currently co-operating small firms with less than 10 employees have problems with the legal framework conditions in the region, the quality of co-operation and cultural differences in general.

Large firms by contrast attach less importance to market access and a higher importance to costs as motives for co-operation. For them market potential abroad and closeness to customers ranks only behind the cost advantages among the motives for co-operation. They, however, also attach a larger weight to the access to skilled labour. In addition they in general report to have fewer problems with co-operation than small enterprises.

In addition there are also some important differences between sectors and ownership forms. Domestically owned enterprises, and headquarters of multi-plant enterprises disproportionately often co-operate in R&D co-operations and construction enterprises (whose market radius is more limited than that of manufacturing firms) but also partially and completely foreign owned firms more often tend to co-operate partners from another CENTROPE country than with a partner from third countries.

6.1.3. Regional foreign trade

Foreign trade is another important cornerstone for the economic development of a country or region as – following various economic theories – the expansion to foreign markets not only increases the demand for one region's good and services, thereby increasing income

and employment in this region, but also leads through learning effects to technological change and innovation, not only in the trading sectors but economy wide. At the same time theories tell us that regions or countries trade along their comparative advantages, which may come in different forms, like specific natural endowments, wage and production costs, skill endowment, geographic location etc. In this respect it is no surprise that the trading patterns and structures of the CENTROPE regions differ quite substantially.

Thus, CENTROPE consists on the one hand of regions that are highly export-oriented, (the Czech Southeast, West Transdanubia and Western Slovakia) and on the other hand of regions with less activity in foreign trade, either because they are more services oriented regions like Bratislava or Vienna or less industrialised and slightly more agricultural like Burgenland. In total, the trading patterns and the extent of foreign trade has a direct relation to the amount and type of FDI flows the CENTROPE regions received. All three export-oriented regions received predominantly FDI in the manufacturing industry sector. The engagement of multinationals in those regions was clearly influenced by the favourable production conditions in the three regions, given their proximity to Western markets and relatively low wage and production costs amongst other factors. Hence most of the goods produced in the FDI firms are in fact exported Europe wide or even globally and this finds its reflection in the trade statistics of the Czech Southeast region, West Transdanubia and Western Slovakia. To a minor extent this also holds for Bratislava, though being a capital city region, it nevertheless received a comparatively high amount of manufacturing FDI.

Overall foreign trade of the CENTROPE regions is mainly with medium high and medium low skilled manufactured goods, again corresponding to FDI flows; West Transdanubia also exports a considerable amount of high technology intensive goods.

As far as trade integration of CENTROPE is concerned it can be considered to be relatively high, as trade flows between the CENTROPE countries and regions are overproportionally high. That is from a market size point of view each CENTROPE country is, if compared to the EU 27 as a whole, very small. In terms of GDP the CENTROPE countries account for 0.4 to around 2.2 percent of the EU 27 GDP. Yet in terms of foreign trade the CENTROPE countries are much more important for each other than GDP numbers suggest, as the CENTROPE regions export around 12% to over 40% of their EU 27 exports to other CENTROPE regions. Certainly geographic proximity plays an important role here, just as historic ties do or an almost common language like in the case of Slovakia and the

Czech Republic where trade integration seems to be stronger than elsewhere in the CENTROPE.

In addition trade patterns are characterised a number of peculiarities in CENTROPE. Looking only at market potential one could assume that Vienna and Lower Austria are the main export markets for the other CENTROPE regions. However they are not. They are of course important in terms of absolute trade flows, because both regions are high income regions with a corresponding import demand. Yet exports from the CEE CENTROPE only flow under-proportionally to both regions, while trade amongst the CEE CENTROPE regions is higher than expected if their market potential is considered. One reason for this is that a lot of this trade between the CEE CENTROPE regions is inter-industry trade. This indicates that these regions are closely linked in production chains, whereby the goods produced in on CEE CENTROPE are inputs for the production in others.

6.1.4. Labour Mobility in the CENTROPE

Current migration and commuting patterns in CENTROPE

While barriers to FDI and trade in CENTROPE were removed already before accession to the EU, the institutional restrictions on the cross-border mobility still limited labour movements in the region until very recently. None the less the results collected in this study suggest that in terms of cross-border labour mobility the CENTROPE-region is characterised by an average openness towards foreigners moving to the region, since due to the high share of foreign born residing in the Austrian part, in total 8.1% of the total working age population residing in CENTROPE was born abroad which is only slightly lower than the 8.6% average of the EU countries, and is slightly lower than the share of foreign born in Denmark, which ranks on the 11th place in terms of the share of the foreign born among the EU countries.

CENTROPE is, however, also rather weakly internally linked in terms of labour migration. In 2007 only around 1.2% of the population residing in one of the NUTS 2 regions of CENTROPE was born in a different CENTROPE-country than they resided. Even in Vienna, which due to its size and wealth acts as the major basin of attraction for migrants in the region only 2.6% of the population was born in another CENTROPE country.

