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*Neil Foster, Gábor Hunya, Olga Pindyuk and Sándor Richter*

## **Revival of the Visegrad Countries' Mutual Trade after their EU Accession: a Search for Explanation**

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Neil Foster, Gábor Hunya, Olga Pindyuk and Sándor Richter are Research Economists at the Vienna Institute for International Economic Studies (wiiw).

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*Neil Foster, Gábor Hunya,  
Olga Pindyuk and  
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## **Summary**

*After the Visegrad countries' accession to the EU in 2004, one of the most remarkable developments was the sudden upturn in their mutual trade. In 2007 the value of aggregate intra-Visegrad trade was two and a half times higher than in 2003. The rate of growth in these countries' trade with the EU-15 (the 'old' member states) was only half as much. Also, individual Visegrad countries showed higher export growth rates to other Visegrad members in the post-accession period than in the years before EU accession. These developments are reflected in the changes in the geographical distribution of trade. While the relative significance of intra-Visegrad trade increased substantially both in the immediate pre-accession years (2000-2003) and the immediate post-accession years (2004-2007), the shifts in favour of intra-Visegrad trade were stronger in the years after accession in the case of all four countries and in both exports and imports. Three years after the EU accession the relative significance of intra-Visegrad trade attained the level it had reached in 1985, that time still under the extreme protection from global competition provided by the CMEA.*

*The research to find an explanation for the upturn of intra-Visegrad Group trade was primarily focused on the identification of changes in the composition of trade. This approach was supplemented by an investigation of intra-bloc trade in services and an analysis of the mutual FDI flows among the countries concerned.*

*Various trade structure indicators (traditional descriptive, marginal intra-industry and revealed comparative advantage indicators), calculated in the framework of this research, show that accession to the EU has not brought about any abrupt changes in the commodity patterns and revealed comparative advantages. In bilateral trade relations, apart from some exceptions, the changes observed were typically continuous and gradual, overarching the whole period 2000-2007. This is, however, no reason to claim that EU accession had a minor role in the upturn of mutual trade in the region concerned – rather, the effect is not focused on the year of accession (and +/- one year). Despite the clearly hesitant attitude of the incumbent EU members towards eastern enlargement in the 1990s and the lack of their final commitment up until 2002, with the year of accession approaching it became more and more obvious that the accession would take place indeed. In this gradual process of self-conviction the firms involved in the intra-Visegrad Group trade may have gradually elaborated their new, geographically more diversified sales/procurement strategy. In the new strategic concepts of the main exporting firms (mostly multinationals) the Visegrad region itself is thought to have been upgraded both as a target for sales and as a host of potential cooperation partners for production.*

*Results from the gravity modelling exercise indicated that there was no significant change in intra-Visegrad trade post-2004 after controlling for typical gravity determinants. Combined with the observed increase in intra-Visegrad trade these results would tend to sug-*

gest that the observed increases in trade were largely the result of the relatively strong rates of growth of per capita GDP in Visegrad countries and not due to accession per se. The results from the gravity exercise further indicate that the changes in intra-Visegrad trade have occurred mainly along the extensive margin, with a greater variety of products traded amongst Visegrad countries.

Services trade was found to be too low to cause any significant productivity changes that would influence merchandise exports dynamics of the Visegrad countries. The prevalence of traditional transport and travel services in the services trade structures also points to a lower importance of services for the countries' economies, in particular for merchandise trade developments. Our results may indicate an insufficient level of development of Visegrad countries yet, which prevents them from using services more efficiently.

EU accession did not have a one-time effect on FDI among the Visegrad countries and also the comparison of the pre- and post-accession periods does not reveal any increase in the importance of mutual investments. This means that it was not mutual FDI that was driving trade. FDI among the Visegrad countries is rather low because there are not many local companies that are able to invest abroad. Those that do invest in the Visegrad area aim at serving mainly the local market of the target country, which has little trade-enhancing effect. There must be, however, a link between mutual trade and FDI from outside the region. Most of the Visegrad countries' exports are generated by foreign subsidiaries of multinationals from the EU-15 and other developed countries. These subsidiaries are linked by intra-company trade, sourcing and selling in the Visegrad region. After EU enlargement, foreign investors have concentrated the production of consumer goods sold in the region in a lower number of locations which also generated trade among the Visegrad countries.

Our analysis has an important message for the Southeast European countries, all aspiring for EU membership and simultaneously participating in the regional free trade agreement CEFTA. Facilitating the upturn of mutual trade by the governments concerned has been regarded by the EU as an important step towards membership.

The research results testify that in the process of the intra-bloc trade revival the year of EU accession does not appear in the time series as a major watershed in terms of commodity patterns, intra-industry trade or revealed comparative advantage. The developments, primarily specialization, took place gradually, starting prior to and continuing after the accession to the EU. That does not exclude that the removal of administrative and other, mainly invisible obstacles to free trade on the day of accession did not support the upswing of mutual trade, but it could not be the major force behind the phenomenon as it took place in the bilateral Visegrad–EU-15 trade as well, without producing a spectacular upturn in that relation. Our assumption is that the likely driving force of the intra-Visegrad trade expan-

*sion has been a change in the networking strategy of the multinational companies located in the region around the date of EU accession. This change manifested itself in upgraded intra-firm deliveries among affiliates located in two or more of the four Visegrad countries.*

*In this sense the increasing presence of multinational firms (more FDI projects and related inflows) is the key to rapid expansion of intra-CEFTA trade. This is, however, closely related to the prospects of the individual CEFTA members concerning the date of their EU accession. The legal stability provided by the gradual takeover of the *acquis communautaire*, on the one hand, and the prospects of removing all administrative and other, invisible obstacles to trade within the CEFTA region, on the other hand, are the connecting link between FDI, EU accession and an upturn in intra-CEFTA trade. Thus the summarized policy recommendation from our project for the Southeast European EU aspirants is that good progress in the accession negotiations, professional preparatory work for starting such talks and, further, the creation of an FDI-friendly regulatory environment may become key elements of a policy targeted at the upswing of intra-regional trade.*

**Keywords:** *intra-regional trade, Visegrad Group, CEFTA, trade patterns, intra-industry trade, revealed comparative advantage, marginal intra-industry trade, volume and variety of goods traded, gravity model, trade in services, FDI*

**JEL classification:** *F13, F14, F15, F23.*



## **Revival of the Visegrad countries' mutual trade after their EU accession: a search for explanation**

### **1. Introduction<sup>1</sup>**

#### **1.1 Historical background**

Since their accession to the EU in 2004, mutual trade among the Visegrad countries (the Czech Republic, Hungary, Poland and Slovakia) has been expanding much faster than their trade with the 'old' EU members and also much more dynamically than before accession. This is a surprising new development requiring explanation, after the collapse of this trade in the early 1990s and its sluggish recovery prior to the EU accession of the countries concerned.

Mutual trade of the Visegrad partners was not especially significant in the last two decades of communism and it further declined as transition began.<sup>2</sup> Concerning Visegrad trade shares in total trade, the lowest level reached by Poland was 5.4% for exports and 4.4% for imports in 1993; in the case of Hungary 5.8% for exports in 1991 and 6.6% for imports in 1993. For Czechoslovakia we cannot identify the turning point for CEFTA trade as the separation of the Czech and the Slovak Republics in January 1993 makes a comparison of the successor states' trade data with those of the former Czechoslovakia practically impossible.

The comparison of pre- and post-1990 structures in mutual trade among the Visegrad countries shows the immediate impact of the transition to a market economy generally, and that of the collapse of the CMEA<sup>3</sup> trade system followed by the rapid geographical reorientation in particular. In 1989 still more than half of intra-Visegrad trade fell on the commodity group SITC 7, machinery and transport equipment, reflecting the most important characteristic of the mutual trade of pre-transition Visegrad countries under the protective shield of the peculiar CMEA trading system. Except for semi-finished products (SITC 6, with 16% share) no other commodity group had a strong position. This set-up had changed by 1995. The share of machinery and transport equipment lost close to 40 percentage points. In the emerging post-transition intra-Visegrad trade structure, inputs to production gained in importance: semi-finished products (SITC 6), chemicals (SITC 5) and energy sources (SITC 3). There was a characteristic change between 1995 and 1998: the share of machinery and transport equipment (SITC 7) regained some of its earlier share, but was still far from its very high pre-transition levels.

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<sup>1</sup> This introduction was written by Sándor Richter; the text is a summary of the introductory section of the author's contribution to this project (see Richter, 2011).

<sup>2</sup> The source of the following statistical analysis is Richter (2001).

<sup>3</sup> Council for Mutual Economic Assistance (1949-1991), the economic integration bloc under the leadership of the Soviet Union.

In the Visegrad countries' exports to the European Union, the transition to a market economy also brought about significant rearrangements. It is interesting to note that remarkable gains in shares were recorded especially in those two commodity groups (SITC 7 and 8, machinery and transport equipment; consumer goods) where the loss was so strong in intra-Visegrad trade. In 1989 the share of machinery in Visegrad exports to the EU was 14%, corresponding to the level where it 'landed' in intra-Visegrad trade after the dramatic decline between 1989 and 1995. Parallel to this, in exports to the EU this commodity group's share climbed to 25% in 1995 and to 43% by 1998, attaining a level that was not much below the share it had occupied in intra-Visegrad trade in the last pre-transition year.

It is important to note that along with the transition to a market economy the trade policy framework of intra-Visegrad trade underwent fundamental changes. On 21 December 1992, the Czech Republic, Hungary, Poland and Slovakia signed the CEFTA (Central European Free Trade Agreement) Document, an agreement on the gradual creation of a free trade area concerning trade in industrial goods, and a gradual reduction of certain, but not all, barriers to trade in agricultural goods. In the following years Slovenia, Romania and Bulgaria joined the agreement, and in 2003, immediately before the founder countries' accession to the EU, Croatia acceded as well.

## **1.2 The upturn after accession to the EU**

After the Visegrad countries' accession to the EU in 2004, one of the most remarkable developments was the sudden upturn in mutual trade. In 2007 the value of aggregate intra-Visegrad trade was two and a half times higher than in 2003. The rate of growth in these countries' trade with the 'old' EU member states was only half as much.<sup>4</sup> In the post-accession years each of the Visegrad countries had higher (in most cases substantially higher) exports growth rates in trade with individual members of the group than in trade with the EU-15.<sup>5</sup> Also, individual Visegrad countries had higher export growth rates to other Visegrad members in the post-accession period than in the years before EU accession.<sup>6</sup>

These developments are reflected in the changes concerning the geographical distribution of trade (see Tables 1.1 and 1.2). While the relative significance of trade with other Visegrad countries increased substantially both in the immediate pre-accession years (2000-2003) and the immediate post-accession years, the shifts were stronger in favour of intra-Visegrad trade in the years after accession for all four countries and in both exports and imports. The post-accession increment relative to the pre-accession increment in intra-Visegrad group trade was especially remarkable in the case of Hungarian and Slovak ex-

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<sup>4</sup> Own calculations based on Eurostat data (COMEXT).

<sup>5</sup> The only exception is represented by Slovak exports to the Czech Republic (1 in 12 observations).

<sup>6</sup> 12 in 12 observations.

ports and Czech imports. In 2007 the Visegrad group's share in Hungarian exports and imports was already substantially higher than in 1985, then still under the extreme protectionist umbrella of the CMEA. The same is the case for Poland's intra-Visegrad exports (the 2007 Visegrad share in imports still lagged somewhat behind the 1985 share). For the Czech Republic and Slovakia no such comparison can be made as these two countries still constituted one common state back in 1985 and their trade was internal and not foreign trade. However, the recent changes are highly interesting: The share of intra-Visegrad exports in total Slovak exports decreased substantially in the years before EU accession only to undergo a strong revival after the accession. In imports intra-Visegrad purchases made up one fifth of total Slovak imports in 2000; three years after the country's EU accession this share was close to one third. In 2009 the value of Slovak imports from the Visegrad group amounted to as much as three quarters of the imports from the EU-15. Though less spectacularly, the relatively high share of the Czech Republic's trade with the Visegrad group in its total trade reflects the continuation of the Czech-Slovak special relations nearly two decades after the peaceful separation of the two entities.

This clear increase in relative significance of intra-Visegrad trade for each member of the group must appear as a loss of relative significance for other trade partners. Tables 1.1 and 1.2 testify that it was the EU-15 which lost in weight. In the case of exports the shrinkage of this group's share accelerated substantially after the Visegrad countries' accession to the EU, with the exception of exports to Slovakia. The same decrease in significance of the EU-15 took place in imports, too, but here the shrinkage was somewhat slower after the EU accession in the case of two countries, the Czech Republic and Hungary.

That means that EU accession gave an important impetus to mutual trade of the countries concerned. This sudden acceleration of trade expansion cannot be explained by the removal of trade barriers upon accession. Free trade for industrial commodities had been long in place. Most of the restrictions on agricultural and food industry products had also been removed by 1 May 2004 already, and this applies to trade with the EU-15 and intra-regional trade as well.<sup>7</sup>

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<sup>7</sup> Nevertheless, according to Hornok (2010) the elimination of non-traditional trade barriers following the EU accession may have been a significant contribution to the upturn in trade flows. The author mentions the following non-traditional trade barriers: eliminated border waiting time and customs procedures; elimination of technical barriers through completion of harmonization; lower legal and information costs for exporters; and reduced political risk.

Table 1.1

**Geographical distribution of the Visegrad countries' trade in selected years**

in %

Reporting country	Exports					Imports				
	2000	2003	2004	2007	2009	2000	2003	2004	2007	2009
<b>Czech Republic</b>										
Hungary	1.9	2.3	2.6	3.1	2.5	1.6	2.0	2.1	3.0	2.4
Poland	5.4	4.8	5.1	5.9	5.8	3.6	4.1	4.8	6.3	7.0
Slovakia	7.7	8.0	8.3	8.7	9.0	6.1	5.2	5.5	6.3	6.6
<b>Visegrad</b>	<b>15.0</b>	<b>15.0</b>	<b>16.0</b>	<b>17.7</b>	<b>17.3</b>	<b>11.4</b>	<b>11.3</b>	<b>12.4</b>	<b>15.6</b>	<b>15.9</b>
EU-15	68.5	69.8	68.7	64.4	64.2	62.8	58.9	66.6	63.1	59.7
Rest of the world	16.5	15.1	15.3	17.9	18.5	25.9	29.8	21.0	21.4	24.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>Hungary</b>										
Czech Republic	1.7	2.1	2.4	3.8	3.2	2.0	2.4	2.8	3.5	3.6
Poland	2.1	2.3	2.9	4.2	3.8	2.0	2.8	3.2	3.9	4.1
Slovakia	1.0	2.0	1.9	4.2	5.0	1.8	1.9	2.0	3.0	4.1
<b>Visegrad</b>	<b>4.8</b>	<b>6.3</b>	<b>7.2</b>	<b>12.1</b>	<b>11.9</b>	<b>5.8</b>	<b>7.1</b>	<b>8.1</b>	<b>10.5</b>	<b>11.8</b>
EU-15	75.1	73.7	70.7	59.6	59.1	58.4	55.0	57.8	55.6	53.3
Rest of the world	20.0	20.0	22.2	28.3	29.0	35.7	37.9	34.1	34.0	34.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>Poland</b>										
Czech Republic	3.8	4.0	4.3	5.5	5.8	3.2	3.4	3.8	3.9	4.0
Hungary	2.1	2.4	2.6	2.9	2.7	1.6	1.8	2.0	2.2	1.9
Slovakia	1.4	1.6	1.8	2.2	2.3	1.5	1.5	1.6	1.9	2.4
<b>Visegrad</b>	<b>7.2</b>	<b>8.1</b>	<b>8.7</b>	<b>10.6</b>	<b>10.8</b>	<b>6.3</b>	<b>6.8</b>	<b>7.4</b>	<b>8.0</b>	<b>8.3</b>
EU-15	69.9	68.8	67.3	62.9	64.0	61.1	61.1	65.6	63.3	61.8
Rest of the world	22.9	23.1	24.0	26.5	25.2	32.6	32.1	27.0	28.7	29.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>Slovakia</b>										
Czech Republic	17.2	12.8	13.4	12.6	12.9	14.9	14.4	18.4	17.3	18.8
Hungary	4.9	4.9	5.2	6.0	6.4	2.1	3.4	3.8	6.7	7.1
Poland	5.9	4.8	5.5	6.2	7.2	3.1	3.5	4.3	4.9	4.9
<b>Visegrad</b>	<b>28.0</b>	<b>22.5</b>	<b>24.1</b>	<b>24.8</b>	<b>26.6</b>	<b>20.1</b>	<b>21.4</b>	<b>26.5</b>	<b>29.0</b>	<b>30.8</b>
EU-15	59.2	60.8	59.6	58.3	55.8	49.1	51.5	50.8	43.9	41.9
Rest of the world	12.8	16.7	16.3	17.0	17.6	30.8	27.1	22.6	27.1	27.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Own calculations based on COMEXT trade.



