

FOREIGN TRADE AND INTERNATIONAL ECONOMY

CHANGES IN FOREIGN TRADE STRUCTURE AND INTRA-INDUSTRY TRADE IN FIVE CEECS*

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The article analyses the structural changes of foreign trade between five Central and Eastern European countries and the EU. It points out that during the nineties, a significant shift has taken place towards technologically more developed products. The former specialisation on low-technology, labour intensive goods strongly weakened and in certain cases new specialisation patterns have been developed among the high-tech products. The level of manufacturing intra-industry trade increased and this in several cases meant product quality improvement as the results of the unit value calculations showed. For these changes in the foreign trade structure those – high and medium-tech – products are responsible which are produced by foreign owned, multinational companies. FDI therefore exerts a determinant effect on the external competitiveness of Central European countries.

KEYWORDS: Foreign trade, Foreign direct investment.

The Central and Eastern European countries are striving for the European Union membership. In this case they will be part of the single internal market experiencing the advantages and drawbacks of the increased competition. The competitiveness of a country is often judged on the basis of its export performance on the foreign markets. The dynamics and the composition of the exports, the complexity and quality of the traded goods reflect the development of their domestic economy. In the era of globalisation and increasing competition this kind of competitiveness is getting more and more important.

Recently, that a decade has passed since the basic political changes in this region, it is instructive to analyse the development of the foreign trade. The paper focused its analysis on those five Central and Eastern European countries (CEEC-5) who were first selected by the EU to begin the accession negotiations: Poland, Estonia, Hungary, Slovenia and the Czech Republic. The subject of the analysis is the foreign trade of these countries with the European Union. In this respect, this paper analyses the changes in the product structure, and specialisation trends emphasising the technological level of the products.

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Among developed countries, a considerable part of trade is intra-industry trade, which means trade with similar, diversified manufactured products. This type of trade can be the exchange of the same goods on the basis of different packing or seasonal effects, can be the exchange of differentiated or substitutive goods or can be induced by intra-industry co-operation. This article examines to what extent this kind of trade increased in the CEEC-5 during the nineties, showing thus similar trends to the developed countries. Based on an in-depth analysis of the intra-industry trade patterns conclusions can also be drawn regarding the quality of the exported products.

The foreign trade performance of a country – especially if its size is small – is often influenced by the strongly export-oriented activity of multinational and foreign firms. Multinationals give a determinant part of world trade at the end of the nineties and they have realised important investments in the CEEC-5 region. According to our hypothesis therefore, the changes taken place in the foreign trade, have been in great part due to the activity of the foreign investment enterprises in the countries.

1. CHANGING FOREIGN TRADE STRUCTURE

At the end of the nineties the foreign trade of the CEECs has already been tied to the European Union, the geographical composition of exports and imports has been modified in favour of the EU. Apart from the geographical factor, there have been important changes also in the product composition of foreign trade. These changes in the manufacturing product structure are in the center of the following analysis.

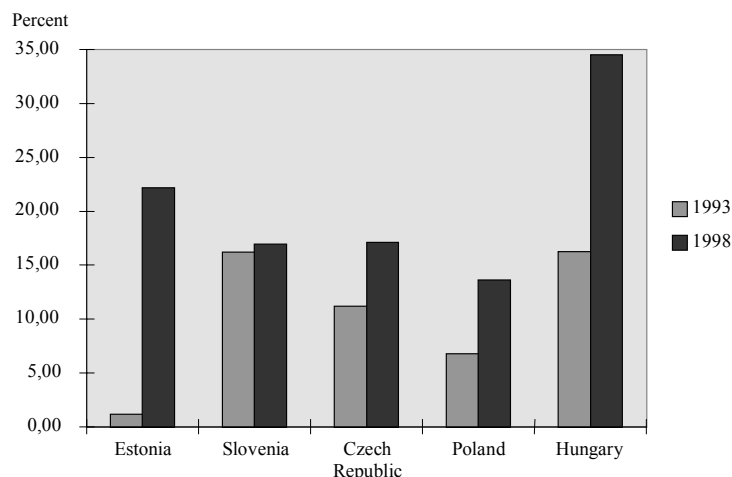
The article uses the industry classification based on the method of OECD (1993) made in ISIC (International Standard Industrial Classification of All Economic Activities) classification. Three groups were created in this classification: high-technology, medium-technology and low-technology intensive products.² All the calculations referring to foreign trade dynamics and indices are made at the Standard International Trade Classification (SITC) 5 digit product level (3464 items) given by the EUROSTAT Comext database.³ This is a level detailed enough to avoid all biases stemming from the aggregation of products. Data were converted afterwards to ISIC Rev3 classification, in order to apply the former mentioned technology grouping of sectors. (This sectoral approach has certainly limitations because of the not sufficiently disaggregated data. Certain products manufactured by high-tech sectors are medium or low tech and vice versa. The OECD therefore developed a product approach, but only for the high-tech products. Though this approach has also its own limitations (*Hatzichronoglou; 1997*) the sectoral approach is applied here.)