Although evidence of labour market integration is somewhat more pronounced in the field of commuting, here too, the region is still far from deeply integrated. In total 1.8% of the

employed in one of the NUTS 2 regions of CENTROPE commuted across borders in 2009. This is well above the average of 0.7% in the EU 27 and places some of the CENTROPE regions among the top 10 European NUTS 2 regions in terms of cross-border commuting. This share is, however, also well below the levels of commuting that could be expected from highly urbanised regions such as CENTROPE if they were located in the same country. Thus national borders still represent an important barrier to cross-border labour mobility in the CENTROPE-region.

Furthermore cross-border commuting and migration in the region follow a rather hierarchical pattern. In particular with respect to cross-border migration the majority of moves in the past have been from the new member state regions to Austria, with only very little of the migration occurring between the new member state regions amongst each other and migration from Austria to the new member states being extremely low. Once more the situation is slightly different with respect to commuting. Here due to the historic linkages between some of the new member state regions cross-border commuting among the new member state regions of CENTROPE (in particular from Slovakia to the Czech Republic, but also to Hungary), were slightly more pronounced and Austria is less well integrated in terms of commuting. Aside from commuting from the Hungarian CENTROPE to the Austrian parts, which was partially liberalised by special institutional arrangements, cross-border commuting to Austria is rather low and cross-border commuting from the Austrian CENTROPE to the new member state parts is almost unheard of.

These current patterns of labour mobility thus suggest that CENTROPE is still far away from the substantial bilateral commuting and migration flows based on models of circular and temporary labour mobility, that could be expected from deeply integrated poly-centric urban cross-border spaces such as CENTROPE and that have been found to be particularly conducive of regional development in many case studies. Much rather, from the point of view of the region as a whole, emigration to other parts of Europe (as well as the rest of the world) seems to be quantitatively more important than internal migration and commuting. Around 10% of the persons born in one of the CENTROPE countries currently live in another EU 27 country.

While some of these results may have been expected given that there are still substantial institutional barriers to labour mobility in the region as well as wage differentials between the Austrian CENTROPE and its new member state parts (which makes mobility from the Austrian CENTROPE to the new member states rather unattractive from a financial point

of view), one of the most worrying findings of this study is the high potential for brain drain in the region. Although the share of tertiary educated among the migrants to the CENTROPE-region is higher than among natives, among all foreign born residing in the EU 27 CENTROPE tends to get a below average share of tertiary educated. In addition also the share of highly educated among the emigrants from the CENTROPE countries is almost twice as high as among immigrants in all parts of CENTROPE but the Slovak part. This thus suggests that in terms of the worldwide competition for talent CENTROPE is marked by low competitiveness only.

Migration and Commuting Intentions

These fundamental facts are also unlikely to change on account of the institutional changes affecting cross-border labour mobility in the CENTROPE region on May 1st 2011. Evidence on the willingness to commute and migrate in the region suggests that migration potentials in the region are low, have reduced since 2004 and are often directed to countries outside CENTROPE. In particular in December 2010 wishes to become mobile across borders (which were held by 1.1% of the working age population) were already lower in the new member state parts of CENTROPE than in Vienna (where this wish was held by 3.1% of the population). Only about one third of those wishing to become mobile with some degree of concreteness want to move to Austria. The only area where some change to pre-existing patterns could be expected is that slightly more cross-border commuting to Austria may occur, so that also here the hierarchical structure of cross-border labour mobility found for migration could emerge.

In addition, those willing to migrate in the CENTROPE-regions of the new member states constitute a group that is strongly drawn by the better economic conditions in the recipient region, while getting new experience but also the political situation back home appear to exert a more important impact on the decision to be willing to migrate in particular for Austrian respondents. While these national differences in response patterns also apply to those willing to commute, for potential commuters also economic push factors such as the bad economic situation back home are of a larger importance than for those willing to migrate.

By contrast, when considering those unwilling to move, the motivational situation is entirely different. The key motives for non-mobility are personal factors and non-monetary costs of mobility, such as the fear of losing family and personal networks, the feeling of affinity to one's home country and knowledge of relevant local factors. This highlights the importance

of location-specific insider advantages as an explanation for non-mobility, as well as the relevance of uncertainty as a major barrier to mobility. Among the monetary factors identified were real estate assets (ownership of a house, home or garden. etc.) or the lack of investments in human capital, like foreign language skills. Personal factors are thus the greatest barrier to mobility in the CENTROPE regions.

Finally, looking at the reasons for choosing a particular country for migration and mobility there are large differences among both migrants and commuters with respect to the choice of country. Thus, a comparison of motives for choosing other CENTROPE countries and countries outside the CENTROPE for those who are willing to migrate and commute suggests that those who would prefer to move to other CENTROPE countries, do so mainly because of its geographical proximity and its high wage levels. Many other important motives for choosing a particular country to migrate to, such as the language skills, resident family members and relatives or friends, however, are about of similar importance and all important motives that are associated with the acquisition of human capital such as the desire to learn the language and education or training opportunities speak for migrating to other countries than the CENTROPE countries. This thus once more suggests that for migrants that are primarily interested in acquiring human capital the CENTROPE countries are less attractive destinations than other EU 27 countries.