Table 1.2

### Changes in the geographical distribution of the Visegrad countries' trade in selected years

in percentage points

Reporting country	Change in exports shares		Change in imports shares		Post accession change relative to pre-accession change	
	Pre-accession	Post-accession	Pre-accession	Post-accession	Exports	Imports
	2000/2003 (a)	2004/2007 (b)	2000/2003 (c)	2004/2007 (d)	(b)-(a)	(d)-(c)
<b>Czech Republic</b>						
Hungary	0.4	0.5	0.4	0.9	0.1	0.5
Poland	-0.6	0.8	0.5	1.4	1.4	0.9
Slovakia	0.3	0.4	-1.0	0.8	0.1	1.8
<b>Visegrad</b>	<b>0.0</b>	<b>1.7</b>	<b>0.0</b>	<b>3.1</b>	<b>1.6</b>	<b>3.2</b>
EU-15	1.3	-4.3	-3.9	-3.5	-5.6	0.3
Rest of the world	-1.3	2.6	3.9	0.4	3.9	-3.5
<b>Hungary</b>						
Czech Republic	0.4	1.4	0.4	0.7	1.0	0.3
Poland	0.1	1.3	0.7	0.7	1.2	0.0
Slovakia	0.9	2.2	0.2	1.0	1.3	0.9
<b>Visegrad</b>	<b>1.4</b>	<b>5.0</b>	<b>1.3</b>	<b>2.4</b>	<b>3.5</b>	<b>1.1</b>
EU-15	-1.5	-11.1	-3.4	-2.2	-9.6	1.1
Rest of the world	0.0	6.1	2.1	-0.2	6.1	-2.3
<b>Poland</b>						
Czech Republic	0.3	1.2	0.2	0.1	1.0	-0.2
Hungary	0.4	0.3	0.2	0.2	0.0	0.0
Slovakia	0.2	0.4	0.1	0.3	0.2	0.3
<b>Visegrad</b>	<b>0.8</b>	<b>1.9</b>	<b>0.5</b>	<b>0.6</b>	<b>1.1</b>	<b>0.1</b>
EU-15	-1.0	-4.4	0.0	-2.3	-3.4	-2.3
Rest of the world	0.2	2.5	-0.5	1.7	2.3	2.2
<b>Slovakia</b>						
Czech Republic	-4.4	-0.9	-0.5	-1.1	3.6	-0.6
Hungary	0.0	0.8	1.3	2.9	0.8	1.6
Poland	-1.1	0.8	0.5	0.7	1.8	0.2
<b>Visegrad</b>	<b>-5.5</b>	<b>0.7</b>	<b>1.3</b>	<b>2.4</b>	<b>6.2</b>	<b>1.1</b>
EU-15	1.5	-1.4	2.4	-6.9	-2.9	-9.3
Rest of the world	4.0	0.7	-3.6	4.5	-3.3	8.1

Source: Own calculations based on Table 1.10.

In order to find an answer to the question what is behind the extraordinary intra-Visegrad trade expansion, our attempts were focused on changes in the commodity composition of commodity and services trade and characteristic features of FDI flows before and after the Visegrad countries' accession to the EU. Research on developments in commodity trade included traditional descriptive analysis of trade flows, the decomposition of trade flows by factor inputs and skills, an investigation of trade increments via marginal intra-industry trade indicators, intensive and extensive margins of trade expansion and finally by revealed comparative advantage indicators.

## **2. Changes in the structure of intra-Visegrad-Group trade after these countries' accession to the EU<sup>8</sup>**

### ***2.1 Diverging ways of specialization***

Intra-Visegrad Group trade expanded to different extents before and after the EU accession of the countries concerned. Although bilateral trade flows expanded rapidly in both periods (1999-2003 and 2003-2007), even in bilateral relation with less spectacular trade expansion (Poland's exports to Hungary) the growth differential was over 32 percentage points, in favour of the post-accession period. Nevertheless, in 5 of the 12 observations (bilateral relations) the differential was over 100 percentage points.<sup>9</sup>

Despite similarly rapid expansion, individual intra-Visegrad Group bilateral relations were of a diverging character concerning the composition of trade. One extreme was Hungary's excessive specialization in transport equipment and components in exports to the other three Visegrad Group countries (see Figures 2.1-2.3).<sup>10</sup> The other extreme was Slovakia (see Figures 2.4-2.6), where the initial proportions across main commodity groups had hardly changed in the period of rapid extension of trade volumes. A comparison of the Czech Republic's exports to Hungary and Slovakia, respectively, testified that strong specialization (in trade with Hungary) and the preservation of a diversified spectrum of commodities traded (in trade with Slovakia) were both successful options for a Visegrad-Group country to achieve a rapid expansion of its exports (see Figures 2.7-2.9).

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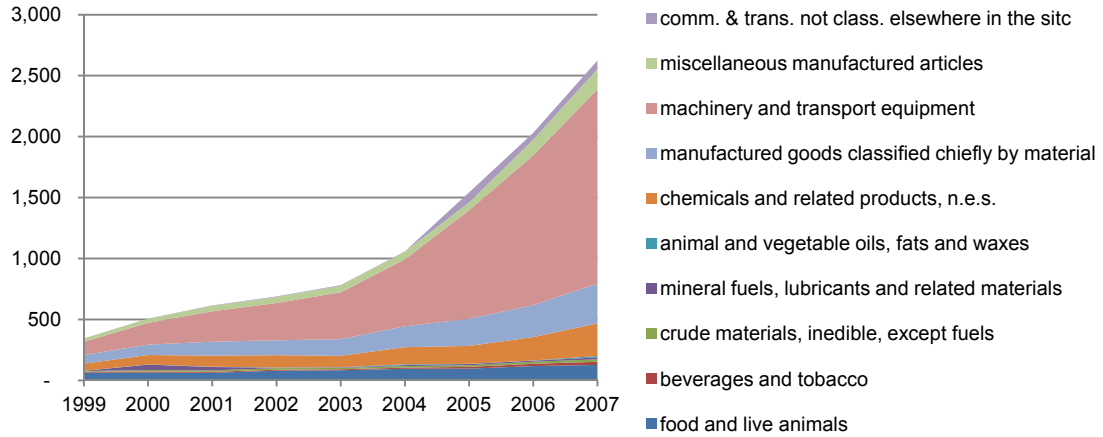
<sup>8</sup> This chapter is a summary of the research paper written by Sándor Richter in the framework of this project, see Richter (2011).

<sup>9</sup> Richter (2001), Table 3.1 on p. 18.

<sup>10</sup> Figures 2.1 to 2.9 were first published in Richter (2009).

Figure 2.1

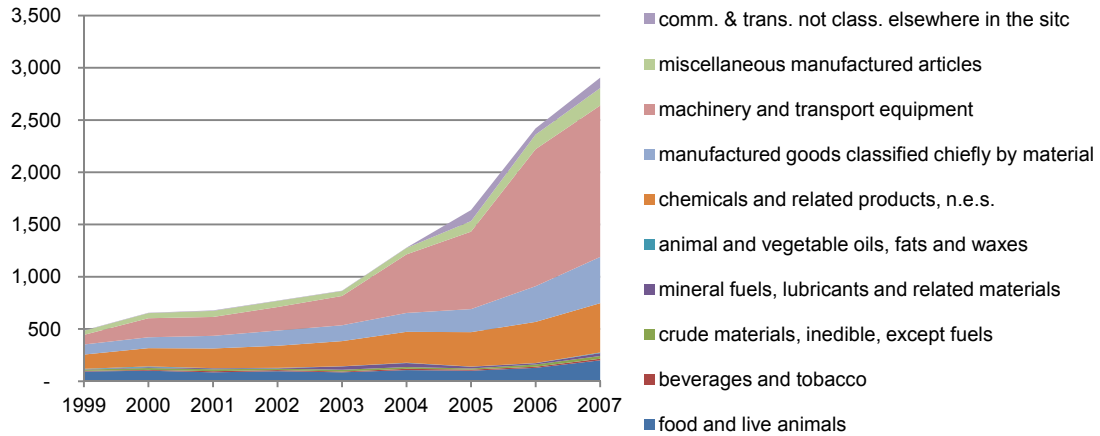
### Hungary's exports to the Czech Republic, in EUR million



Source: Eurostat database (COMEXT), own calculations.

Figure 2.2

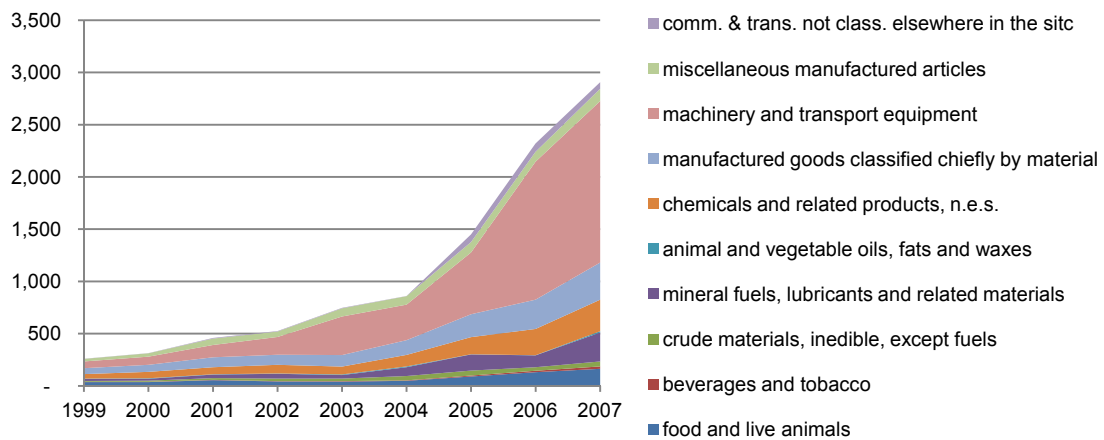
### Hungary's exports to Poland, in EUR million



Source: Eurostat database (COMEXT), own calculations.

Figure 2.3

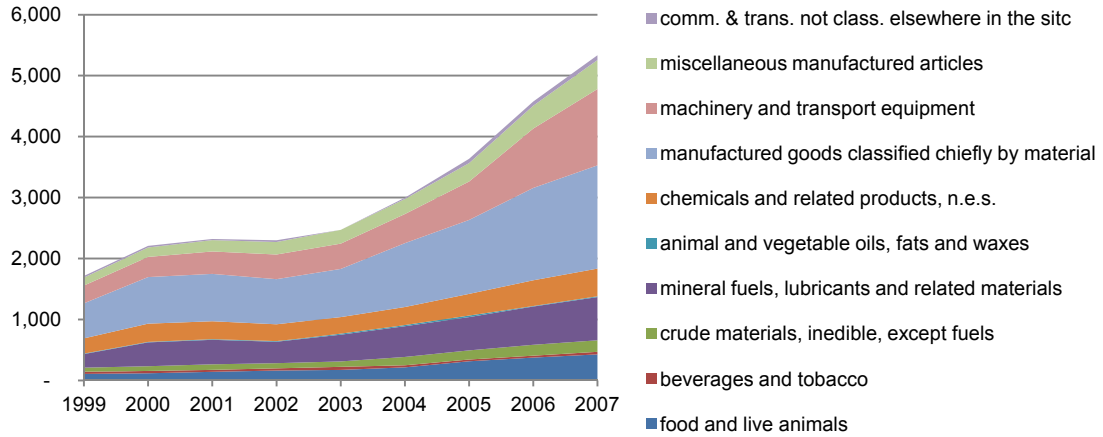
### Hungary's exports to Slovakia, in EUR million



Source: Eurostat database (COMEXT), own calculations.

Figure 2.4

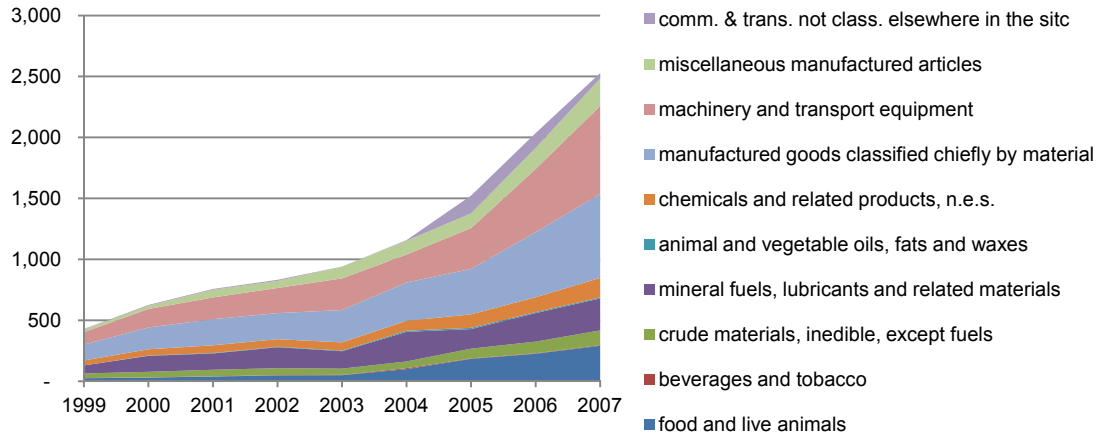
### Slovakia's exports to the Czech Republic, in EUR million



Source: Eurostat database (COMEXT), own calculations.

Figure 2.5

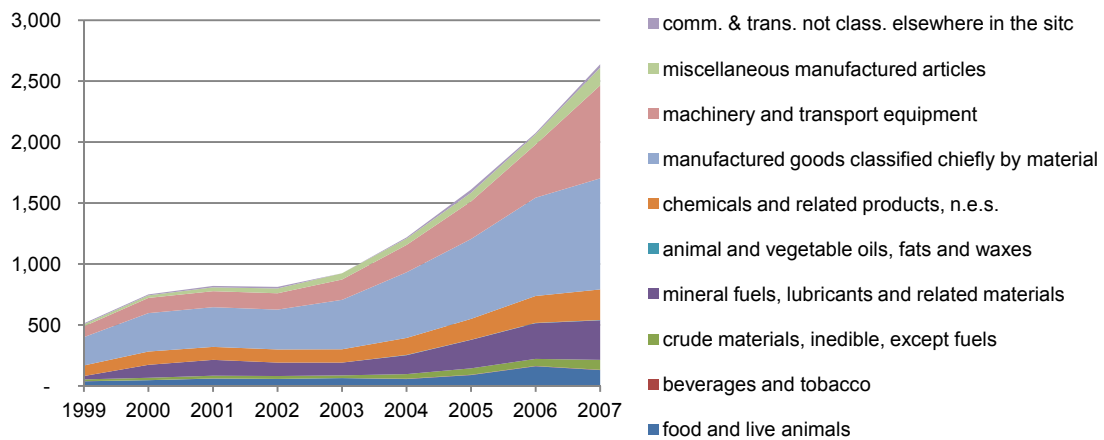
### Slovakia's exports to Hungary, in EUR million



Source: Eurostat database (COMEXT), own calculations.