In analysing the technology-intensity of traded products, first the development of the high-tech group is followed. According to the OECD definition pharmaceuticals, telecommunication equipment, office machinery, aircraft-spacecraft, precision instruments and electrical machinery branch belong to this group. Figure 1 shows the development of the high-tech exports to the EU in the case of the CEEC-5 between 1993 and 1998.

² The indicator of technological intensity (weighted according to sectors and countries) is the share of R&D expenditures in output or value-added. At the end of the nineties based on the experiences the OECD revised the grouping (*Hatzichronoglou; 1997*) and divided the medium-tech group into two parts. Medium-high and medium-low groups were created, precision instruments and electrical machinery were put into the former one. However, the former grouping is applied in the paper.

³ In this database the EU is the reporter country, so 'CEEC-5 exports to the EU' means the EU imports from the CEECs.

Figure 1. The share of high-tech branches in the exports of the CEEC-5



Source: Own calculations based on EUROSTAT Comext data.

The first striking phenomenon is the extremely rapid increase in the share of high-technology sectors in manufacturing exports in Hungary and in Estonia. This share was the highest in 1998 in Hungary, reaching 34 percent.⁴ The definite growth in the case of Poland and the Czech Republic is also remarkable.

If we examine the detailed sectoral composition of the exports and imports it turns out that in all five countries in most cases the same sectors increased their export share during the period examined. The strong increase in high-tech exports is due to the electrical machinery, telecommunication equipment, precision instruments and office machinery. Certain medium-technology sectors also increased their share in all countries, like chemicals and plastics, but above all and the most effectively the motor vehicle branch.

The share of low-technology sectors, however decreased rapidly, mainly due to the food and beverage, textile-clothing industries. These – traditionally strong – sectors in all country decreased significantly their share in the exports to the EU. In some cases it did not mean a decrease also in the absolute value of the exports but in some cases the absolute value decreased too.

In 1998 the share of high-tech products was almost the same in the Slovenian and in the Czech exports to the EU, around 17 percent. However, in the Czech case there was a considerable increase since 1993 while in the case of Slovenian one there is hardly any change. In the Czech exports the electrical machinery sector is responsible for the increase. The share of low-tech product group decreased since 1993, due to the textile-clothing sector.

In the Slovenian exports the share of medium-tech products increased, which has been caused by the motor vehicle and machinery sector. Similarly to the other countries, a decrease in the share of low-tech products can be observed in the exports. This is mainly due to the textile-clothing sector.

⁴ This figure can be compared to the extremely high Irish share, which was 37.9 percent in 1998.

Regarding the high-tech products it is interesting that in Hungary the traditionally important pharmaceutical sector lost some of its importance in the EU-relation, although in other, Eastern-European relations it gained positions. The medium-technology sectors also increased their share for which the motor vehicle branch is entirely responsible. The share of low-technology sectors, however decreased rapidly.

Concerning the Polish exports, the share of high-tech products has also increased considerably between 1993 and 1998. The share of medium-technology group remained more or less the same, while the share of low-tech products decreased in the exports to the EU due to the food and textile branches.