6.2. Policy conclusions

In sum our results suggest that while the CENTROPE region is a highly open region, for the majority of its enterprises and residents a deep integration into European and world markets is more important than integration within CENTROPE. Thus one has to conclude that internal integration in CENTROPE is still far away from the closely knit, unhierarchical intra-regional networks focused on technology and knowledge exchange, that have often been seen as the determinants of regional success in the case study literature on regions such as e.g. Silicon Valley or Little Italy. This may, however, also not be a severe problem given that CENTROPE is a small region for which integration in the world economy is of a much larger importance than internal integration

At the same time following a strategy which attempts to uncritically imitate these spectacular cases where internal integration has contributed to growth and development is also likely to face rather low chances of success. A by now quite substantial body of research shows that these spectacular cases are exceptional and difficult to imitate by regional pol-

icy makers. The reason for this is that problems with critical masses in the region, issues of diseconomies of time compression (i.e. the necessity to take a long-term perspective on developing regional networks) and the inter-connectedness of various policy fields often present unsolvable problems to imitation, with attempts of imitation often leading to situations where policy makers attempt to achieve too much in too short a time with inadequate resources.

A more pragmatic approach to deepening internal integration in CENTROPE should thus focus on a limited number of individual policy initiatives that address issues of particular importance for the region. In this respect the results collected in this study provide some indication on some such potential initiatives in particular in the fields of FDI and labour mobility.

6.2.1. FDI

Marketing CENTROPE as a location for FDI

For instance our results indicate that overall, independent of the type of FDI, the attraction of foreign investments is a sound strategy for the CENTROPE regions in terms of economic growth and development. This is also confirmed by a recent study by the EU Commission, which shows that the presence of multi-national enterprises in a region has positive spillovers on local firms, which through learning effects, taking over of new practices, co-operation with MNEs etc. increase their productivity and competitiveness. Furthermore FDI has also positive effects on the regions' labour markets, firstly through direct effects, but importantly also through indirect effects, as the jobs created in FDI firms generate income that supports more local activities. Moreover FDI spillovers to local firms add to employment generating effects, which in total outweigh the negative FDI effects from takeover restructuring and loss of market shares for competitors. Given this, attracting FDI is an economically important goal for the CENTROPE regions, and there is some potential for joint initiatives that aim to market CENTROPE as a location for FDI's.

Realistically such an initiative will, however, also have to take into account the potential competition for FDI among individual CENTROPE regions. As illustrated by the above analysis, FDI in the CENTROPE is not mutual, where the CENTROPE regions or countries invest in the other CENTROPE regions. Rather the CENTROPE regions are in competition with each other for FDI coming from outside the CENTROPE area. Yet not all CENTROPE regions compete for the same type of FDI. Rather it seems that Vienna and Bratislava, due

to a different functional specialisation, have relatively similar structures of FDI, which focus strongly on the fields of headquarter, business and innovation services, while West-transdanubia, Western Slovakia, the Czech Southeast region and potentially also Lower Austria and Burgenland compete mainly for manufacturing multinational enterprises. Thus these differences in functional specialisation reduce competition among regions to some degree.

In addition in designing such a strategy it will have to be realised that competition for FDI is not confined to the CENTROPE area, rather just as the CENTROPE regions might compete amongst each other for FDI they also compete with regions outside the CENTROPE. Thus such an initiative is most likely to yield high returns, when it focuses on the early stages of an FDI decision, where companies choose a larger region within which to invest and/or when it focuses on parts of the FDI market (i.e. countries or sectors) where so far only few FDI have come from so far.

Increasing the attractiveness of CENTROPE as a location for FDI

In addition to increasing FDI activities in the region also the attractiveness of the region for FDI has to be maintained. In this respect a recent studies on FDI identify several determinants for FDI. The first set of such determinants is derived from statistical analysis and lists the following characteristics. Border regions and regions with a good transport infrastructure attract more FDI than others. Likewise industry clustering and/or existing clusters of foreign firms are conducive to FDI, just as the educational level of the population, while surprisingly information and communication technology is of less importance. Furthermore the size of the domestic market (either regional or countrywise), language skills of the population as well as the tax rates are important determinants.

Apart from the results of statistical analysis, which always suffer from data availability and quality limitations, the Commission study also presents the main location determinants from the point of view of a company's CEO. Here – as also found in our study - the most important determinant (for FDI in the NMS) is the market size or the growth potential of the market, followed by the costs of production, the presence of suppliers, universities and research and education of the population. Clearly many of these determinants are not policy relevant or outside the CENTROPE regions' control, such as whether a region is a border region, tax policy, labour or production costs and market size. Other determinants such as infrastructure, education, language skills, by contrast, can be influenced by policy but are hard to address by cross-border regional policies. However there are also factors,

where something might be gained from cross-border co-operation among CENTROPE regions. These are industry clustering, the presence of other multinationals and the presence of suppliers.