Figure 2.6

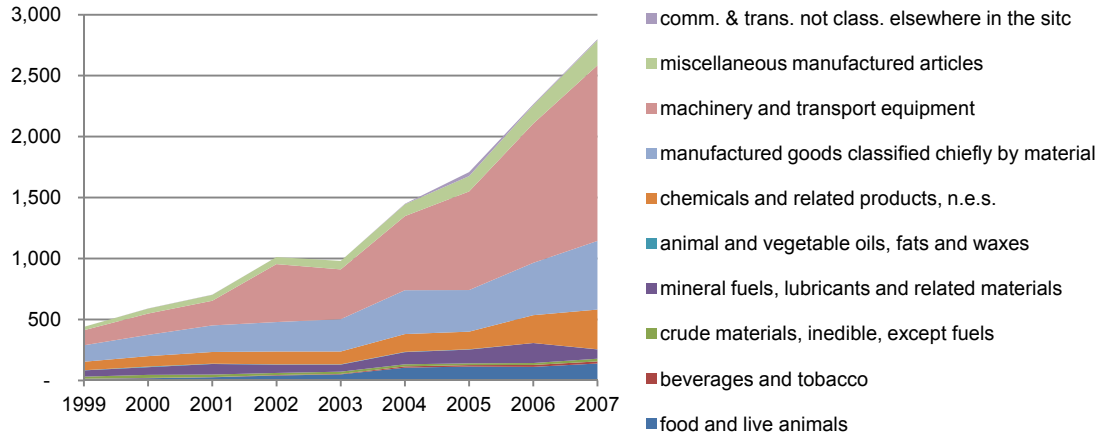
### Slovakia's exports to Poland, in EUR million



Source: Eurostat database (COMEXT), own calculations.

Figure 2.7

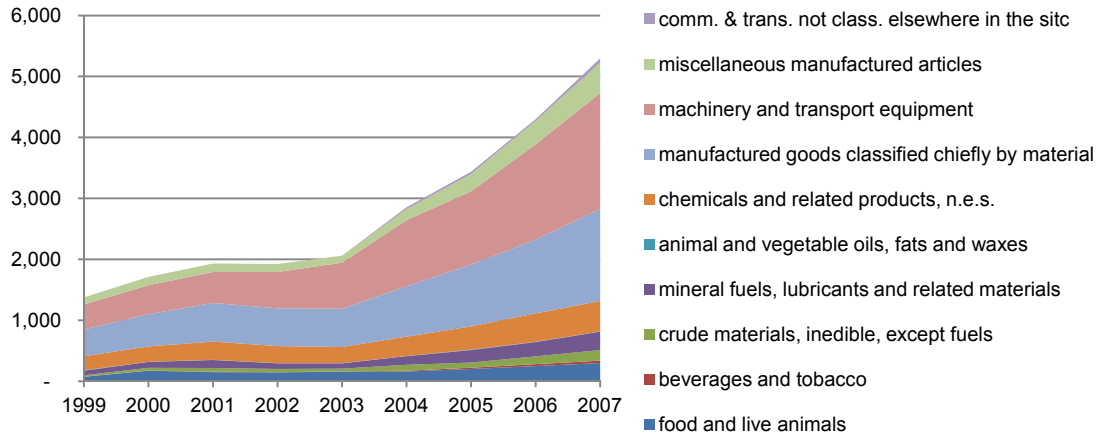
### Exports of the Czech Republic to Hungary, in EUR million



Source: Eurostat database (COMEXT), own calculations.

Figure 2.8

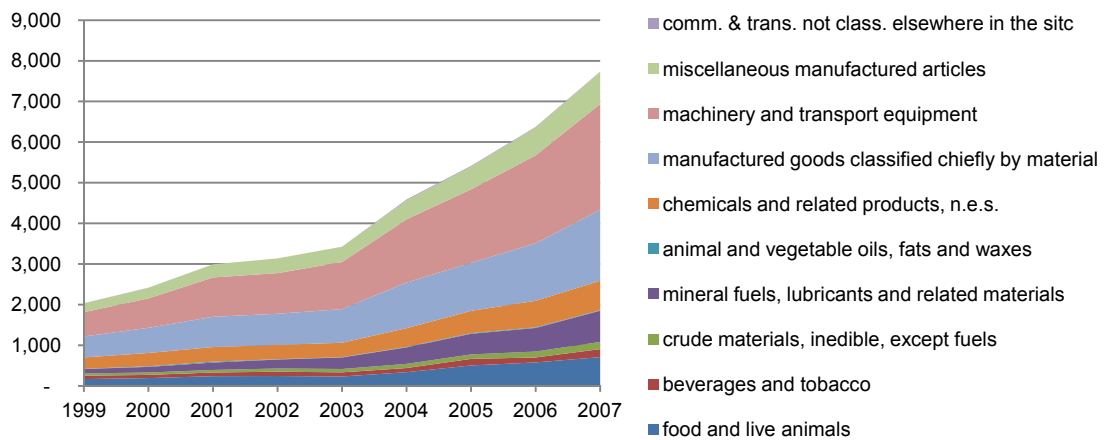
### Exports of the Czech Republic to Poland, in EUR million



Source: Eurostat database (COMEXT), own calculations.

Figure 2.9

### Exports of the Czech Republic to Slovakia, in EUR million



Source: Eurostat database (COMEXT), own calculations.

## 2.2 Changes in the composition of trade by factor inputs and labour skills<sup>11</sup>

### Factor inputs

The division of the period 2000-2007 into a pre-accession and a post-accession segment did not reveal outstanding changes in the composition of intra-Visegrad trade by *factor inputs* (Taxonomy I, see Figures 2.10-2.12). Though *technology-driven* industries gained substantially in importance over the whole period concerned, the process was gradual, with no significant change in the speed of the rearrangement after the EU accession compared to the years before. A less spectacular yet remarkable change (a drop) occurred in the weight of *capital-intensive* industries, but the date of EU accession seems to play no role in the process either.

An EU accession-related change in the Visegrad Group exports to the EU-15 was observed only in one segment, namely in *labour intensive* industries where the shrinkage of this segment's share in exports unambiguously accelerated in the post-accession years. The most important difference between the Visegrad Group and the EU-15 as an export destination was that *technology-driven* industries figured as the dominant commodity group in exports to the EU-15 in the whole period concerned, while, though spectacularly gaining in significance over the period, they were substantially less important in intra-Visegrad Group trade.

The emerging picture probably reflects the change in attitude of export-oriented and engineering sector-based multinationals operating in the Visegrad Group countries. Earlier exports (often intra-firm deliveries) were predominantly deliveries from a production site in one of the Visegrad Group countries to the mother company or to the markets in the EU-15, and to a much smaller extent to other Visegrad Group countries. This attitude is assumed to have started to change with the spectacularly growing deliveries of the same circle of exporters to affiliates and/or markets in other Visegrad Group countries.

Hungarian exports data suggest that this country is the main driving force behind the expansion of *technology-driven* industries in the intra-Visegrad Group trade. While in Hungary's exports to the EU-15 half of the turnover fell on this group over the whole period, in Hungary's deliveries to the other three Visegrad countries the share of *technology-driven* industries nearly doubled and, by the end of the period, it also made up close to half of the deliveries. Remarkably, in Hungary's case the stormy expansion took place predominantly after the country's EU accession.

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<sup>11</sup> The here applied taxonomy for factor inputs and labour skills was elaborated by Peneder (2001).

### *Skill intensity*

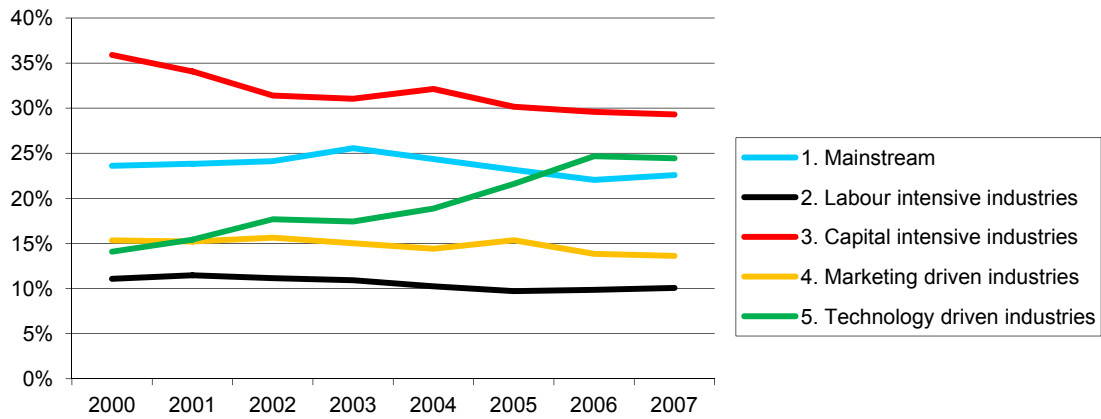
In the case of exports decomposed by *skill intensity* (Taxonomy II, see Figures 2.13-2.15) the date of accession does not seem to have any special meaning; the trends already present before the EU accession were carried on without substantial changes.

Gradual shifts in the composition of the intra-Visegrad Group exports reflect an upgrade of the export structure by skill. The share of *low-skill* industries shrank over the period concerned. Nevertheless, in intra-Visegrad Group trade *low-skill* industries still amounted to more than a third of the total turnover, substantially above the respective share in Visegrad exports to the EU-15. On the other extreme of the scale, *high-skill* industries were significantly more relevant in exports to the EU-15 than to the other Visegrad countries, and the shift in favour of this segment's share in total trade was more formidable in the case of EU-15 destinations than for the other Visegrad Group countries. All in all, the general picture is that the Visegrad countries' exports to the EU-15 reflect a more advanced economy (in terms of skills) than trade within the Visegrad bloc.

A comparison of *intra-Visegrad Group* with *intra-EU-15* trade flows in terms of composition by skill intensity revealed two striking differences. First, *low-skill* industries make up one third of the former and only one fifth of the latter trade flows. Second, the weight of *high-skill* industries is twice as high in intra-EU-15 trade (21-22%) than in intra-Visegrad Group trade (9-10%). These unfavourable proportions did not change over the whole period concerned.

Figure 2.10

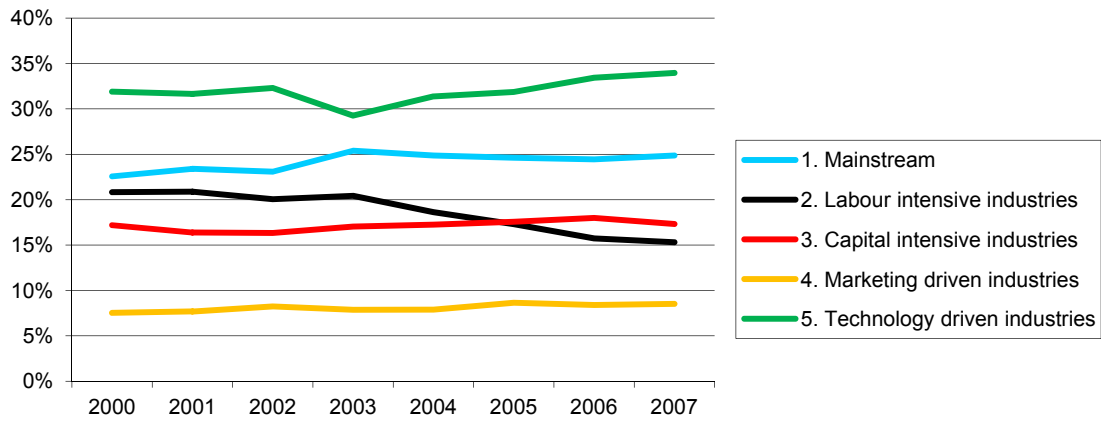
**Intra-Visegrad Group trade (based on export statistics) by Taxonomy I**



Source: Eurostat database (COMEXT), own calculations.

Figure 2.11

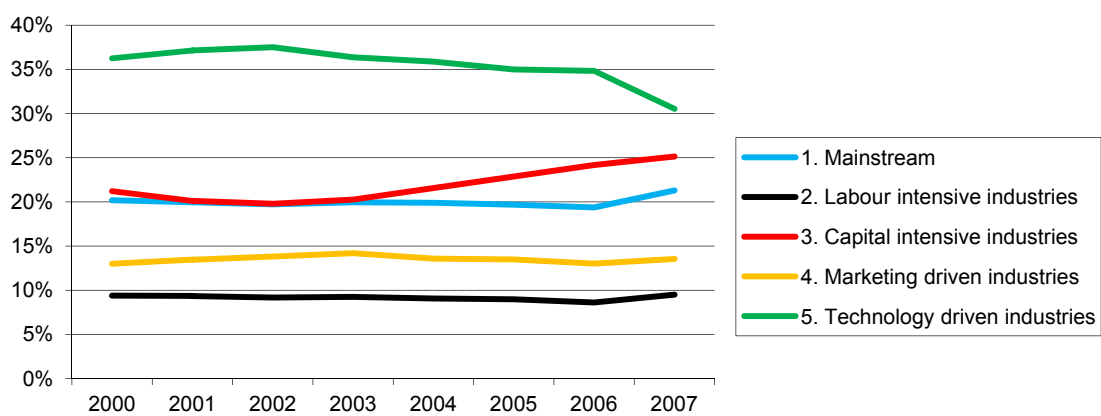
**Visegrad Group exports to the EU-15 by Taxonomy I**



Source: Eurostat database (COMEXT), own calculations.

Figure 2.12

**Intra-EU-15 trade (based on export statistics) by Taxonomy I**

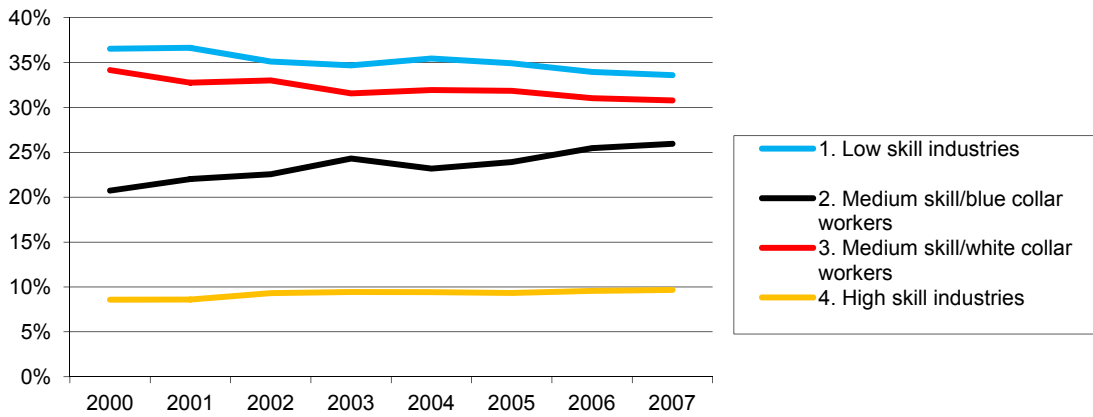


Source: Eurostat database (COMEXT), own calculations.



Figure 2.13

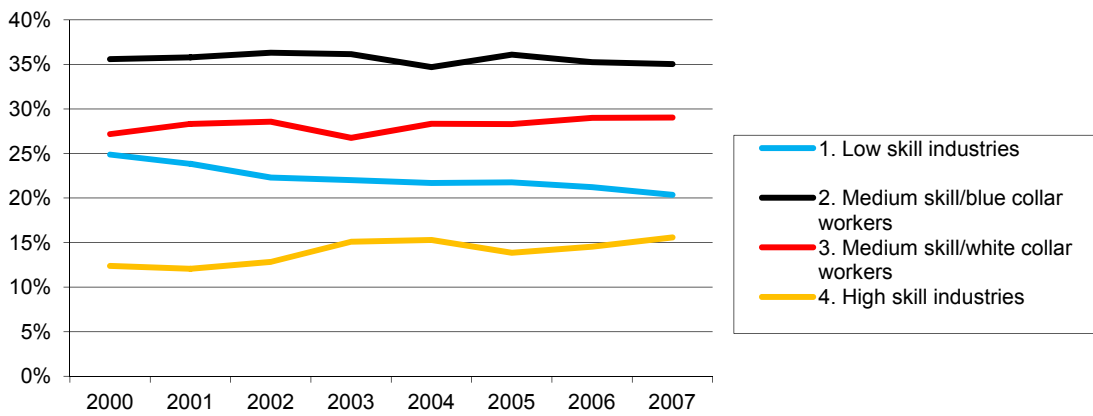
**Intra-Visegrad Group trade (based on export statistics) by Taxonomy II**



Source: Eurostat database (COMEXT), own calculations.