As far as Estonia is concerned, the telecommunication equipment (radio-TV sets) branch is the most important among the high-tech groups, but office and electrical machinery sectors also increased considerably their share. At the same time, the role of medium-tech products drastically decreased in the exports to the EU, from 30 percent to 10 percent. As an exception among the examined countries the share of low-tech products remained at the same high level (70%), textile, wood, and refined petroleum products are still important components of the Estonian exports.

Table 1

*Share of product groups in the CEEC – EU trade
(percent)*

Country, product groups	Exports	Imports	Exports	Imports
	1993		1998	
Hungary				
High technology	16.26	18.43	34.54	25.88
Medium technology	24.62	44.89	37.12	47.38
Low technology	59.12	36.68	28.34	26.74
Manufacturing	100.00	100.00	100.00	100.00
Estonia				
High technology	1.16	8.27	22.17	21.48
Medium technology	29.07	32.28	9.54	24.17
Low technology	69.77	59.45	68.28	54.35
Manufacturing	100.00	100.00	100.00	100.00
Czech Republic				
High technology	11.21	21.42	17.11	23.82
Medium technology	33.45	48.86	44.43	44.76
Low technology	55.34	29.72	38.46	31.42
Manufacturing	100.00	100.00	100.00	100.00
Slovenia				
High technology	16.20	12.19	16.97	14.23
Medium technology	29.47	45.33	41.03	46.47
Low technology	54.33	42.48	42.00	39.29
Manufacturing	100.00	100.00	100.00	100.00
Poland				
High technology	6.78	15.60	13.59	17.58
Medium technology	27.20	46.13	30.55	47.21
Low technology	66.02	38.27	55.86	35.20
Manufacturing	100.00	100.00	100.00	100.00

Source: Own calculations based on EUROSTAT Comext database.

In the structure of the imports from the EU we can find that the share of high-tech products in the exports is considerably higher than their share in the imports in the case of Hungary and slightly in the case of Estonia and Slovenia. However, in absolute value this means only in Hungary more high-tech exports than imports, in the case of Slovenia the value of high-tech exports is slightly lower than the value of imports (although it was much higher in 1993), and Estonia imports considerably more high-tech products than exports.

Generally speaking in terms of foreign trade and in terms of exports on the EU market, the competitiveness of the CEEC-5 countries has improved in the nineties. This means that the export structure has become more similar to that of the developed countries, with more and more high-tech products in the foreground. Apart from the modern structure, another feature of the foreign trade among the developed countries is the relatively high share of intra-industry trade. The following part analyses this kind of development in the case of the CEEC-5.

2. THE DEVELOPMENT OF INTRA-INDUSTRY TRADE

In general, for the analysis of intra-industry trade (IIT),⁵ the index of *Grubel–Lloyd* (1975) is used. However, since the work of *Greenaway – Milner* (1994) two types of intra-industry trade can be distinguished. The first is called vertical IIT, when the products traded are of the same type but different in quality, the other is the horizontal IIT, when also the quality of products is comparable.

Separating vertical and horizontal IIT is important for many reasons. Regarding the effect of integration, in the case of countries which are of different development level, integration can enhance vertical IIT. In this case, products of the less developed country, which are of lower quality can be crowded out by better quality imports of more developed countries, thus the costs of adjustment can be high. Regarding this theory, empirical verification of the role of scale economies in creating IIT remained rather poor.⁶ Calculations showed that generally vertical IIT is much more significant than horizontal IIT, therefore interest has grown in analysing and explaining vertical IIT.

Falvey (1981) pointed out that difference in quality among similar goods (that is vertical IIT) on the supply side is caused by the differing capital/labour ratio of their production. High-quality products require more capital-intensive production techniques. On the demand side there is an aggregate demand for a variety of differentiated products, low-income consumers will buy lower quality products, high-income consumers high quality products. A relatively labour abundant country will export the lower quality/labour in-