Embedding existing FDI's in the region

These factors highlight the fact, that the multinational enterprises that invest in one region are not independent, autarkic entities but rather for their own production depend on a network of local or nearby suppliers of intermediate inputs in the form of goods and services. Given the complexity of production or value chains of multinationals it is more than unlikely that one region alone can provide all the necessary inputs for - at least medium to large scale – multinationals. This fact can thus be exploited by policies aiming both at attracting FDI as well as by policies aiming at a deeper integration of the existing FDI's in the region into the regional economy for benefit of the whole CENTROPE area.

Indeed, given the already high importance of FDI, this later objective (i.e. embedding existing FDIs in regional supply and delivery networks) is of an even higher importance than attracting new FDI.

Such a deeper integration of the CENTROPE in the form of establishing cross-border industry or firm networks, fostering the co-operation between enterprises (multinational and locals) may have a number of positive effects. Multinationals might find it easier to find suppliers in close range to their production site, reduce search costs and thus make the CENTROPE regions even more attractive for FDI. The establishment of a cross-border firm network reduces some weaknesses of individual CENTROPE regions, which may arise because of their specialisation in certain economic activities, the lack of availability of specific inputs etc. Moreover embedding the multinationals into a geographically close and dense network of suppliers not only ties FDI stronger to the region but also generates more spillovers to a larger number of local firms, which, in turn, increases the competitiveness of these firms. Last but not least, through a cross border firm network the direct gains of one region because of FDI are more easily spread across the wider CENTROPE area.

In addition such strengthening of cross-border ties of firms depends – inter alia – on a number of prerequisites that facilitate co-operation. Amongst these are education, communication infrastructure and importantly foreign language skills and transport infrastructure. Certainly, these factors are important for integration independently of foreign direct investment, but taking FDI into account it makes even more sense to put more emphasis

on these factors, as they do not only serve integration but also the competitiveness and attractiveness for FDI of the whole CENTROPE area.

Generating deeper integration of existing and new SME and R&D networks

In addition our results also suggest that in CENTROPE there is, also still some room with respect to developing more locally based more vertically integrated enterprise networks, as well as integrating into international enterprise level R&D networks. While this is not very surprising since it reflects the results of much of the literature our results also indicate that any policy that aims at increasing internal co-operation within the CENTROPE-region and/or improving the integration into corporate R&D networks in the region would have to take the substantial heterogeneity of the enterprises in the region into account.

For instance our results suggest that for policies that aim at a deeper integration within the CENTROPE in terms of cross-border enterprise co-operation – aside from foreign owned enterprises - the primary target groups would be young and small enterprises, since they have a high chance of co-operating in the region. Policies targeted at these enterprises would, however, have to follow quite different strategies. When targeting young and small enterprises one could expect that they need substantial support both in the form of consulting services as well as with financing, since they face larger problems in cross-border co-operation than any of the other enterprise groups considered in this chapter. For fully foreign owned enterprises, by contrast, a much narrower spectrum of measures focused on helping with finding potential partners may suffice, since they in general report only few problems when actually co-operating.

Similarly, if the objective is to increase integration into international R&D co-operations the central target groups would be natively owned headquarters of multi-establishment enterprises and potentially also newly founded enterprises, with again the young enterprises needing substantial support while natively owned enterprises would probably most require consultancy services on the legal and framework conditions of such co-operations.

6.2.2. Labour Mobility

Strengthen existing initiatives to ease cross-border labour mobility and improve cross-border placement activities

In terms of labour mobility, by contrast, CENTROPE is faced with three closely related policy challenges: The first is to increase internal mobility. Aside from the still existing insti-

tutional restrictions on cross-border labour mobility on the Austrian labour market (which has led cross-border commuting to Austria to be rather unimportant given the wage differences, but will disappear on 1st of May 2011), evidence suggests that cross-border worker mobility is also hampered by difficulties of mutual skill recognition (due to different educational systems), risks of over-qualified employment and difficulties in gaining information. This suggests that as a first policy measure existing initiatives aimed at improving the comparability and cross-border transferability of qualifications, improving language training as well as providing information on labour market possibilities for workers should be strengthened, with the aim of making the CENTROPE as a whole an integrated labour market.

One aspect in this endeavour is to strengthen the role and credibility of public employment services (PES) in cross-border labour market placements, since only a small number of persons wishing to look for work abroad consider using the services of the PES when searching for an employer across borders. Current systems of cross-border labour placement such as EURES are often criticised for being rather slow and excessively bureaucratic by those looking for work in other countries. This suggests that more flexible and less bureaucratic forms of cross-border placement through co-operation of regional public employment services in should be considered.