Figure 2.14

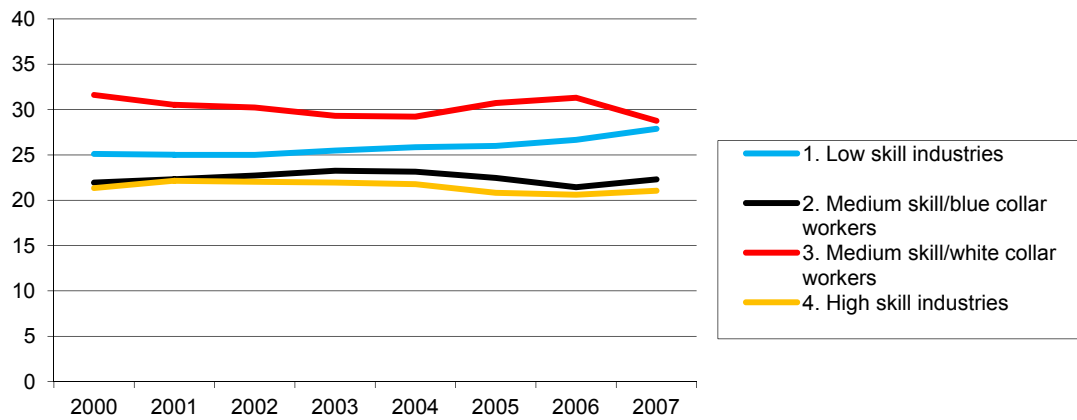
**Visegrad Group exports to the EU-15 by Taxonomy II**



Source: Eurostat database (COMEXT), own calculations.

Figure 2.15

**Intra-EU-15 trade (based on export statistics) by Taxonomy II**



Source: Eurostat database (COMEXT), own calculations.

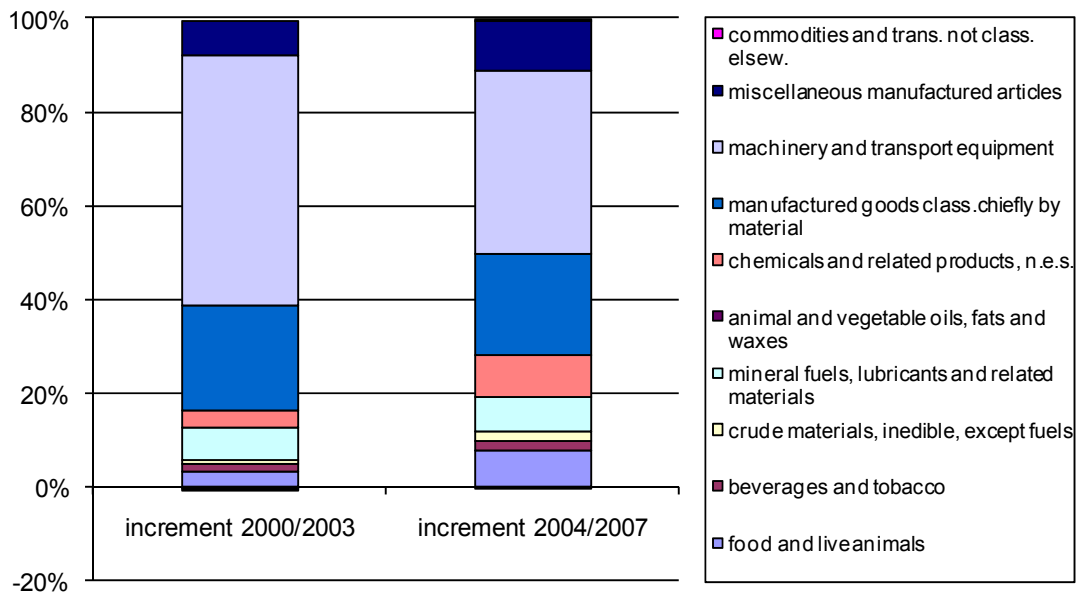
### **2.3 Changes in trade increments**

#### *Strong specialization in machinery and transport equipment*

Comparing trade increments in the pre-accession and the post-accession periods, the data reveal that *machinery and transport equipment* was the key commodity group in the export increment of the individual Visegrad Group members both in trade with the other Visegrad countries and the EU-15, likewise before and after these countries' EU accession. Specialization in this commodity group was, however, substantially stronger in trade increments with the EU-15 than in increments of intra-Visegrad Group trade. For the changing composition of intra-Visegrad trade increments see Figures 2.16-2-19.

Figure 2.16

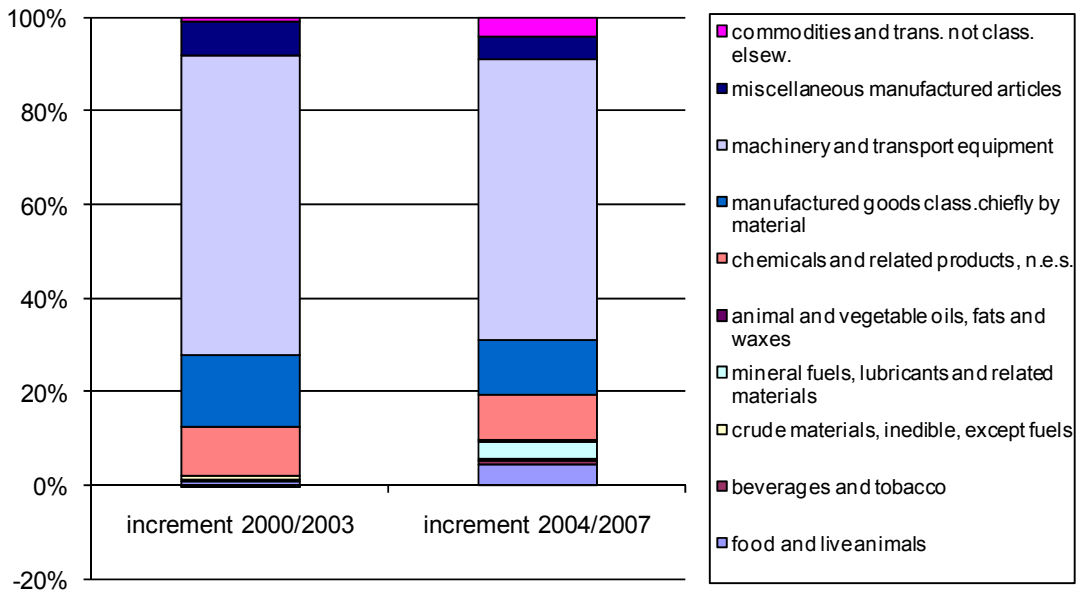
### Czech exports to Visegrad Group countries



Source: Eurostat database (COMEXT), own calculations.

Figure 2.17

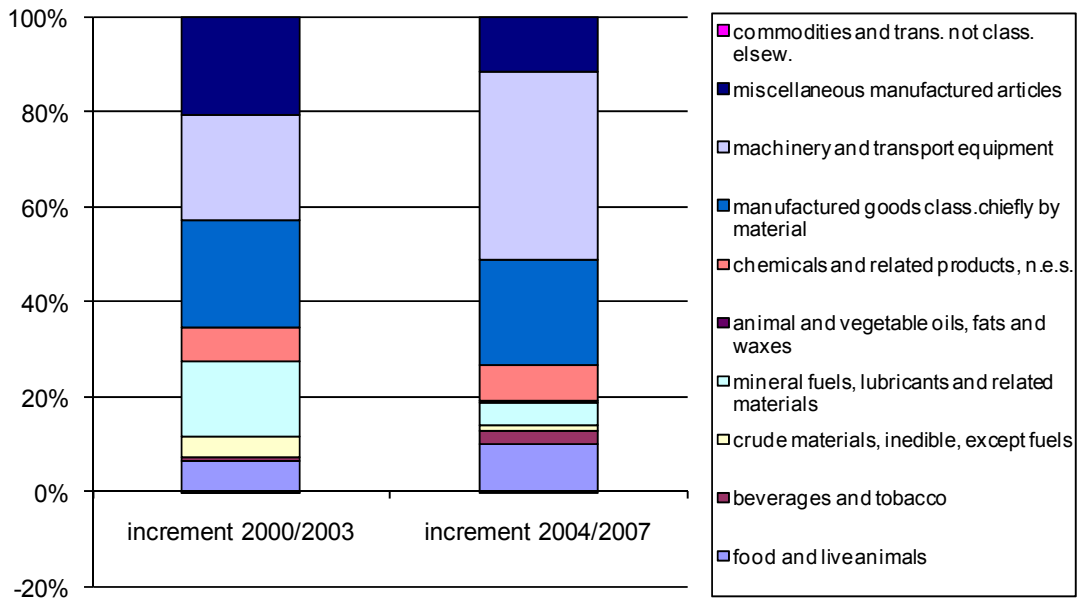
### Hungary's exports to Visegrad Group countries



Source: Eurostat database (COMEXT), own calculations.

Figure 2.18

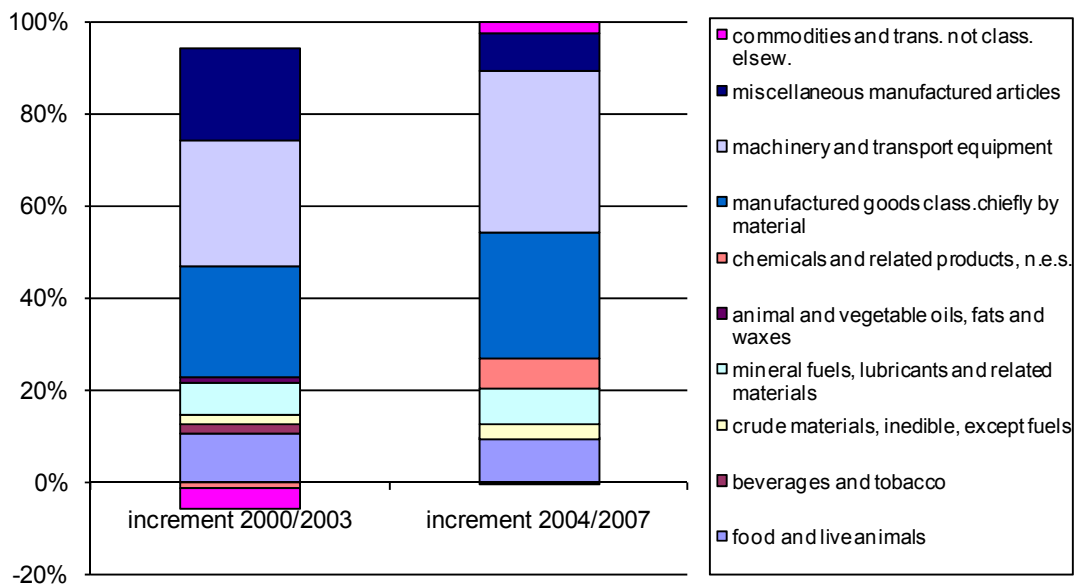
### Poland's exports to Visegrad Group countries



Source: Eurostat database (COMEXT), own calculations.

Figure 2.19

### Slovak exports to Visegrad Group countries



Source: Eurostat database (COMEXT), own calculations.

### Marginal intra-industry trade (in manufacturing)

As the change in the composition of trade flows related to an important event (the EU accession) is the main issue of this investigation, marginal intra-industry trade (MIIT) indicators deliver important insight into the *structure of the change* in export and import flows. 'In

a nutshell, MIIT is about the importance of intra-industry trade in trade changes [increments, note by S.R.], and not about the change in intra-industry trade.’<sup>12</sup>

The concept of marginal intra-industry trade was elaborated by Hamilton and Kniest in 1991.<sup>13</sup> Since then several alternative methods for calculating the indicator have been proposed.<sup>14</sup> In this project the version proposed by Brüllhart was applied:<sup>15</sup>

$$MIIT_i = 1 - |\Delta X_i - \Delta M_i| / (|\Delta X_i| + |\Delta M_i|)$$

- $X_i$  Exports of sector i (NACE classification)
- $M_i$  Imports of sector i (NACE classification)
- $\Delta$  Difference between two consecutive years

The index ranges from 0 to 1. Its value is equal to 0 if marginal trade is fully *inter-industry* and 1 if it is fully *intra-industry*. Zero value may also mean that in the period concerned either exports or imports or both decreased in the analysed commodity group.

MIIT is envisaged to be summed across industries of the same level of statistical disaggregation by the formula

$$MIIT_{tot} = \sum_{i=1}^k w_i MIIT_i,$$

where

$$w_i = |\Delta X_i| + |\Delta M_i| / \sum_{i=1}^k (|\Delta X_i| + |\Delta M_i|)$$

and where  $MIIT_{tot}$  is the weighted average of MIIT over all industries of the economy or over all sub-sectors of an industry, denoted by i...k.

Overall (manufacturing) marginal intra-industry trade indicators ( $MIIT_{tot}$ ) point to higher levels of marginal intra-industry trade in the intra-Visegrad Group trade in the period after the EU accession as compared to before accession in three of the four bilateral relations, namely one Visegrad Group member's trade with the rest of the Group, see Table 2.1. Nevertheless the change was not spectacular, 4 points in the case of Poland and Slovakia, as opposed to the Czech Republic where the increment was a remarkable 15 points. In the Visegrad Group members' trade with the EU-15,  $MIIT_{tot}$  values were, first of all, somewhat lower and, second, more diverse than in the intra-Visegrad Group trade. Again, in a 3:1 proportion across countries, marginal intra-industry trade was higher in the post-accession than in the pre-accession period. Concluding, we found that the EU accession facilitated

<sup>12</sup> Brüllhart (2002), p. 11.

<sup>13</sup> Hamilton and Kniest (1991).

<sup>14</sup> Important inputs on the methodology were provided by Greenaway, Hine, Milner and Elliott (1994); and Oliveras and Terra (1997).

<sup>15</sup> Brüllhart (2002), p. 12. See also Kaitila (2008).

intra-industry trade both in the intra-Visegrad Group flows and in the Group members' trade with the EU-15.

Table 2.1

**MIIT (tot) index in intra-Visegrad Group trade and Visegrad countries' trade with the EU-15, before and after EU accession**

NACE 2									
Reporting country:	Czech Rep.		Hungary		Poland		Slovakia		
Period:	pre- accession	post accession	pre- accession	post accession	pre- accession	post accession	pre- accession	post accession	
<b>Partners:</b>									
<b>Visegrad Group</b>	0.71	0.86	0.72	0.66	0.71	0.75	0.68	0.72	
<b>EU-15</b>	0.7	0.79	0.57	0.59	0.61	0.75	0.72	0.59	

Note: Based on NACE 2 data.

Source: Own calculations based on COMEXT data.

*MIIT in the motor vehicle cluster*

Following huge FDI projects targeted at car manufacturing in the past one and a half decades, the *motor vehicle* cluster has become one of the leading suppliers of exports in each Visegrad country. It seemed expedient to have a closer look at the development of marginal intra-industry trade indicators in this cluster before and after the EU accession of the countries concerned.<sup>16</sup> We chose NACE 3-digit trade data for the analysis, focusing on three commodity groups: NACE 341 – *motor vehicles*; NACE 342 – *bodies (coachwork) for motor vehicles and their engines*; and, finally, NACE 343 – *parts and accessories for motor vehicles and their engines*.

As data in Tables 2.2 and 2.3 display, the results were not conclusive, and the methodological problems inherently related to this indicator have clearly shown the constraints of application. The interpretation of marginal intra-industry indicators was made difficult by the several zero values caused by diminishing exports and/or imports in one of the periods concerned. Hungary, where production and exports of *parts and accessories* are more important than those of *ready motor vehicles*, maintained very high MIIT in this category in both (Visegrad and EU-15) destinations and in both periods (before and after EU accession). *Bodies for motor vehicles* show a similar picture. *Motor vehicles'* MIIT dropped in trade with the Visegrad Group after the accession. For the Czech Republic *ready-made cars'* MIIT in trade with the Visegrad Group was low before the EU accession but increased somewhat thereafter, and the opposite occurred in trade with the EU-15. MIIT in *parts and accessories'* trade increased after the EU accession in both destinations. Poland's MIIT with the Visegrad Group was at a moderate level in both periods concerned and attained a high level in trade with the EU-15 only in the category *parts and accessories*

<sup>16</sup> On the Visegrad countries intra-industry trade in the motor vehicle cluster see Kawecka-Wyrzykowska (2010).

and only after EU accession. Slovakia had the lowest MIIT index of the four Visegrad countries in the commodity group *parts and accessories* in intra-Visegrad Group trade both before and after accession. It is also remarkable that, after the country's accession to the EU, MIIT decreased substantially in trade with the EU-15.