⁵ As it is well known, IIT is characteristic for the sophisticated manufactured products. Monopolies, increasing returns to scale, homogeneous consumer preferences in partner countries explain this type of trade. Intra-industry trade is especially intensive among developed countries, which trade with similar, diversified manufactured products. The more similar the factor endowments of the partner countries are, the greater the extent of IIT is. It should be mentioned that intra-industry trade is often mixed with trade within the production vertical. Thus, if a country imports motors and exports cars, it is not intra-industry trade although in a high enough aggregation level both products belong to the 'vehicles and components' category. Therefore proper disaggregation is very important in the measurement of intra-industry trade. It should be clarified that intra-firm trade – between a multinational parent company and affiliates – can be of intra-industry type but not necessarily, intra-firm trade is not a part of intra-industry trade and vice versa (*Fontagné et al.*; 1995). The propensity for intra-firm trade differs according to industries and also depends on firm and country-specific factors, among them the size of FDI involved (see *Dunning*; 1993). Applying intra-firm trade multinational companies can manipulate the terms of trade, tackle the different tax systems of governments.

⁶ For details see *Blanes-Martin* (2000).

tensive version of the product (aiming low-income consumers abroad) and will import the higher quality product (for high-income consumers on the domestic market). Thus IIT is explained by comparative advantages. From another aspect *Davis* (1995) also shows that IIT can take place without increasing returns and imperfect competition. In that case the emphasis is on technical differences among the countries which determine specialisation on one or other types of intra-industry product.

As it was mentioned, the basic indicator used to measure intra-industry trade is the Grubel-Lloyd index. The definition of the index for a given product group 'i' is the following:

$$B_i = \left[1 - \frac{|X_i - M_i|}{(X_i + M_i)} \right] * 100$$

The index for the whole economy (or a sector group) is the weighted average of the product group indices according to the weight of the product groups in foreign trade (W_i). X and M are exports and imports respectively:

$$B_{iw} = \sum W_i B_i$$

where

$$W_i = \frac{(X_i + M_i)}{\sum (X_i + M_i)}$$

The value of the index can vary between 0 and 100, a higher index means a higher level of IIT. Note that the less detailed aggregation is used, the higher the value of the index is, IIT should therefore be calculated at a very detailed level of classification.⁷

In the method of separation of IIT into horizontal (HIIT) and vertical (VIIT) types quality differences of exports and imports are used.⁸ If the export and import unit value differ by less than 15 percent then IIT is horizontal (the traded goods are of the same quality), if the difference is bigger in such a way that export unit values are higher then IIT is high quality vertical, otherwise IIT is low-quality vertical.⁹

In the calculations we apply the SITC 5 digit level classification. The results were converted and grouped according to the technology-intensity level in line with the ISIC classification already used.

Figure 2 gives a 'general view' of the situation in the five examined countries. The first observation one can make is that the share of intra-industry trade is in every country higher in 1998 than it was in 1993. The increase has been especially spectacular in the case of Estonia and Slovenia. Compared to the others, Estonia has still the lowest share, but shows the highest increase. For 1998 Slovenia had the second largest share of IIT in the trade with the EU.

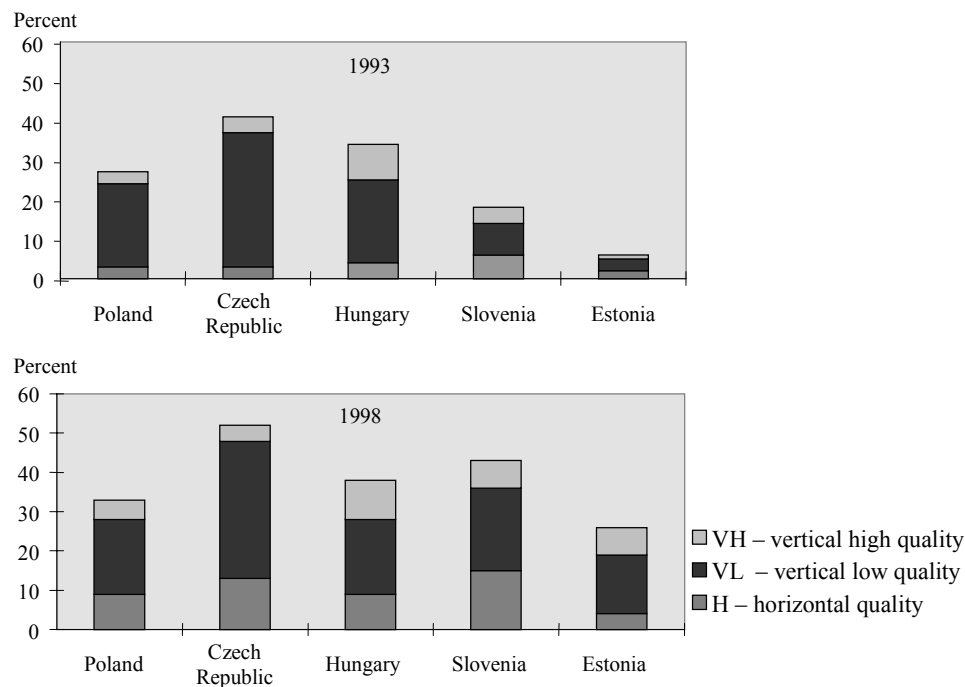
⁷ About problems of the GL indicator and other types of measures see *Vona* (1991) for more details.