Encourage and establish systems of temporary and circular migration

In addition policy could also focus on establishing and strengthening existing channels for circular and temporary migration, with the aim of changing the current patterns of unidirectional labour mobility that often result in brain drain to patterns that resemble more bilateral relationships based on brain exchange since such migration processes are in general also perceived to be more conducive of mutual learning and regional development. In this respect, policy could attempt to address issues reported as impediments or motivations for mobility. The current study finds that aside from lacking language knowledge, which can be influenced by education policy, the most important impediments to migration are caused by non-pecuniary costs of emigration (such as the fear to lose contact to friends and family) or are often due to factors deeply rooted in the mentality and attitudes of people (such as the feeling of being at home at the current place of residence) and that the motives for migration (aside from pecuniary motives) are also strongly influenced by the desire to gain novel experiences. This suggests that the willingness to migrate or commute is difficult to influence in the short run by economic policy.

The study, however, also finds that those willing to move say that the advantage of mobility within the CENTROPE is that it does not involve large distances (and thus reduces the risk of e.g. loosing friends and family), while the disadvantage is often seen in the few opportunities to learn in the region. One central instrument to achieve increased internal mobility could therefore be to focus strongly on increasing the human capital content of migration. In addition, since the majority of persons that are considering migration are rather young focusing on different life-cycle phases of migration may be important. This suggests that programs focusing on increasing student exchange (at all levels of education starting from vocational to university education) and on early career mobility (of workers of all education groups) should receive a high priority in the attempt to increase cross-border mobility. In addition one could also think about activities to also increase temporary migration of persons on temporary leave or sabbaticals (as for instance in experts in residence programs).

Improve competitiveness of CENTROPE in the international competition for talent

The second policy challenge is to increase the competitiveness of CENTROPE in the worldwide competition for talent. In this respect a much larger spectrum of policy measures than just those in the hands of regional policy have to be addressed, to achieve fundamental improvements, since a substantial part of the migration decisions and choice of country of residence of highly skilled migrants is shaped by a number of rather heterogeneous factors that are mainly in the hands of national policy. For instance the mobility of students and academics is shaped by the performance of the university sector and the innovation system in a region, while that of engineers, industry researchers and managers is much more dependent on the performance of the business sector and entrepreneurs are often drawn to a country by financial facilities, bureaucratic efficiency as well as issues of tax policy, all of which can at best be only partially influenced by regional policy.

Nonetheless, regional policy can contribute to increasing the attractiveness of a region for the highly skilled by a) improving the above conditions for high skilled mobility wherever possible and b) providing services that are geared towards the needs of migrants and reduce costs of integration (such as for instance wellcomming centres that provide help with bureaucratic procedures, finding schools for children, workplaces for spouses and other issues often relevant for the migration decision of highly skilled).

Furthermore, results from the migration literature also suggest that small labour markets are less attractive for highly skilled migrants than large ones, so that policy measures that aim at increasing cross-border labour mobility within CENTROPE (and thereby enlarge the current national labour markets) in particular when they are geared towards the needs of the highly skilled (such as improving the mutual recognition of skills) are complementary to the goal of increasing the attractiveness of the CENTROPE region as a place for immigration of highly skilled.

Increase effort to avoid brain drain from the region and resource expatriates

The third policy challenge, finally, is to avoid brain drain to other regions. This is obviously closely related to the aim of increasing competitiveness of CENTROPE in the worldwide competition for talent, since any policy that increases the attractiveness of a region for highly skilled immigrants is also likely to reduce the incentives for highly skilled to emigrate. In addition, however, since the success of the return option for migrants depends on whether migrants have acquired skills abroad that are in demand and can be adopted back home, a number of further policy aspects could be considered here. In particular a number of regions and countries have recently organised special initiatives for high-skilled returnees which provide them with consultancy on job offers back home and (similar to welcome services) services to help with integrating family and children into the home economy.

In addition, given the substantial emigration of highly skilled also the option of resourcing expatriates that are unwilling to return, by for instance using them as anchor persons for networks abroad (the so called Diaspora Option) could be a valuable complementary measure to foster regional development in the CENTROPE region. In this respect a number of recent policy initiatives (e.g. Austrian Scientists North America, Siss-List.com) have launched networks that aim at improving the links between and to researchers abroad and to intensify and maintain their connection to the sending country.

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7.1. Annex: Additional data on FDI

Table 50: Ranking of source countries by number of FDI projects, 2003–2010

	Austria		Czech Republic		Hungary		Slovakia	
1	Germany	232	Germany	217	Germany	301	Germany	120
2	USA	76	USA	166	Austria	200	Austria	94
3	Italy	62	Japan	94	USA	187	USA	79
4	Switzerland	41	UK	87	UK	101	UK	39
5	France	28	Austria	82	France	80	France	38
6	Netherlands	27	France	48	Netherlands	53	South Korea	31
7	UK	27	Sweden	38	Japan	50	Netherlands	30
8	Canada	23	Netherlands	32	Switzerland	45	Italy	27
9	Japan	21	Spain	25	Italy	44	Czech Republic	25
10	Belgium	20	Taiwan	24	Spain	41	Japan	24
11	Sweden	14	Ireland	22	Sweden	38	Denmark	15
12	Spain	12	Italy	22	Finland	32	Sweden	15
13	Denmark	11	Switzerland	22	Belgium	28	Spain	14
14	Finland	10	Poland	18	Denmark	24	Hungary	13
15	UAE	10	Denmark	17	South Korea	20	Switzerland	11
16	Hong Kong	5	Belgium	16	Israel	19	Ireland	9
17	Hungary	5	Russia	13	China	14	Luxembourg	9
18	Norway	5	South Korea	12	Canada	12	Finland	8
19	Russia	5	Finland	10	Czech Republic	10	Belgium	7
20	Slovenia	5	Israel	10	Greece	10	Taiwan	7