Table 2.2

**MIIT in intra-Visegrad Group trade in the motor vehicle cluster**

	Hungary	Czech R.	Poland	Slovakia
	<b>2000/2003</b>			
NACE 341 motor vehicles	0.98	0.50	0.05	0.81
NACE 342 bodies (coachwork) for motor vehicles	0.89	0.00	0.00	0.88
NACE 343 parts and accessories for motor vehicles and their engines	0.88	0.46	0.60	0.19
<b>memo:</b>				
<i>share of the three comm. groups in the exports increment</i>	16.0	23.1	5.2	10.2
<i>share of the three comm. groups in the imports increment</i>	11.8	10.5	21.4	21.1
	<b>2004/2007</b>			
NACE 341 motor vehicles	0.64	0.65	0.67	0.53
NACE 342 bodies (coachwork) for motor vehicles	0.80	0.91	0.57	0.83
NACE 343 parts and accessories for motor vehicles and their engines	0.87	0.78	0.57	0.40
<b>memo:</b>				
<i>share of the three comm. groups in the exports increment</i>	24.9	12.5	15.6	7.7
<i>share of the three comm. groups in the imports increment</i>	21.0	16.2	7.5	17.8

Source: Own calculations based on COMEXT data.

Table 2.3

**MIIT in trade with the EU-15 in the motor vehicle cluster**

	Hungary	Czech R.	Poland	Slovakia
	<b>2000/2003</b>			
NACE 341 motor vehicles	0.00	0.94	0.77	0.88
NACE 342 bodies (coachwork) for motor vehicles	0.00	0.59	0.00	0.00
NACE 343 parts and accessories for motor vehicles and their engines	0.92	0.70	0.73	0.92
<b>memo:</b>				
<i>share of the three comm. groups in the exports increment</i>	4.0	18.8	27.0	37.0
<i>share of the three comm. groups in the imports increment</i>	19.0	17.9	24.2	32.3
	<b>2004/2007</b>			
NACE 341 motor vehicles	0.55	0.55	0.72	0.36
NACE 342 bodies (coachwork) for motor vehicles	0.94	0.92	0.69	0.24
NACE 343 parts and accessories for motor vehicles and their engines	0.87	0.78	0.94	0.00
<b>memo:</b>				
<i>share of the three comm. groups in the exports increment</i>	30.4	20.2	21.1	25.3
<i>share of the three comm. groups in the imports increment</i>	16.7	10.0	12.1	19.3

Source: Own calculations based on COMEXT data.

Concluding, the MIIT indicator did not help to better understand changes in the Visegrad Group trade. As mentioned earlier, the indicator's value cannot be computed if trade (either exports or imports or both) decreased in a given period. Further, the indicator displays an equal value if there is hardly any change in the trade volume but that is balanced, i.e. exports and imports of the commodity group increased marginally but to equal proportions.

The same indicator may emerge if there is a stormy expansion in both exports and imports, in equal proportions. Simultaneously, a strong increase in either exports or imports so that trade flows in the opposite direction hardly change will lead to a deterioration of the MIIT. Thus, a deteriorating MIIT index may indicate a successful export offensive or successful import substitution by domestic production but also the knock-out of domestic production and perhaps that of exports through a flood of imports of the commodity group concerned. In this respect the evaluation of changes in the MIIT indicators seems highly problematic.

## 2.4 Revealed comparative advantages

Indicators of revealed comparative advantage (RCA) were calculated for the period 2000-2007.<sup>17</sup>

The revealed comparative advantage indicators were calculated according to the Balassa formula:<sup>18</sup>

$$RCA_{ci} = 100 \cdot \ln \left( \frac{\frac{X_{ci}}{M_{ci}}}{\frac{\sum_i X_{ci}}{\sum_i M_{ci}}} \right)$$

where:

- X (M) are exports (imports);
- c denotes a partner country;
- i denotes the respective industry grouping.

Positive (negative) RCA values indicate a comparative (dis-) advantage.

The RCA indicators for NACE 2 manufacturing industries show a continuous rearrangement over the years but only some of these changes were related to EU accession. Of the altogether 22 NACE industries observed in the individual Visegrad countries' trade with the other three members of the Visegrad Group, RCA indicators in 4 industries (Poland) to 8 industries (Hungary) were seemingly influenced by the EU accession (see Table 2.4).

It is remarkable that the Czech Republic, the country with the longest industrial tradition in the Visegrad Group, showed unfavourable change in RCA indicators in the *office machinery and computers* and the *motor vehicles* industries, while an improvement of RCA values was recorded for Hungary and Slovakia in the former and for Poland in the latter industries. *Food products and beverages*, the only trade segment where quantitative restrictions were

<sup>17</sup> For the methodology applied see Richter (2011), p. 69.

<sup>18</sup> Balassa (1965).



Table 2.4

**EU accession-related changes in RCA in individual Visegrad Group countries' trade with the Visegrad Group**

<b>Type of change in RCA</b>	<b>Czech Republic</b>	<b>Hungary</b>	<b>Poland</b>	<b>Slovakia</b>
<b>turning from negative to positive</b>	wood and products of wood and cork (except furniture)	office machinery and computers electrical machinery and apparatus n.e.c.	motor vehicles, trailers and semi-trailers	leather and leather products printed matter and recorded media other transport equipment
<b>positive and improving</b>		machinery and equipment n.e.c.		wood and products of wood and cork (except furniture)
<b>negative but improving</b>	wearing apparel leather and leather products coke, refined petroleum products and nuclear fuel			office machinery and computers
<b>turning from positive to negative</b>		food products and beverages textiles wearing apparel		chemicals, chemical prod. and man-made fibres
<b>positive but deteriorating</b>	textiles office machinery and computers motor vehicles, trailers and semi-trailers	chemicals, chemical prod. and man-made fibres	rubber and plastic products	
<b>negative and deteriorating</b>		coke, refined petroleum prod. and nuclear fuel	radio, television and communication equipment & apparatus other transport equipment	tobacco products

Source: Own calculations based on the COMEXT database.

still in place in the intra-Visegrad (then also intra-CEFTA) trade up until EU accession, appear only in the case of Hungary as an area where accession turned the revealed comparative advantage of the country into a revealed comparative disadvantage. Similar restrictions were still valid in the Visegrad Group's trade with the EU-15 up until EU enlargement. However, in food trade of Poland and Slovakia the impact of full liberalization had the opposite consequences as in Hungary, as their RCA indicators displayed a considerable improvement after EU accession.

#### *Factor intensity*

RCA indicators calculated for industries by factor intensity reveal that in individual Visegrad countries' trade with the other Visegrad Group members a few significant changes occurred around the date of the EU accession. It is worth mentioning Hungary's RCA improvement in *technology-intensive industries* and the deterioration of RCA values in *capital-intensive industries* from 2004 onwards. In the case of Poland the process of strong RCA improvement in *labour-intensive industries* suddenly stopped and became flat after the EU accession, and in *technology-intensive industries* a strong deterioration was halted and turned into a strong (but short-lived) improvement in the year of Poland's EU accession. Other interesting features, not directly related to the EU accession, were the permanent positive RCA indicators in *technology-intensive industries* in the case of the Czech Republic and Hungary, and the negative RCA values for this segment in the case of Poland and Slovakia. In *labour-intensive industries* Hungary had strongly negative, while Poland significantly positive RCA indicators in the period concerned, as quasi mirror images of the RCA indicators in *technology-intensive industries*.

All in all, it seems that the recent industrial modernization surge in Hungary and Slovakia manifested itself in the intra-Visegrad Group trade; this is proved by the highly positive and improving RCA indicators for *technology-intensive industries* in the case of Hungary and the negative but spectacularly improving RCA indicators in the same commodity group for Slovakia.

#### *Skill intensity*

Investigating the changes in RCA indicators in intra-Visegrad Group trade by skill intensity, the results did not indicate any remarkable shifts related to the EU accession either. Hungary and the Czech Republic remained in the terrain of substantially positive RCA in *high-skill industries* and, as a mirror image, Poland and Slovakia remained in the extreme negative area in this segment. The opposite was the case for *low-skill industries*, where Poland and Slovakia showed a revealed comparative advantage while the Czech Republic, and even more so Hungary, displayed a strong revealed comparative disadvantage.

### 3. On the volume and variety of intra-bloc trade in an expanded EU<sup>19</sup>

In this part of the project we examined developments in bilateral trade flows within the EU. Our focus was on two issues: (i) whether the observed changes in intra-Visegrad Group trade following EU accession were due to observed differences in economic performance or to a changing structure of trade flows geographically, and (ii) whether the changing patterns of trade flows have been the result of a change in the volume of products traded, or due to a change in the variety of goods traded.

The data point to a marked increase in intra-Visegrad Group trade post-accession, both in absolute terms and also relative to developments in bilateral trade for other country-pairs within the EU. Such an increase is on the face of it difficult to explain since most tariff barriers between Visegrad countries had been removed prior to 2004. One of the questions addressed by this part of the project was whether this change was due to the relatively strong economic performance of these countries leading to an increase in demand, or whether it was a process of realignment due to natural trading patterns, possibly as a result of a movement away from a hub-and-spoke trade pattern in the EU. Alternatively, it may be that, although trade policy barriers were low prior to EU accession, other non-policy barriers remained, examples including differences in legal frameworks, political risk, and other administrative costs of trading (see Hornok, 2009). To address this question we used the familiar gravity equation of international trade including dummies for the different blocs within the EU (i.e. Visegrad, other new members, and old members) along with their interactions with dummies for the post-accession period, which allowed us to examine how and whether intra-bloc exports developed differently and, more importantly, whether they developed differently post-accession.

The second issue we address relates to whether the observed changes in bilateral trade flows have been due to an increase in the volume of existing goods traded or an increase in the variety of goods traded. This issue is interesting for a number of reasons. Hummels and Klenow (2005), for example, argue that to the extent that larger countries export more, the impact of their higher exports on welfare will depend upon whether this is due to an increase in variety or an increase in the volume of each good. In particular, if higher export volumes are due to the intensive margin, then the prices of the country's exports would be expected to be lower, with a consequent reduction of welfare for larger countries. If, on the other hand, larger countries' higher exports were due to the extensive margin, then there is no need for their export prices to be lower or their welfare to be lowered. Exporting a wider variety of products may also lead to gains from trade and increased growth by increasing the size of the market, which may encourage learning by doing and increase the returns to innovation (see Funke and Ruhwedel, 2002). Feenstra and Kee (2008) have recently shown that the

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<sup>19</sup> This chapter is a summary of the research paper written by Neil Foster in the framework of this project, see Foster (2011).

variety of exports is also related empirically to country productivity. Their theoretical model relates to the recent literature on heterogeneous firms, with firms self-selecting into export markets. Since more productive firms self-select into export markets and are thus more productive than the average domestic firm, an increase in the number of firms exporting and therefore an increase in export variety is associated with rising productivity.

To address these issues we employ a gravity equation of the form:

$$EXP_{jmt} = \sum_{z=1}^Z \beta_z Gravity_{z\ rct} + \delta_1 VISEGRAD_{rct} + \delta_2 EU15_{rct} + \delta_3 OTHEU_{rct} + \varepsilon_{rct}$$

where *EXP* refers to the level of (bilateral) exports or to a measure of export volume (*VOL*) or variety (*VAR*) (the latter two variables constructed using the methodology of Feenstra, 1994 and Hummels and Klenow, 2005), *Gravity* refers to standard gravity determinants (which include distance, the level of GDP of exporter and importer, common border dummy, etc.), *VISEGRAD* is a dummy equal to one if countries *j* and *m* are both in Visegrad, *EU15* is a dummy equal to one if both countries are in the EU-15, while *OTHEU* is a dummy equal to one if both exporter and importer are in the remaining group of 10 accession countries. The model as specified will allow us to examine whether exports and the margins have developed differently for different country groupings, after controlling for standard gravity determinants of trade. The excluded (comparison) group will be bilateral trade flows between members of different blocs (e.g. an EU-15 country trading with a Visegrad country and so on). Introducing interaction terms between the bloc dummies and a dummy variable for the post-accession period (*POST*) will allow us to examine whether the development of the margins for the different bilateral relationships behaved differently before and after accession.

Table 3.1 reports a selection of the results from estimating this model on data for the EU-25 countries over the period 1999-2007. Coefficients on the gravity determinants in Column (1) are largely as expected with distance found to lower bilateral exports and a common language and border found to enhance bilateral exports. The GDP of the importer and exporter have positive impacts on the level of exports, as expected. These results are largely similar when one considers the measure of the volume (*VOL*) of trade in Column (2) and the measure of the variety (*VAR*) of trade in Column (3). Turning to the coefficients on the bloc dummies, we observe positive and significant coefficients on the bloc dummies for intra-Visegrad (*INTRA – VISEGRAD*) exports and for exports among other new entrants (*INTRA – OTHNEWEU*), indicating that exports between countries from these blocs have been higher than would have been expected by the gravity model over the entire period. The results when considering the volume and variety of exports indicate that the higher exports among Visegrad and other new members of the EU have occurred largely through an increase in the variety of goods exported, and not through an increase in the volume of goods exported, with the coefficients on the bloc dummies when considering the volume of exports being either insignificant or negative. Finally, we consider whether there have been

any significant changes in intra-bloc exports post-accession by considering the coefficients on the interaction of the bloc dummy with the post-accession dummy. Results from Column (1) indicate that there has been no significant change in exports post-accession for Visegrad and new member states (after controlling for standard gravity variables), though there is some evidence of a decline in exports among old EU members. Considering the volume and variety of goods traded we observe that while there have been no significant changes in volume and variety for any of the blocs post-accession, we find some evidence indicating that the volume of existing products exported has increased slightly post-accession for Visegrad and new member states.

Table 3.1

**Selected results from the Gravity Model**

VARIABLES	(1) <i>EXP</i>	(2) <i>VOL</i>	(3) <i>VAR</i>
<i>LDIST</i>	-1.112*** (0.0262)	-0.0290*** (0.00247)	-0.150*** (0.00347)
<i>COMBORD</i>	0.217*** (0.0528)	0.0545*** (0.00474)	0.0439*** (0.00757)
<i>COMLANG</i>	0.424*** (0.0809)	0.0365*** (0.00674)	0.0587*** (0.0108)
<i>LOCK</i>	2.348 (7.864)	0.0360 (0.462)	1.557 (0.953)
<i>LGDP – EXP</i>	0.852*** (0.137)	0.0133 (0.00827)	0.0380** (0.0159)
<i>LGDP – IMP</i>	0.775*** (0.136)	-0.00993 (0.00852)	0.0749*** (0.0158)
<i>LPOP – EXP</i>	-1.716** (0.801)	-0.0125 (0.0360)	-0.324*** (0.0802)
<i>LPOP – IMP</i>	0.0986 (0.747)	0.0149 (0.0505)	-0.0439 (0.0943)
<i>INTRA – EU15</i>	0.0550 (0.0617)	0.000341 (0.00265)	-0.00188 (0.00625)
<i>INTRA – VISEGRAD</i>	0.943*** (0.108)	-0.00696 (0.00803)	0.208*** (0.0149)
<i>INTRA – OTHNEWEU</i>	0.818*** (0.184)	-0.0235*** (0.00456)	0.221*** (0.0169)
<i>INTRA – EU15 × POST</i>	-0.120** (0.0521)	0.00109 (0.00319)	-0.00729 (0.00611)
<i>INTRA – VISEGRAD × POST</i>	0.145 (0.124)	0.0204* (0.0112)	0.000867 (0.0182)
<i>INTRA – OTHEU × POST</i>	0.254 (0.255)	0.0280*** (0.00954)	-0.0229 (0.0254)
Year dummies	Yes	Yes	Yes
Exporter dummies	Yes	Yes	Yes
Importer dummies	Yes	Yes	Yes
Observations	4,945	4,945	4,945
R-squared	0.999	0.812	0.978
F-test	128415***	347.4***	5032***

Robust standard errors in parentheses

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

Overall, our results suggest that, while exports among Visegrad and new member states have been higher than other exports, there was no effect of accession on such exports (after controlling for standard gravity determinants). Our results, therefore, would tend to support the view that the relatively strong growth of exports among accession countries is due to a natural realignment of exports and to the relatively stronger performance of these economies when compared with the old members of the EU. Our results further show that the increase in exports among Visegrad and other new member states has occurred mainly through an increase in the variety of goods exported, with some (limited) evidence indicating that the volume of existing products traded may have increased post-accession.