⁸ The principle of 'bigger price, better quality' can be criticised (for example some products can be overpriced), however there is no better method found out for signing quality differences.

⁹ If $0.85 \leq UV_X / UV_M \leq 1.15$ then IIT is horizontal.

The level of intra-industry trade was and is the highest between the Czech Republic and the EU. This means that in 1998 more than the half of the manufacturing trade was of intra-industry type. This is almost as high as the Spanish figure (58.8%).¹⁰ Regarding the types of IIT, in every country the vertical low quality IIT dominates, similarly to the international experience.¹¹ Hungary shows the highest share in the vertical high quality type IIT (where the quality of the exported products is better than that of the imported ones) but Slovenia and Estonia also could increase this type of IIT.

Figure 2. Development of intra-industry trade in the CEEC-5



Source: Own calculations based on EUROSTAT Comext database.

Detailed calculations of IIT at the sectoral level are available in electronic format (www.ksh.hu/statszml). It can be stated that in the CEEC-5 in almost every branch, intra-industry trade increased between 1993–1998.

As regards Hungary, among the high-technology groups a decrease in (mostly vertical low quality) IIT can be observed in the case of pharmaceuticals, but for telecommunications equipment and electronic machinery a significant increase is manifested in

¹⁰ Éltető (2000), p. 159.

¹¹ Obviously, if we regard the CEEC-5 trade separately with EU-members, we get a heterogeneous picture. Therefore, the level of intra-industry trade depends not only on the aggregation level but also on the country group we define. This phenomenon is called 'geographical bias' by Fontagné-Freudenberg (1997) who argue that when different partner countries are put together, the sign of the trade balance for a given product may change from one partner to another and will show up as a 'multilateral' intra-industry flow, which is a pure artefact. Though conscious of this fact, in the calculations EU is assumed to be one geographical unit.

horizontal IIT. Outstandingly high is the share of IIT in the office machinery branch (33.9%). In the case of medical, precision instruments low quality vertical IIT increased.

In the case of low technology sectors, increase in intra-industry trade (although from a low level) is general and in several cases means an increase in horizontal or vertical high quality IIT (textile, paper, metals), which suggests quality upgrading. Regarding medium-technology sectors, the situation is the same. The increase in vertical high quality IIT is especially spectacular in the case of transport equipment (except for railway locomotives).

In the case of Estonia, the considerable increase of IIT was caused by the vertical low and high quality type. The latter increased mainly in the trade of high-tech products, telecommunication, electrical machinery and pharmaceuticals. Among the medium-tech products transport equipment show an increase and plastic products a decrease of vertical high quality IIT. Regarding the low-tech group, intra-industry trade increased significantly in almost every product categories.

In the Czech trade of high-tech products the Grubel-Lloyd index for pharmaceuticals decreased. This is similar to the Hungarian phenomenon though this decrease was due to the vertical high quality IIT. Horizontal IIT increased in the trade of telecommunication equipment and vertical high quality IIT increased in medical precision instruments. In the trade of medium-tech products IIT (of vertical low quality) decreased quite significantly in motor vehicles and manufacture of transport equipment, however in the motor vehicle branch there has been an important increase in horizontal IIT. Horizontal IIT increased in the trade of low-tech products in textile, paper, refined petroleum, fabricated metals, and vertical high-quality IIT increased in the case of wood products; hinting to a quality upgrading.