Source: fdimarkets.com, own calculations

Table 51: Ranking of source countries by number of FDI projects per head of population, 2003–2010

	Austria		Czech Republic		Hungary		Slovakia	
1	Slovenia	12.0	Austria	24.2	Austria	59.1	Austria	27.8
2	Switzerland	9.6	Ireland	10.2	Finland	14.7	Luxembourg	20.1
3	Germany	7.6	Sweden	9.4	Israel	11.8	Czech Republic	16.1
4	UAE	5.6	Germany	7.1	Switzerland	10.6	Hungary	10.8
5	Belgium	4.8	Taiwan	6.4	Germany	9.8	Denmark	5.3
6	Finland	4.6	Israel	6.2	Sweden	9.4	Netherlands	4.2
7	Hungary	4.1	Denmark	6.0	Denmark	8.5	Ireland	4.2
8	Denmark	3.9	Switzerland	5.2	Netherlands	7.4	Germany	3.9
9	Netherlands	3.8	Poland	4.9	Belgium	6.7	Sweden	3.7
10	Sweden	3.4	Finland	4.6	Czech Republic	6.4	Finland	3.7
11	Italy	3.2	Netherlands	4.5	UK	4.3	South Korea	3.6
12	Hong Kong	2.6	Belgium	3.8	Greece	3.6	Switzerland	2.6
13	Canada	1.8	UK	3.7	France	3.4	Taiwan	1.9
14	Norway	1.5	France	2.0	Spain	3.2	Belgium	1.7
15	France	1.2	Japan	2.0	South Korea	2.3	UK	1.7
16	UK	1.2	Spain	2.0	Italy	2.3	France	1.6
17	Spain	0.9	South Korea	1.4	USA	1.4	Italy	1.4
18	USA	0.6	USA	1.3	Japan	1.1	Spain	1.1
19	Russia	0.5	Russia	1.2	Canada	1.0	USA	0.6
20	Japan	0.4	Italy	1.1	China	0.4	Japan	0.5

Source: fdimarkets.com, own calculations

Table 52: Ranking of source countries by number of construction and services FDI projects, 2003–2010

	Construction & Services							
	Austria		**Czech Republic**		**Hungary**		**Slovakia**	
1	Germany	45	USA	58	USA	58	Austria	24
2	USA	27	Germany	42	Austria	40	USA	20
3	Italy	13	Austria	21	Germany	34	Germany	19
4	Switzerland	12	UK	16	UK	29	Netherlands	9
5	Netherlands	10	France	14	France	23	France	8
6	UK	9	Netherlands	14	Netherlands	15	Czech Republic	7
7	France	7	Japan	12	Spain	14	Japan	6
8	Japan	7	Spain	9	Israel	10	UK	5
9	Spain	7	Sweden	9	Japan	9	Hungary	4
10	Sweden	5	Russia	8	Switzerland	8	Ireland	4

Source: fdimarkets.com, own calculations

Table 53: Ranking of source countries by number of headquarter, business services and innovation related FDI projects, 2003–2010

	HQ, business services, innovation							
	Austria		**Czech Republic**		**Hungary**		**Slovakia**	
1	Germany	59	USA	41	Austria	48	USA	14
2	USA	25	Germany	19	USA	34	Austria	12
3	UK	10	Austria	14	Germany	29	Germany	9
4	Switzerland	9	UK	14	UK	10	Czech Republic	7
5	Canada	8	Ireland	11	Sweden	6	Ireland	4
6	France	8	France	8	France	5	France	3
7	Italy	8	Sweden	6	Ireland	5	Hungary	2
8	Netherlands	6	Japan	5	South Korea	5	South Korea	2
9	UAE	6	Switzerland	5	Spain	5	Spain	2
10	Denmark	5	Denmark	3	Belgium	4	UK	2

Source: fdimarkets.com, own calculations

Table 54: Ranking of source countries by number of high and medium technology intensive manufacturing FDI projects, 2003–2010

	High and medium technology intensive industries							
	Austria		**Czech Republic**		**Hungary**		**Slovakia**	
1	Germany	37	Germany	82	Germany	96	Germany	35
2	Canada	12	Japan	58	USA	46	USA	27
3	USA	12	USA	41	Japan	32	South Korea	25
4	Italy	9	Taiwan	20	Austria	29	Austria	19
5	Switzerland	8	UK	14	Finland	15	France	13
6	Japan	5	South Korea	10	France	15	Japan	13
7	Finland	4	Italy	9	Switzerland	15	Italy	11
8	Netherlands	3	Austria	8	Denmark	13	Denmark	10
9	Denmark	2	France	8	UK	13	Luxembourg	4
10	France	2	Spain	7	Sweden	12	Netherlands	4