#### **4. The role of services in trade revival<sup>20</sup>**

##### ***4.1 Trends in trade and FDI in services in Visegrad countries***

The importance of services for the Visegrad economies is revealed by the fact that services account for more than 60% of gross value-added of the Visegrad countries, and also for more than 60% of total inward FDI stock in the region. Most of the FDI is concentrated in business services, financial intermediation, and telecommunications, and the EU-15 remains the biggest foreign investor in the region, accounting for more than 80% of the FDI stock. Though trade in services<sup>21</sup> accounted for 10-16% of total foreign trade of countries in the region in 2007, which is lower than the EU-15 share (23%), the growth of services trade has been speeding up in the region during 2004-2007: the average rate of services exports growth during this period was 2-3 times higher than during 1997-2003; services imports sped up as well (see Figures 4.1-4.4). The Slovak Republic and Poland experienced the most dynamic services trade growth during that period: average annual growth of services exports was 28% and 27% respectively, for imports this indicator reached 25% and 26% respectively.

Services exports value of individual Visegrad economies is proportional to their GDP size, with Poland being the biggest services exporter in the region, and the Slovak Republic being the smallest one. The same holds for services imports. Services trade of Visegrad countries is concentrated first of all on the EU, with the EU-15 being the primary partner. In total, the EU accounts for about 64-74% of services exports, and for 54-64% of services imports of the region. Similarly to merchandise trade, services trade within the Visegrad region was growing faster than with the EU-15 during 2004-2007.

With regard to the sectoral structure of services trade, we distinguish between two groups of services: (1) traditional services (transport, travel), and (2) producer services (such as

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<sup>20</sup> This chapter is the summary of the research paper written by Olga Pindyuk in the framework of this project, see Pindyuk (2011).

<sup>21</sup> According to BOP statistics, which cover modes 1 and 2 of trade in services – cross-border trade and movement of consumers.

financial intermediation, insurance, communication, other business services). The region experienced noticeable changes over time in 1995-2007. The share of travel services in exports decreased in the period 1997-2007, in line with the global trends; nevertheless, this sector's share still remains the biggest. Exports of transport services, the second biggest sector, in contrast to the average world trend, were increasing their share – probably reflecting fast growth in merchandise exports. Overall, the shares of these two sectors are about 5 percentage points higher each than the shares of these sectors in world trade.

The share of other business services in Visegrad exports is 22%, 3 percentage points lower than on average in the world, and has been somewhat decreasing recently. Financial services exports have been quite low – the share of the sector in services exports is only 2% as compared to 8% in global trade. Instead, Visegrad countries have a quite high share of royalties and licence fees in their services exports, at par with the average world level. This sector's exports have had quite dynamic growth during the past 10 years. Another sector that has been gaining importance in exports is computer and information services. Instead, the construction and insurance sectors have been losing shares in exports.

The structure and trends in Visegrad services imports mirror those of services exports. Travel and transports services are over-represented compared to the average world trade structure, though the share of travel services has been declining. The share of other business services in imports, though 2 percentage points higher than in exports, has also been falling. The shares of financial and insurance services are quite low relative to world trade.

However, aggregating Visegrad countries may hide some individual characteristics of those countries with respect to services trade. The structures of services trade by individual countries used to be very different in the past and still remain quite different, though there is a tendency for the structures to converge. In 1997, among the Visegrad countries, Hungary specialized most in travel services: the share of this sector in services exports was 63%. Around 35% of services exports of Poland and the Slovak Republic were in transports services – as compared with 8% in Hungary and 19% in the Czech Republic. The Slovak Republic tended to specialize most in other business services exports (25% share). With regard to imports, in 1997 Poland had the highest share of transport services (27%), while the Czech Republic outperformed with respect to travel services imports (52% share). The Slovak Republic had the highest share of other business services imports (43%).

By 2007, the Visegrad countries show more similar structures of services trade, though still with some differences. Poland has the highest shares of transports and travel in services exports among the four countries (the share of travel services is also high in the Czech Republic). Overall these shares vary from 19% to 30% for transport services, and from 26% to 34% for travel services. Other business services account for about 20% of services

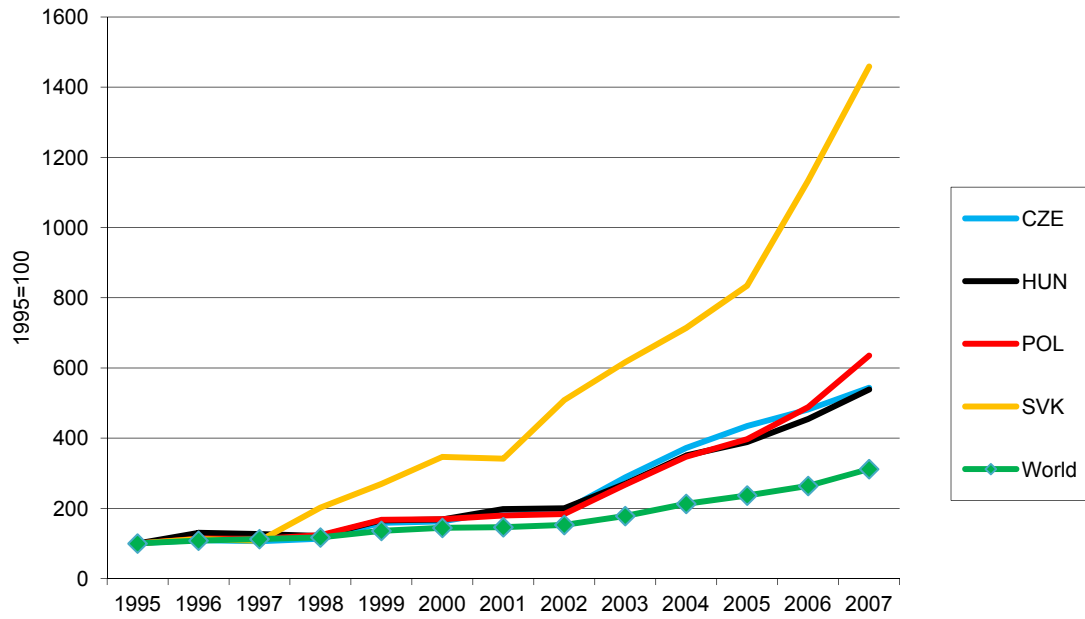
exports in all the countries, except for Hungary with a 31% share. The share of financial services is low in all the countries (1-5%, the highest share in the Slovak Republic). The shares of royalties and licence fees differ from 3% in the Czech Republic to 10% in Hungary.

In services imports, the structures are similar to those of exports, with transport and travel services having the biggest shares (only in Hungary and the Slovak Republic are other business services the biggest import sector with 30% shares).



Figure 4.1

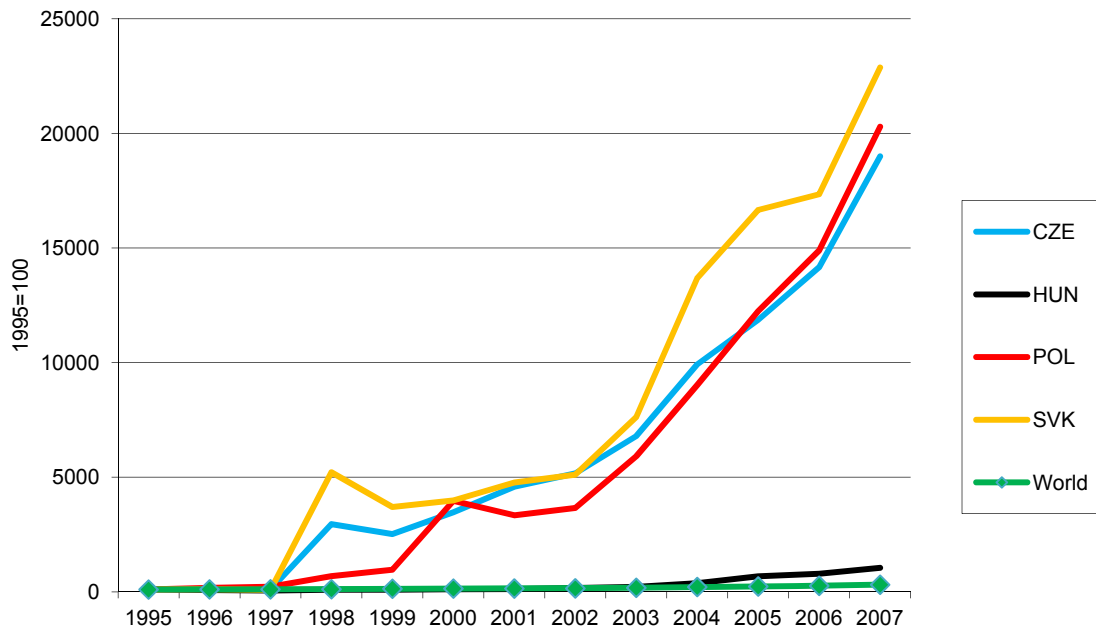
**Index of services export to the EU-15 in 1995-2007, 1995 = 100**



Source: TSD<sup>22</sup>, author's calculations.

Figure 4.2

**Index of services export to Visegrad in 1995-2007, 1995 = 100**

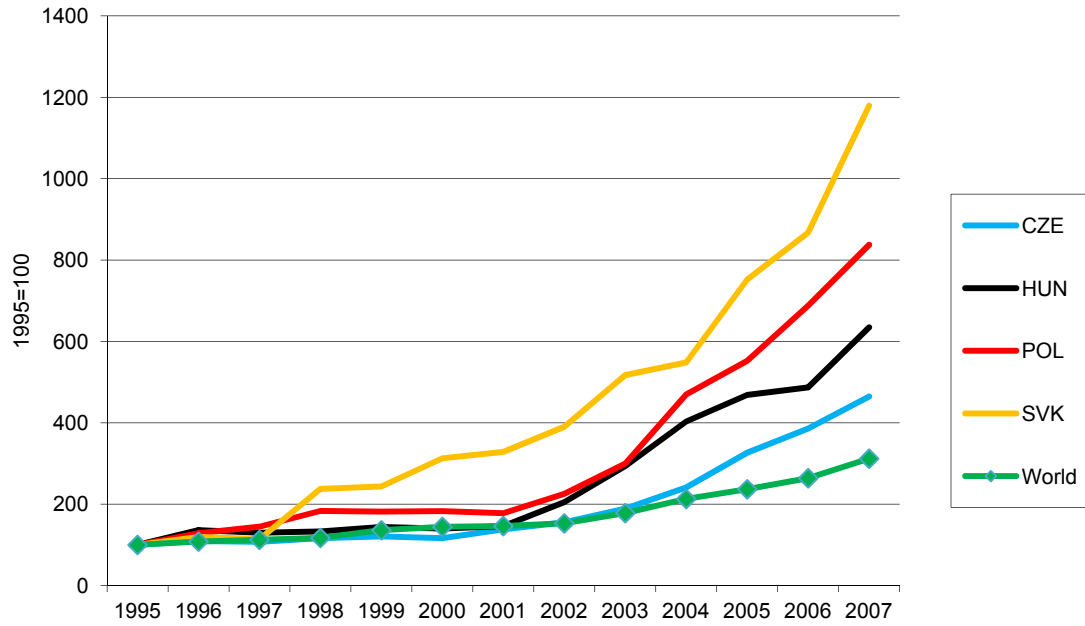


Source: TSD, author's calculations.

<sup>22</sup> See Francois, Pindyuk and Wörz (2009) for more details on the dataset.

Figure 4.3

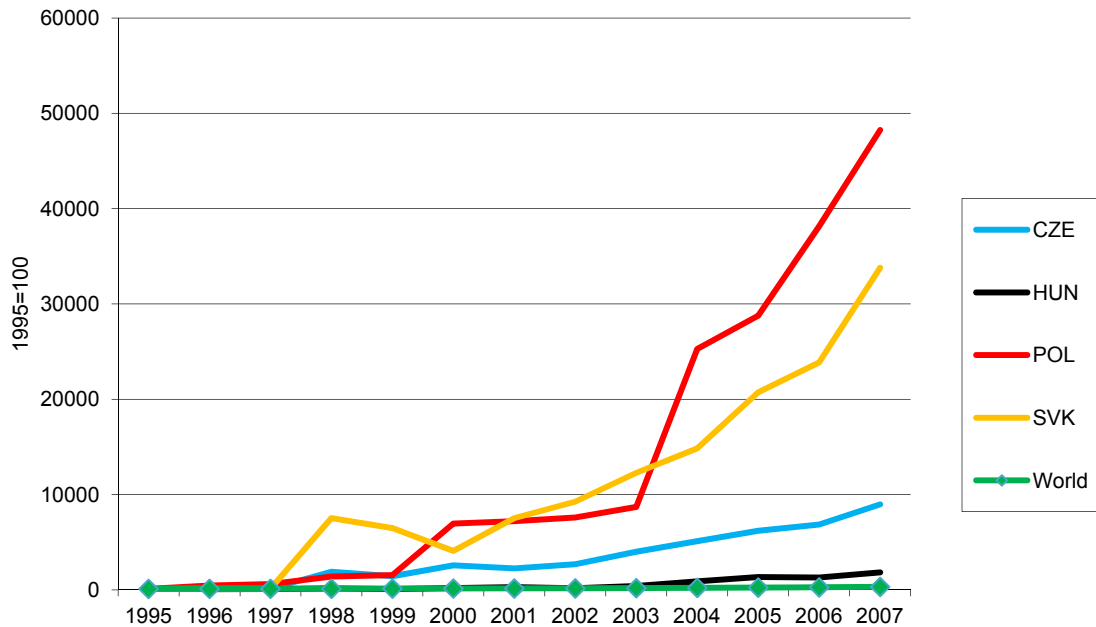
**Index of services import from the EU-15 in 1995-2007, 1995 = 100**



Source: TSD, author's calculations.

Figure 4.4

**Index of services import from Visegrad in 1995-2007, 1995 = 100**



Source: TSD, author's calculations.

## 4.2 Patterns of specialization

We used the Revealed Comparative Advantage index (RCA) to investigate in what services Visegrad countries specialize, whether Visegrad countries exhibit similar or different comparative advantages on the world market and two main regional markets – EU-15 and Visegrad<sup>23</sup>, and how the specialization patterns changed over time in 1997-2007.

The index for country *i* and good *j* is

$$RCA_{ij} = (X_{ij} / X_{it}) / (X_{wj} / X_{wt})$$

where

w = world

t = total for all services.

RCA does not determine the true comparative advantages, but simply compares the composition of exports of one country to a certain market with the composition of total exports that are absorbed by the market. A country is considered to have a revealed comparative advantage in a certain type of services if the value of the RCA index for this sector is higher than 1. RCA indices are presented in Tables 4.1-4.4.

The analysis of RCA indices reveals that the pattern of RCA has been changing over time, which can be expected taking into account the significant sectoral shifts in services trade of Visegrad countries. All the Visegrad countries seem to specialize in telecommunications services, which is not surprising given recent trends of creating offshore call centres. Also all the countries apart from Hungary tend to specialize in transport services. Hungary is the only country among the four which specializes in other business services – and this specialization was developed in the post-accession period. In contrast, the Czech Republic and the Slovak Republic used to have specialization in other business services prior to 2004, but they have lost it. Hungary and the Slovak Republic also developed specialization in royalties after 2004. The Czech Republic stands out among the Visegrad countries by having high RCAs in travel and computer services (specialization in the latter developed after 2004), while Poland is the only country among the four which has high RCA in insurance services. Poland and the Slovak Republic also specialize in construction services.