As it was mentioned, the level of Slovenian IIT with the EU increased to a great extent to 1998, which was mainly due to the horizontal and vertical low type of IIT. Vertical high quality IIT increased in the trade of high-tech products, locomotives and other manufacturing but decreased in the case of non-ferrous metals, motor vehicles and plastics. There are certain low-technology products where horizontal IIT is quite high, like paper, textile, basic and fabricated metals.

Poland experienced a moderate increase in intra-industry trade. There were several product groups where IIT decreased, like pharmaceuticals, precision instruments, rubber, transport equipment, locomotives, etc. Horizontal IIT increased remarkably in telecommunication equipment, electrical machinery, motor vehicles.

Analysing the increase of IIT, it is important to know the 'technical' composition of this increase. Stemming from the properties of the IIT index, an increase of intra-industry trade can be observed in certain cases if the trade balance improves but also if the trade balance worsens. The IIT indicator can increase if imports grow from a lower level than exports but exports remain similar. Therefore it is considered important to analyse what the increase of intra-industry trade caused in these countries. The developments of the trade balance of a sector are manifested in the foreign trade specialisation patterns of the countries.

3. SPECIALISATION PATTERNS

As it was introduced the structure of the foreign trade has changed considerably among the CEEC-5 and the EU during the nineties. Based on this one can presume that there have been changes in trade specialisation patterns too. In this respect the index

calculated is a 'specialisation index' or 'net export index' (*Balassa-Noland*; 1987) and its definition is:

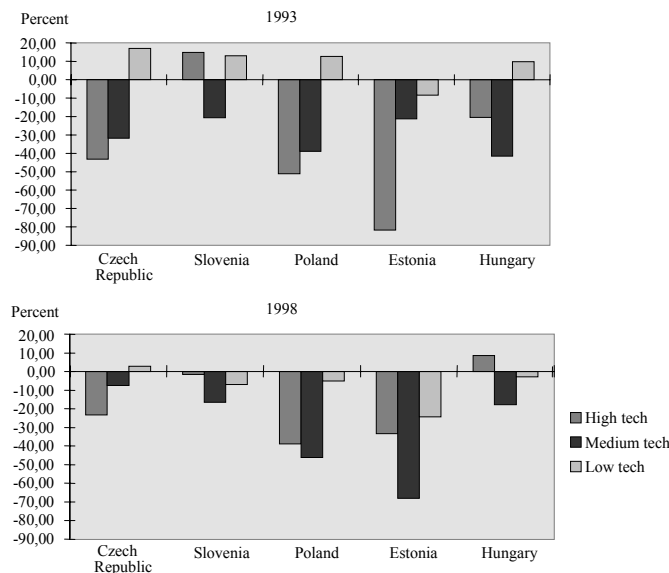
$$SI_i = \frac{X_i - M_i}{X_i + M_i} * 100 ,$$

where X_i is the exports and M_i is the imports of sector i . For any aggregates SI is computed as the ratio of the aggregated numerator ($\sum(X_i - M_i)$) and the denominator ($\sum(X_i + M_i)$), expressed in a percentage form. One can speak about advantages, or specialisation if the value of the index is positive. Because of the properties of the index, its positive value means a positive trade balance.

Results of the calculation of SI indices for the five CEECs is shown in Figure 3. It can be seen that in 1993 four countries had clear specialisation on low-tech products, Estonia was the only exception. To 1998 this specialisation vanished remaining only to a tiny extent in the Czech Republic. This means that in these low-tech branches the trade balance considerably worsened and turned into a deficit.

Despecialisation on high-tech products at the same time decreased in the countries (except for Slovenia, which was in 1993 specialised on high-tech products but despecialised in 1998). In the case of Hungary, the SI index has even turned to positive for 1998, which already shows a clear specialisation caused by the surplus in trade balance of the high-tech products. Estonia, Poland and the Czech Republic improved their trade balance position considerably in high-tech products but could not turn this into positive. An improvement can be observed in the medium-tech group also, except for Estonia where a strong worsening of despecialisation can be seen.