Source: fdimarkets.com, own calculations

Table 55: Ranking of source countries by number of low technology intensive manufacturing and electricity FDI projects, 2003–2010

	Low technology intensive industries and electricity							
	Austria		**Czech Republic**		**Hungary**		**Slovakia**	
1	Germany	21	Germany	19	Germany	54	Germany	19
2	UK	5	UK	17	Austria	43	Austria	16
3	Norway	4	Austria	14	USA	27	USA	14
4	Italy	3	USA	11	Italy	14	Sweden	10
5	Switzerland	3	Japan	9	France	12	Italy	8
6	UAE	3	Sweden	8	Finland	10	Netherlands	8
7	USA	3	Denmark	5	Switzerland	10	Czech Republic	6
8	Finland	2	France	5	UK	9	Canada	5
9	Ireland	2	Switzerland	5	Japan	5	France	5
10	Netherlands	2	Netherlands	4	Netherlands	5	Spain	5

Source: fdimarkets.com, own calculations

Table 56: Ranking of source countries by number retail trade and transport FDI projects, 2003–2010

	Retail trade and transport							
	Austria		**Czech Republic**		**Hungary**		**Slovakia**	
1	Germany	70	Germany	55	Germany	88	Germany	38
2	Italy	29	UK	26	Austria	40	Austria	23
3	Belgium	16	Austria	25	UK	40	UK	23
4	France	11	USA	15	France	25	France	9
5	Switzerland	9	France	13	USA	22	Netherlands	8
6	USA	9	Japan	10	Netherlands	21	Poland	4
7	Japan	7	Poland	10	Italy	15	USA	4
8	Netherlands	6	Sweden	10	Belgium	14	Italy	3
9	Sweden	6	Netherlands	5	Spain	12	Czech Republic	2
10	Hong Kong	3	Belgium	4	Switzerland	9	Hungary	2

Source: fdimarkets.com, own calculations

Table 57: Ranking of source countries by number of construction and services FDI projects – CENTROPE regions, 2003–2010

Construction & Services

	AT11 Burgenland		AT12 Lower Austria		AT13 Vienna		CZ06 Czech Southeast		HU22 West–transdanubia		SK01 Bratislava		SK02 West Slovakia	
1	Finland	1	Germany	6	USA	21	USA	5	Austria	9	Austria	13	Austria	3
2	France	1	Italy	2	Germany	16	Germany	4	USA	5	USA	12	Germany	2
3			Denmark	1	Switzerland	8	Austria	2	Germany	4	Germany	7	UK	2
4			Switzerland	1	Spain	6	India	2	France	3	France	4	Finland	1
5					Italy	5	Taiwan	2	Belgium	1	Japan	4	France	1
6					Japan	5	Bermuda	1	Cyprus	1	Netherlands	4	Hungary	1
7					Netherlands	5	Malaysia	1	Czech Republic	1	Ireland	3	Sweden	1
8					France	4	Netherlands	1	Israel	1	Czech Republic	2	USA	1
9					UK	4	Poland	1	UK	1	Italy	2		
10					Sweden	3	Spain	1			China	1		

Source: fdimarkets.com, own calculations

Table 58: Ranking of source countries by number of headquarter, business services and innovation related FDI projects – CENTROPE regions, 2003–2010

HQ, business services, innovation

	AT11 Burgenland		AT12 Lower Austria		AT13 Vienna		CZ06 Czech Southeast		HU22 West–transdanubia		SK01 Bratislava		SK02 West Slovakia	
1			USA	2	Germany	37	USA	9	Austria	12	Austria	9	USA	2
2			Sweden	1	USA	16	UK	2	USA	2	USA	7	Germany	1
3			Switzerland	1	UK	7	Austria	1	Canada	1	Czech Republic	6	South Korea	1
4			UK	1	Switzerland	6	Netherlands	1	Germany	1	Germany	5	Taiwan	1
5					France	4			Italy	1	Ireland	3		
6					Netherlands	4			UK	1	Hungary	2		
7					Denmark	3					Belgium	1		
8					Belgium	2					France	1		
9					Canada	2					Italy	1		
10					Italy	2					Netherlands	1		

Source: fdimarkets.com, own calculations

Table 59: Ranking of source countries by number of high and medium technology intensive manufacturing FDI projects – CENTROPE regions, 2003–2010

High and medium technoology intensive industries

	AT11 Burgenland		AT12 Lower Austria		AT13 Vienna		CZ06 Czech Southeast		HU22 West–transdanubia		SK01 Bratislava		SK02 West Slovakia	
1	Germany	1	Finland	4	USA	7	Japan	9	Germany	24	Germany	5	Germany	15
2	Japan	1	Germany	3	Germany	5	USA	8	USA	12	Austria	1	South Korea	13
3			France	2	Canada	2	Germany	7	Austria	10	Ireland	1	Austria	11
4			Austria	1	Italy	1	Taiwan	4	Singapore	4	Italy	1	France	9
5			Spain	1	Netherlands	1	Italy	3	China	2	Japan	1	USA	9
6			Switzerland	1			France	2	France	2	Switzerland	1	Japan	5
7			UAE	1			UK	2	Spain	2			Denmark	4
8							Belgium	1	Switzerland	2			Luxembourg	3
9							Canada	1	Canada	1			Italy	2
10							Denmark	1	Denmark	1			Spain	2