A comparison of specialization patterns vs. the EU-15 and the Visegrad Group shows that the Czech Republic has revealed comparative advantages in royalties and insurance services compared to both regions. In addition, it has high RCA in financial, other business and computer services as compared with the Visegrad countries. For Hungary the pattern of specialization is the same in comparison to the EU-15 and the Visegrad countries. Poland has additional revealed comparative advantages in travel services compared to both

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<sup>23</sup> The formula for the RCA is modified: instead of world exports, exports of the EU-15 and the Visegrad Group respectively are used in the denominator.

Table 4.1

**Revealed comparative advantages of the Czech Republic in services  
compared to the EU-15 and the Visegrad Group**

BOP		Visegrad		EU15		Visegrad		EU15		Visegrad		EU15	
code	Sector name	1996	1996	1999	1999	2002	2002	2005	2005	2007	2007	2007	2007
205	Transport	<b>1.2</b>	1.0	1.0	1.0	0.9	<b>1.1</b>	1.0	<b>1.1</b>	0.8	1.0		
236	Travel	0.7	1.0	0.7	0.9	0.7	1.0	0.9	1.0	0.8	1.0		
260	Financial	<b>1.8</b>	0.8	<b>1.6</b>	0.9	<b>1.4</b>	0.8	<b>1.3</b>	0.8	<b>3.2</b>	0.8		
266	Royalties and license fees	<b>9.5</b>	<b>1.5</b>	<b>1.6</b>	<b>1.3</b>	<b>1.6</b>	<b>1.3</b>	<b>1.2</b>	<b>1.1</b>	<b>1.1</b>	<b>1.2</b>		
268	Other business services	<b>1.2</b>	0.9	0.9	1.0	1.0	0.9	<b>1.1</b>	0.9	<b>1.1</b>	0.9		
245	Post & telecommunication	<b>1.2</b>	<b>1.3</b>	0.6	<b>1.1</b>	1.0	0.9	0.9	0.8	0.9	0.9		
249	Construction	0.3	0.8	0.7	0.9	0.6	0.9	0.5	0.9	0.7	1.0		
253	Insurance	1.0	0.8	0.7	<b>1.2</b>	<b>1.7</b>	<b>1.1</b>	<b>1.9</b>	<b>1.3</b>	<b>2.6</b>	<b>1.2</b>		
262	Computer & Information	<b>1.4</b>	0.8	<b>1.2</b>	0.8	<b>1.4</b>	0.8	<b>1.2</b>	0.8	<b>1.2</b>	0.9		

Source: TSD, author's calculations.

Table 4.2

**Revealed comparative advantages of Hungary in services  
compared to the EU-15 and the Visegrad Group**

BOP		Visegrad		EU15		Visegrad		EU15		Visegrad		EU15	
code	Sector name	1996	1996	1999	1999	2002	2002	2005	2005	2007	2007	2007	2007
205	Transport	0.3	0.3	0.5	0.5	0.5	0.7	0.7	0.8	0.6	0.8		
236	Travel	<b>1.3</b>	<b>1.9</b>	<b>1.4</b>	<b>1.7</b>	<b>1.2</b>	<b>1.5</b>	<b>0.9</b>	<b>1.1</b>	0.8	1.0		
260	Financial	<b>1.4</b>	0.6	<b>1.1</b>	0.6	0.5	0.3	0.3	0.2	0.7	0.2		
266	Royalties and license fees	<b>1.6</b>	0.2	<b>1.4</b>	<b>1.1</b>	<b>1.4</b>	<b>1.1</b>	<b>1.6</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>		
268	Other business services	<b>1.6</b>	<b>1.3</b>	1.0	<b>1.1</b>	1.0	0.9	<b>1.3</b>	<b>1.1</b>	<b>1.3</b>	<b>1.1</b>		
245	Post & telecommunication	0.4	0.5	0.5	0.8	0.7	0.7	<b>1.1</b>	1.0	<b>1.1</b>	<b>1.1</b>		
249	Construction	0.2	0.5	0.8	<b>1.1</b>	0.9	<b>1.4</b>	<b>1.5</b>	<b>2.6</b>	0.6	1.0		
253	Insurance	0.2	0.1	0.4	0.7	0.8	0.5	0.9	0.6	0.9	0.4		
262	Computer & Information	<b>1.9</b>	<b>1.1</b>	<b>1.2</b>	0.8	1.0	0.6	<b>1.1</b>	0.7	1.0	0.7		

Source: TSD, author's calculations.

Table 4.3

**Revealed comparative advantages of Poland in services  
compared to the EU-15 and the Visegrad Group**

BOP		Visegrad		EU15		Visegrad		EU15		Visegrad		EU15	
code	Sector name	1996	1996	1999	1999	2002	2002	2005	2005	2007	2007	2007	2007
205	Transport	<b>1.4</b>	<b>1.2</b>	<b>1.2</b>	<b>1.3</b>	<b>1.2</b>	<b>1.5</b>	<b>1.4</b>	<b>1.5</b>	<b>1.1</b>	<b>1.4</b>		
236	Travel	0.7	1.0	0.8	1.0	1.0	<b>1.3</b>	<b>1.1</b>	<b>1.3</b>	<b>1.1</b>	<b>1.4</b>		
260	Financial	0.9	0.4	0.7	0.4	0.5	0.3	0.5	0.3	0.6	0.2		
266	Royalties and license fees	0.5	0.1	<b>1.5</b>	<b>1.2</b>	<b>1.4</b>	<b>1.1</b>	<b>1.2</b>	<b>1.1</b>	0.9	1.0		
268	Other business services	0.6	0.4	0.8	0.9	0.8	0.7	0.9	0.7	0.9	0.7		
245	Post & telecommunication	<b>1.9</b>	<b>2.1</b>	<b>2.0</b>	<b>3.6</b>	0.8	0.7	0.9	0.8	0.9	0.9		
249	Construction	<b>1.9</b>	<b>4.1</b>	<b>1.2</b>	<b>1.7</b>	<b>1.5</b>	<b>2.4</b>	<b>1.4</b>	<b>2.3</b>	<b>1.6</b>	<b>2.4</b>		
253	Insurance	<b>2.5</b>	<b>2.1</b>	<b>2.1</b>	<b>3.7</b>	<b>1.4</b>	0.9	<b>1.4</b>	0.9	<b>1.2</b>	0.6		
262	Computer & Information	0.9	0.5	0.8	0.6	1.0	0.6	0.7	0.5	0.7	0.5		

Source: TSD, author's calculations.

Table 4.4

**Revealed comparative advantages of the Slovak Republic in services  
compared to the EU-15 and the Visegrad Group**

BOP		Visegrad		EU15		Visegrad		EU15		Visegrad		EU15	
code	Sector name	1996	1996	1999	1999	2002	2002	2005	2005	2007	2007	2007	2007
205	Transport	<b>1.6</b>	<b>1.4</b>	<b>1.7</b>	<b>1.8</b>	<b>1.6</b>	<b>1.9</b>	0.8	0.8	0.9	<b>1.1</b>		
236	Travel	0.7	<b>1.1</b>	0.6	0.7	0.6	0.8	0.7	0.8	0.7	0.9		
260	Financial	<b>2.1</b>	0.9	<b>1.1</b>	0.6	<b>1.2</b>	0.7	<b>2.9</b>	<b>1.7</b>	<b>2.2</b>	0.5		
266	Royalties and license fees	<b>1.8</b>	0.3	0.7	0.6	0.6	0.5	0.9	0.9	<b>1.2</b>	<b>1.3</b>		
268	Other business services	<b>1.1</b>	0.9	<b>1.2</b>	<b>1.3</b>	<b>1.2</b>	1.0	0.8	0.7	0.8	0.6		
245	Post & telecommunication	0.6	0.6	0.8	<b>1.4</b>	0.9	0.8	0.7	0.6	<b>1.1</b>	<b>1.1</b>		
249	Construction	0.6	<b>1.3</b>	<b>1.3</b>	<b>1.8</b>	0.6	0.9	0.6	1.0	1.0	<b>1.5</b>		
253	Insurance	0.1	0.1	0.3	0.5	0.8	0.5	0.7	0.5	1.0	0.4		
262	Computer & Information	0.5	0.3	1.3	0.8	<b>1.1</b>	0.7	0.6	0.4	0.7	0.5		

Source: TSD, author's calculations.

the EU-15 and Visegrad countries; specialization in insurance services is revealed only in comparison to the Visegrad Group. The Slovak Republic shows specialization in construction only compared to the EU-15, while compared to the other Visegrad countries it has additional specialization in financial services.

### 4.3 Trends in FDI in services

The stock of FDI in producer services has been growing fast in all the four countries, though at a quite different pace. The Slovak Republic and Poland increased their stocks of FDI in producer services by 18 and 15 times respectively during 1997-2007, while in the Czech Republic and Poland the increase was only by 8 and 4 times respectively.

The structures of the FDI stock also differ by countries: Hungary has the highest share of FDI in other business services (49% vs., for example, 28% in the Slovak Republic), while the Slovak Republic has the highest share of FDI in financial intermediation (56% vs., for example, 32% in Hungary). The shares of FDI in transport and communications do not vary that much (from 16% in the Slovak Republic to 20% in the Czech Republic).

### 4.4 The impact of producer services on manufacturing exports

We estimated the impact of service linkages (measured by the service intensity of industries) on Visegrad manufacturing exports. As part of the estimation, we checked for differences in the importance of service linkages for intra- and extra-Visegrad exports, and whether there has been an increase in service intensity of exporting sectors during the post-accession period. The service intensity of manufacturing sectors of Visegrad countries was estimated taking into account both direct and indirect (when services are bought by

one manufacturing sector and then sold downstream to another sector) input demand of a given sector.

The manufacturing sectors of Visegrad countries appear to have quite different service intensities, the difference being more profound in technology-intensive industries. Hungary and Poland tend to have significantly higher service intensities than the Czech Republic and the Slovak Republic. Apart from the Czech Republic, where the service intensity of technology-intensive industries has been falling over recent years, the other countries seem to level out in terms of service intensity.

The results of our regression analysis show that the level of services imports is still too low to cause any significant productivity changes that would influence merchandise export dynamics. The Czech Republic and Hungary seem to have more developed linkages between services imports and manufacturing exports than Poland and the Slovak Republic.

The importance of services for the export performance is shown to depend on the level of development; with the move from middle-income to upper-income countries, producer services become increasingly more important for the export performance through inter-industry linkages. Thus our results might indicate an insufficient level of development of Visegrad countries yet, which prevents them from using services more efficiently.

## **5. FDI among the Visegrad countries<sup>24</sup>**

The Visegrad countries embarked on an FDI-assisted economic growth strategy in the late 1990s at the latest. Hungary introduced this policy already at the beginning of the decade by providing investment incentives and targeting foreign investors in the privatization process. The other countries followed later but by 2000 all four countries became significant receivers of FDI. Most of the FDI came from the EU-15 and went both into efficiency-seeking manufacturing subsidiaries and local market-oriented trade, telecommunications and financial services. Trade integration and an upgrading of export structures were the outcome of the resulting corporate integration process.

Capital account liberalization allowed foreign companies to invest in these countries well before EU enlargement. The rules for attracting FDI were harmonized by applying the common EU competition rules, and discretionary incentives were phased out. In the early 2000s already, investment decisions took into consideration the forthcoming EU membership. Also the rather long preparation period of an FDI decision suggests that the accession date in itself would not have changed investors' behaviour. Related studies did not

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<sup>24</sup> This chapter is the summary of the research paper written by Gábor Hunya in the framework of this project, see Hunya (2011).

find any dramatic changes in the intensity of FDI flows due to enlargement (Kalotay, 2006). What has most probably changed in the wake of enlargement was the specialization of subsidiaries. A rationalization of subsidiaries took place to fewer locations serving several countries in the region (Bellak and Narula, 2009).

A closer look at the bilateral FDI flows reveals diverging tendencies in the four countries. The amount of total FDI inflow was higher after accession than before – only marginally in Slovakia, very much so in Poland (Table 5.1). The inflow from the Visegrad countries was approximately equal in the two periods, but there were important differences between the individual countries. Both the Visegrad Group’s FDI inflow volume and its share in total inflow increased in the Czech Republic and in Poland, stayed at roughly the same level in Hungary and declined in Slovakia. The Czech Republic and Slovakia remained the most significant targets of intra-Visegrad FDI both before and after enlargement.

Table 5.1

**FDI inflows to the Visegrad countries in the pre-accession period (2000-2003, cumulated) and the post-accession period (2004-2007, cumulated) by host country**

	Czech Rep.		Hungary		Poland		Slovakia	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Total, EUR billion	22.6	25.8	12.5	19.4	25.1	51.6	10.2	10.6
Visegrad, EUR billion	0.47	1.82	0.05	0.05	0.07	0.33	2.82	1.51
Visegrad, in % of total	2.1	7.1	0.4	0.3	0.3	0.6	27.6	14.2

Source: wiiw Database on FDI, relying on National Bank data of the respective countries.

Table 5.2

**FDI outflows from the Visegrad countries in the pre-accession period (2000-2003, cumulated) and the post-accession period (2004-2007, cumulated) by home country**

	Czech Rep.		Hungary		Poland		Slovakia	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Total, EUR billion	0.63	3.16	2.82	8.42	0.42	14.7	0.44	0.95
Visegrad, EUR billion	0.19	0.86	0.68	0.81	0.02	1.12	0.13	0.09
Visegrad, in % of total	30.2	27.2	24.1	9.6	4.8	7.6	29.5	9.5

Source: wiiw Database on FDI, relying on National Bank data of the respective countries.

In terms of FDI outflow, all Visegrad countries invested significantly higher amounts in the post-accession period than before (see Table 5.2). Outflows to the other Visegrad countries increased significantly from the Czech Republic and Poland, less so from Hungary, and it declined from Slovakia. The largest investor in the post-accession period became Poland, followed by the Czech Republic and Hungary. In the pre-accession period FDI in the Visegrad countries made up a large part of the FDI outflows from the Czech Republic, Hun-

gary and Slovakia but in the post-accession period they retained a significant share only in the case of the Czech Republic. Except for Poland, emerging from a very low share, the importance of FDI into Visegrad countries diminished in the outward FDI of the four countries.

FDI stock changes reveal essentially the same trends as cumulated outflow data but, in addition, allow to analyse FDI by economic activity. Inward FDI stocks from the Visegrad countries were very low in the Czech Republic, Hungary and Poland although their shares in the total inward stocks increased between 2003 and 2007 (see Table 5.3). In Slovakia, a high but declining share of Visegrad stocks was registered. As to the outward FDI stock of the Visegrad countries, these increased significantly in nominal EUR terms but with declining shares in the total in the case of the Czech Republic and Hungary (28-30%). From Poland and Slovakia increasing shares of the outward FDI stocks were located in the region. For Slovakia the other three Visegrad countries represent the overwhelming part of the outward FDI stock while this regional specialization is weak for Poland.

Table 5.3

**Share of the Visegrad countries in the FDI stocks of Visegrad countries**

(in %)

	Inward FDI stock		Outward FDI stock	
	2003	2007	2003	2007
<b>Czech Republic</b>	1.6	3.8	32.5	29.7
<b>Hungary</b>	0.0	0.2	28.7	28.0
<b>Poland</b>	0.4	0.6	4.8	8.6
<b>Slovakia</b>	17.9	11.7	58.8	66.6

Source: wiiw Database on FDI, relying on National Bank data of the respective countries.

As to the activity composition of the mutual FDI stock, this is not available for all bilateral relations; it is most complete for the Czech Republic and Hungary. The trends emerging from the (incomplete) data are the following:

- In the Czech Republic, the Hungarian FDI stock increased significantly and the share of the most important activity, the chemical industry, rose from 33% in 2003 to 46% in 2007. After EU enlargement FDI became more diverse in, and more concentrated on, the manufacturing activities than before. More than 80% of the FDI stock from Poland in the Czech Republic went into other business activities (NACE 72) which are usually holding companies with no real activity in the host economy. From Slovakia FDI was spread across several activities with the highest weights in trade, mechanical engineering and construction. This diversity indicates a high level of integration between the two countries on the corporate level which may also be reflected in intensive trade activities.
- In Hungary, the FDI stock from the Visegrad countries concentrates in trade and other services; in the FDI from Slovakia also the production of construction material is significant.