Source: fdimarkets.com, own calculations

Table 60: Ranking of source countries by number of low technology intensive manufacturing and electricity FDI projects – CENTROPE regions, 2003–2010

Low technology intensive industries and electricity

	AT11 Burgenland		AT12 Lower Austria		AT13 Vienna		CZ06 Czech Southeast		HU22 West–transdanubia		SK01 Bratislava		SK02 West Slovakia	
1	Germany	1	Norway	2	Germany	2	Germany	2	Germany	12	Germany	2	Germany	8
2	USA	1	UAE	2	Norway	1	Netherlands	2	Austria	11	Switzerland	2	Austria	7
3			Germany	1	Saudi Arabia	1	Austria	1	Denmark	3	Austria	1	Netherlands	5
4			Spain	1			Ireland	1	Italy	3	Czech Republic	1	France	3
5			Sweden	1			Japan	1	Sweden	3	France	1	Italy	3
6			UK	1			Luxembourg	1	USA	2	Hungary	1	Canada	2
7			USA	1			Slovakia	1	France	1	Sweden	1	South Korea	2
8							Spain	1	Greece	1	UK	1	Spain	2
9							Sweden	1	Japan	1			Switzerland	2
10							USA	1	Luxembourg	1			Taiwan	2

Source: fdimarkets.com, own calculations

Table 61: Ranking of source countries by number retail trade and transport FDI projects – CENTROPE regions, 2003–2010

Retail trade and transport

	AT11 Burgenland		AT12 Lower Austria		AT13 Vienna		CZ06 Czech South-east		HU22 West–transdanubia		SK01 Bratislava		SK02 West Slovakia	
1	Germany	1	Belgium	3	Germany	26	Germany	7	Germany	11	Germany	12	Germany	9
2			France	3	Italy	12	Austria	5	USA	6	Austria	9	UK	6
3			Germany	3	USA	5	UK	2	Austria	4	UK	8	France	4
4			Italy	2	France	4	France	1	Netherlands	4	USA	4	Austria	3
5			Netherlands	2	Switzerland	3	Ireland	1	Belgium	3	France	3	Japan	1
6			Czech Republic	1	Belgium	2	Slovakia	1	France	3	Italy	2	Luxembourg	1
7			Russia	1	Hong Kong	2	Sweden	1	UK	2	Netherlands	2	Netherlands	1
8			USA	1	Japan	2			Denmark	1	Belgium	1	Poland	1
9					Slovenia	2			Ireland	1	Canada	1	South Korea	1
10					Sweden	2			Italy	1	Czech Republic	1	Spain	1

Source: fdimarkets.com, own calculations

7.2. Annex 2 Definition of sector of economic activity, according to NACE 2digit industries

Agriculture	
NACE–01	products of agriculture, hunting and related services
NACE–02	products of forestry, logging and related services
NACE–05	fish and other fishing products, services incidental to fishing
Energy	
NACE–40	electrical energy, gas, steam and hot water
High technology intensive	
NACE–30	office machinery and computers
NACE–32	radio, television and communication equipment and apparatus
NACE–33	medical, precision and optical instruments, watches and clocks
Low technology intensive	
NACE–15	food products and beverages
NACE–16	tobacco products
NACE–17	textiles
NACE–18	wearing apparel; furs
NACE–19	leather and leather products
NACE–20	wood and products of wood and cork (except furniture), articles of straw and plaiting materials
NACE–21	pulp, paper and paper products
NACE–22	printed matter and recorded media
NACE–36	furniture; other manufactured goods n.e.c.
Medium high technology intensive	
NACE–24	chemicals, chemical products and man–made fibres
NACE–29	machinery and equipment n.e.c.
NACE–31	electrical machinery and apparatus n.e.c.
NACE–34	motor vehicles, trailers and semi–trailers
NACE–35	other transport equipment
Medium low technology intensive	
NACE–23	coke, refined petroleum products and nuclear fuel
NACE–25	rubber and plastic products
NACE–26	other non–metallic mineral products
NACE–27	basic metals
NACE–28	fabricated metal products, except machinery and equipment
Market Services	
NACE–72	computer and related services
NACE–74	other business services
Other Services	
NACE–90	sewage and refuse disposal services, sanitation and similar services
NACE–92	recreational, cultural and sporting services
NACE–93	other services
Raw materials	
NACE–10	coal and lignite; peat
NACE–11	crude petroleum and natural gas; services incidental to oil and gas extraction excluding surveying
NACE–12	uranium and thorium ores
NACE–13	metal ores
NACE–14	other mining and quarrying products