- The main targets of Hungarian outward FDI in the Czech Republic are the chemical industry, hotels and restaurants; in Poland the chemical and the paper industries; and in Slovakia manufacturing, which dominated both before and after EU accession.
- Foreign direct investments in tradable sectors comprise a significant part of Visegrad Group FDI, but it is not clear whether they really have a trade creation effect. Most activities in mutual FDI show low potential trade creation, including the production of construction materials, chemicals and the construction industry. The industrial sectors known for international cooperation such as the automotive or the electronics industries are hardly present. Car producers in the region are subsidiaries themselves which often distribute and repair their products through own subsidiaries but do not invest in production abroad.

FDI in less capital-intensive activities may have some significance that does not show in the invested amounts analysed above. In order to broaden the picture beyond invested capital, one may look at various characteristics of the investment projects. The EURO-STAT FATS data reveal that high number of investment projects and high production values characterize the mutual relationship between the Czech Republic and Slovakia. While the number of Czech projects in Slovakia increased from a low level between 2003 and 2006, the number of Slovak projects in the Czech Republic declined somewhat but remained rather high. Employment in foreign affiliates shows again the major significance of Slovakia for the Czech Republic and vice versa. Polish investments in the Czech Republic or Hungarian investments in Slovakia, on the other hand, are not very numerous but have both large production value and employment.

Table 5.4

**Number of investment projects from Visegrad countries by host country**

	Czech Republic	Hungary	Poland	Slovakia
2003	1	1	1	7
2004	3	1	7	4
2005	4	1	1	7
2006	3	5	3	7
2007	5	3	5	5

Source: <http://www.fdimarkets.com>.

Available data from the *fDimarkets* database suggest that a small number of large investments were created as takeovers and a somewhat larger number of smaller investments were made in new greenfield projects (see Table 5.4). In 2003 only one greenfield project by companies from the other Visegrad countries was announced in the Czech Republic, Hungary and Poland each. Slovakia received more, 7 projects, mainly from the Czech Republic, confirming the special relationship between the two countries already presented above. Following enlargement the annual number of new projects remained roughly con-

stant in Slovakia while it increased in the other three countries albeit unevenly. In 2006 and 2007 (also in 2008) the annual number of new projects was 3 to 5, higher than before. On the whole, we have a rather small number of new projects, 18 in each of the last two years of the post-accession period.

The reported value per investment project did not change much during the post-accession period but its annual value was two times higher than in 2003. In 2004-2007 there were altogether 49 investors of which 13 made at least 2 projects. There were 64 projects for which the business activity of the subsidiary is available, showing that almost half of the projects were set up in sales and retail. The 13 manufacturing projects are mainly Czech investments in Slovakia, in a smaller number Slovak investments in the Czech Republic. The prevalence of trade- and real estate-related projects indicates the low significance of greenfield projects for international trade. Such projects may generate some imports but no exports in the host country.

All FDI-related information outlined above reveals that while total FDI in the Visegrad Group had a trade-enhancing effect, this cannot be identified for the FDI these countries made in each other. Sectoral FDI data indicate that a higher than average share of mutual FDI went into the tradable sectors with potential trade effect but mainly with the aim to sell on the host market. The exception is the bilateral relation between the Czech Republic and Slovakia, which has historical reasons and is not related to EU enlargement. Market seeking is also the dominant answer of investors to the question concerning the motivation for their new investment project (see <http://www.fdimarkets.com>). This type of FDI may generate some imports for the host economy but does not lead to more exports while for the home country it may generate some exports.

The reason for relatively low FDI and low FDI-related trade creation among Visegrad countries may lie in the lack of potential investors. According to the theory of the multinational enterprise, FDI flows to a country are determined by the interaction of a set of firm-specific and country-specific factors. Companies can expand and invest abroad if they possess firm-specific competitive advantages that they can use against their competitors (Caves, 1996). Firm-specific advantages are developed within the firm and transferred from the firm's home country to other countries into the subsidiaries of the firm. Location-specific advantages, on the other hand, are immobile, related to the host country.

The question is whether there exist domestic companies in the individual Visegrad countries that have the firm-specific advantages to invest abroad. Basically there are very few multinationals in these countries. The transformation shocks, the privatization of former state-owned enterprises and foreign takeovers have left relatively few medium-sized and large companies in domestic ownership. The banking sector became almost completely

foreign owned, the manufacturing sector also to a large extent. Thus the pool of companies with firm-specific advantages that could be exploited by FDI is rather limited.

The activity composition and firm-specific information reveal that FDI stocks have increased after EU enlargement in very specific activities related to single multinational companies of the individual countries. In Hungary's outward FDI, for example, the oil company MOL and the commercial bank OTP are the main investors. In addition, the pharmaceutical company Gedeon Richter and the chemical industry enterprise BorsodChem can be mentioned. These are all former state-owned enterprises which were not privatized to a foreign owner but through the stock exchange to diverse investors. Also the Czech energy giant CEZ has widespread activities internationally.

As to location-specific advantages, the Visegrad countries are quite similar to each other in terms of production cost level and doing business conditions. The application of the acquis and joining the EU made them even more similar to each other. From an efficiency-seeking point of view these countries are no good FDI options for each other; comparative advantage cannot be augmented. Therefore it makes little sense for the firms operating in one of the Visegrad countries to locate production in another country of the Visegrad region with the aim of lower sourcing costs and exports to third countries.

While one cannot find a connection between mutual trade upswing and mutual FDI upswing in the Visegrad Group, exports on the whole were supported by FDI. Export data are available for the Czech-controlled enterprises in the other three countries (FATS statistics: majority Czech-owned enterprises) in the year 2007. These show that affiliates owned by Visegrad investors are less export-oriented than the foreign sector in general. The export per turnover ratio for Czech outward investments was 14% globally. It was only 3% for Czech subsidiaries in Hungary and 13% in Poland. At the same time it was especially high, 28%, in Slovakia reflecting the special relationship between the two countries.

For Hungary one can rely on export data from the Central Statistical Office database referring to foreign investment enterprises (FIEs) with 10% or more foreign ownership. These show that FIEs are the dominant exporter of the country in general. Their share in total exports declined from the 2001 peak of 81% to 76% in 2004 and 68% in 2008. For the latter year only, also the share of FIEs in exports to the Visegrad countries could be calculated. This was with 60% significantly lower than in the case of total exports. While most of the companies exporting to the Visegrad countries are the same FIEs which dominate Hungarian exports in general, one can identify a broader than average room for domestic enterprises. Similarly to Hungary, Polish exports are also produced mainly by FIEs, over 70% in 2006 and 2008 (Central Statistical Office, 2010). Thus FDI in general is export enhancing but it follows more the hub and spoke relationship with the EU-15 than trade.

## 6. Conclusions and policy recommendations<sup>25</sup>

From the perspective of the past two decades, intra-regional trade of the Visegrad countries has been a success story since these countries' accession to the EU. After the collapse of the volume and the de-sophistication in the composition of mutual trade in the early 1990s, a spectacular revival followed. Three years after EU accession the relative significance of intra-Visegrad trade attained the level it once had back in 1985. The fundamental difference, however, is that in the 1980s that level was maintained under the extreme protection provided by the CMEA which efficiently excluded competition from the world market. The current level has been attained under the conditions of the single European market, without any protection for intra-Visegrad trade.

What more do we know now, after concluding the research, about the reasons for the exceptional acceleration of intra-Visegrad Group trade after EU accession?

The first insight is about the factors that were filtered out as possible accelerators of intra-Visegrad Group trade. Though invisible administrative barriers may have been removed upon EU accession, the same change had to take place simultaneously in trade with the EU-15 as well, but in that segment the export expansion lagged considerably behind that of the intra-Visegrad Group trade. Moreover, the Visegrad Group's exports to the rest of the world increased more rapidly after EU accession than the Visegrad Group's exports to the EU-15, although in non-EU relations the conditions for trade had relatively deteriorated through the elimination of non-traditional barriers in Visegrad-Visegrad and Visegrad-EU-15 relations.

Another possible factor in the upturn of mutual trade after EU accession – a sudden upgrading of the transport infrastructure for intra-Visegrad Group deliveries – was not registered either. The Czech-Slovak connection had already been satisfactory before EU accession as inherited from the recent statehood up to 1993. The transport infrastructure in the North-South corridor Poland – Slovakia – Hungary or the North-Southwest corridor Poland – Czech Republic did not undergo major extensions either.

What may have contributed to the upswing of intra-Visegrad trade? The research was primarily focused on the identification of changes in the composition of trade. The indicators calculated in the framework of this research show that the EU accession has not brought about any abrupt changes in the commodity patterns and revealed comparative advantages. In bilateral trade relations, apart from some exceptions, the changes observed were typically continuous and gradual, overarching the whole period 2000-2007. This is, however, no reason to claim that EU accession had a minor role in the upturn of mutual trade in the region concerned. Rather, the effect is not focused on the year of accession (and

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<sup>25</sup> This chapter was written by Sándor Richter.

+/- one year). Despite the clearly hesitant attitude of the incumbent EU members towards eastern enlargement in the 1990s and the lack of their final commitment up until 2002, with the year of accession approaching it became more and more obvious that accession would take place indeed. In this gradual process of self-conviction the firms involved in the intra-Visegrad Group trade may have gradually elaborated their new, geographically more diversified sales/procurement strategy. In the new strategic concepts of the main exporting firms (mostly multinationals) the Visegrad region itself is thought to have been upgraded both as a target for sales and as a host for potential cooperation partners for production. In this process intra-firm trade must have played an important role, but this proposition needs to be underpinned yet, an ambitious task for further research.

Results from the gravity modelling exercise reveal that trade between Visegrad countries was higher than would have been expected after controlling for typical gravity determinants over the whole period.<sup>26</sup> More importantly, however, the results indicate that there was no significant change in intra-Visegrad trade post-2004 after controlling for typical gravity determinants. Combined with the observed increase in intra-Visegrad Group trade these results would tend to suggest that the observed increases in trade were largely the result of the relatively strong rates of growth of per capita GDP in Visegrad countries and not of accession per se.<sup>27</sup> Moreover, the results suggest that the observed increases in intra-Visegrad Group trade were related to a gradual change in trade, rather than an abrupt change after accession. The results from the gravity exercise further indicate that the changes in intra-Visegrad Group trade have occurred mainly along the extensive margin, with a greater variety of products traded amongst Visegrad countries. These developments in the variety of products traded may have further implications such as for productivity and labour markets in both exporting and importing countries. Examining the impact of these changes on productivity and labour markets may provide a fruitful area for future research.

Services trade was found to be too low to cause any significant productivity changes that would influence the merchandise exports dynamics of the Visegrad countries.<sup>28</sup> The prevalence of traditional transport and travel services in services trade structures also points to a lower importance of services for the countries' economies, and in particular for merchandise trade developments. Our results might indicate an insufficient level of development of Visegrad countries yet, which prevents them from using services more efficiently.

EU accession did not have a one-time effect on FDI among the Visegrad countries and also the comparison of the pre- and post-accession periods does not reveal any increase

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<sup>26</sup> This paragraph was written by Neil Foster.

<sup>27</sup> In 2001-2003 the GDP of the Visegrad countries increased by 8.5%; in 2005-2007 by 17.4% (compound rate of growth). The respective data for the EU-15 are 4.4% and 7.8%, respectively (wiiw Database). This footnote was written by Sándor Richter.

<sup>28</sup> This paragraph was written by Olga Pindyuk.

in the importance of mutual investments.<sup>29</sup> This means that it was not mutual FDI that was driving trade. FDI among the Visegrad countries is rather low because there are not many local companies that are able to invest abroad. Those that do invest in the Visegrad area aim at serving mainly the local market of the target country which has little trade-enhancing effect.

However, there must be a link between mutual trade and FDI from outside the region. Most of the exports of the Visegrad countries are generated by foreign subsidiaries of multinationals from the EU-15 and other developed countries. These subsidiaries are linked by intra-company trade, sourcing and selling in the Visegrad region. After EU enlargement foreign investors have concentrated the production of consumer goods sold in the region to a lower number of locations which also generated trade among the Visegrad countries.

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What does all that mean for the Southeast European countries, all aspiring for EU membership and participating in the regional free trade agreement CEFTA? The original CEFTA was established by the then three Visegrad countries Czechoslovakia, Hungary and Poland. Later other former planned economies joined the agreement. By 2003 there were already eight CEFTA members, the founding countries plus Slovenia, Romania, Bulgaria and Croatia. The 2004 EU enlargement left CEFTA without most of its members, but the organization was revived by 2007 via the accession of Macedonia, Albania, Bosnia and Herzegovina, Serbia, Kosovo, Montenegro and Moldova. (Romania and Bulgaria left CEFTA for the EU in 2007.)

Five of the seven current members of the new CEFTA were part of the former Yugoslavia and had rich traditions of intra-regional cooperation or, formulated more precisely, in domestic trade. Moldova was part of the former Soviet Union and thus of a 'non-market integrated' type of a unified economic area. Albania was not a member of any trading bloc and maintained voluntary autarchy for decades.

The political relations among those members that were part of the former Yugoslavia are still burdened to some extent by the memory of the wars that followed the dissolution of Yugoslavia. Newly obtained independence presented simultaneously an opportunity and the necessity for a new orientation of external trade relations, mainly towards the highly developed core countries of the EU. This resembles to some extent the ambivalent mutual relations of the Visegrad Group countries after the political changes in 1989/1990 and the dissolution of Czechoslovakia in 1993. Another similarity is the simultaneous liberalization of trade with the EU and within the old and new CEFTA, respectively. A significant differ-

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<sup>29</sup> This paragraph was written by Gábor Hunya.

ence between the Visegrad Group and the new CEFTA relates to the (lacking) homogeneity of the two groups. The level of development and wage levels are very similar across the Visegrad Group members while they are widely different in the new CEFTA, with the high-income country Croatia on the one, and Moldova, Kosovo and Albania as low-income countries on the other extreme of the scale. A further important difference is that the Visegrad countries overcame the hurdles on the road to EU membership more or less simultaneously and all joined the EU in 2004. The new CEFTA group is much less homogeneous in this respect. Croatia is scheduled to become a member of the EU on 1 July 2013; all other countries are far from entering the EU yet. Even their preparedness is in fairly different stages, not to mention Moldova which has not even received a sign from Brussels that it once may become a member of the EU.

Our research results testify that in the process of mutual trade revival the year of EU accession does not appear in the time series as a major watershed in terms of commodity patterns, intra-industry trade or revealed comparative advantage. The important developments, primarily specialization, took place gradually, starting prior to and continuing after the EU accession. That does not exclude that the removal of administrative and other, mainly invisible obstacles to free trade on the day of accession did not support the upswing of mutual trade, but it could not be the major force behind the phenomenon as it took place in bilateral Visegrad–EU-15 trade as well, without producing a spectacular upturn in that relation.

Our assumption is that the likely driving force of the intra-Visegrad Group trade expansion has been a change in the networking strategy of the multinational companies located in the region around the date of EU accession. This change manifested itself in upgraded intra-firm deliveries among affiliates located in two or more of the four Visegrad countries.

If this is true, then the increasing presence of multinational firms (more FDI projects and related inflows) is the key to rapid expansion of intra-CEFTA trade. This is, however, closely related to the prospects of the individual CEFTA members concerning the date of their EU accession. The legal stability provided by the gradual takeover of the *acquis communautaire*, on the one hand, and the prospects of removing all administrative and other, invisible obstacles to trade within the CEFTA region, on the other hand, are the connecting link between FDI, EU accession and an upturn in intra-CEFTA trade.

In this sense the summarized policy recommendation from our project is that good progress in accession negotiations, professional preparatory work for starting such talks, and the creation of an FDI-friendly regulatory environment may become key elements of a policy targeted at an upswing of intra-new-CEFTA trade.

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