Figure 3. Specialisation indices in the CEEC-5



Source: Own calculations based on EUROSTAT Comext database.

Regarding Hungary, at those – mainly low-tech – branches where Hungarian specialisation had been traditionally of a high degree (textile, food, wooden products, coke and petroleum, etc.) there are still positive indices but a radical decreasing or stagnating trend can be observed during the nineties. At the same time, new specialisation patterns appeared within the high-tech products, in office machinery and telecommunication equipment. In electrical machinery, specialisation remained existing. On that basis, one can say that Hungary has lost its specialisation in labour-intensive, low technology goods, but at the same time has been able to develop an important export activity in high technology goods. Exports have been increasing considerably faster than imports in these cases.

Table 2

*Manufacturing branches where specialisation improved or despecialisation decreased
(1993–1998)*

Poland	Slovenia	Czech Republic	Estonia	Hungary
Radio-TV sets	Office machinery	Office machinery	Office machinery	Office machinery
Electrical machinery	Chemicals	Radio-TV sets	Radio-TV sets	Radio-TV sets
Medical, precision instruments	Machinery and equipment	Electrical machinery	Electrical machinery	Medical, precision instruments
Plastic products	Railway locomotives	Medical, precision instruments	Medical, precision instruments	Railway locomotives
Rubber products	Motor vehicles and parts	Plastic	Machinery and equipment	Manufacture of transport equipment
Manufacture of transport equipment		Machinery and equipment	Railway locomotives	
Boats		Non ferrous metals		
		Motor vehicles		
		Boats		
		Fabricated metals		

In the case of the Czech Republic there is a strong improvement in specialisation to medium-tech products. As for of rubber products, locomotives, and motor vehicles the SI index had a positive sign in 1998 (in 1993 it was negative for the motor vehicle products). Among the high-tech groups there is also an improvement, except for pharmaceuticals. In the case of the low technology group although specialisation remained, it has considerably deteriorated since 1993.

Slovenia has also experienced the loss of specialisation on the traditional, low-technology-intensive products. But also in other fields, generally, there is a decrease of the SI value in almost every sectors except for chemicals, locomotives and pharmaceuticals. This hints to a general deterioration of the Slovenian trade balance with the EU.

In the Polish trade there is no specialisation on high-tech products, although an improvement of the SI index can be seen at the electrical machinery branch. Among the medium-tech sectors in two cases we can see a clear specialisation, with positive SI value: by non ferrous metals and manufacture of transport equipment. The specialisation on low-tech products, which was apparent in 1993 has been lost for 1998. The SI index remained positive only for wood products and building of boats.

Estonia also does not show a positive SI index for the high-tech products, although the value for office machinery products improved considerably. Similarly to this, there is no one medium-tech product group either with positive index value. In the case of low-tech products, however, we can find three fields of specialisation: textile-clothing, wood products and refined petroleum. In the latter two cases specialisation is quite strong.

Having an overview on the foreign trade specialisation patterns (and trade balance situation), one can examine which are the sectors where the increase of the intra-industry trade has stemmed from the worsening of the trade balance.

- Czech Republic: chemicals, railway and tramway locomotives, food, beverages, tobacco, textile, clothing, leather, paper and printing, basic metals.

- Slovenia as there are only a few sectors where the trade balance improved, so it is no wonder that in the most cases the increase in IIT was caused by the worsening trade balance: office and electrical machinery, precision instruments, rubber products, motorcycles, food, beverage, tobacco, textile, clothing, leather, wood, paper, basic metals.

- Poland: non ferrous metals, food, beverage, tobacco, textile, clothing, leather, paper, refined petroleum, non metallic minerals, fabricated metals.

- Estonia: pharmaceuticals, chemicals, rubber, plastic, transport equipment, other manufacturing, textile, clothing, leather, wood, paper, non-metallic minerals, boats.

- Hungary: rubber products, food, textile-clothing, wood, paper and printing, petroleum, minerals, non-metallic minerals, basic and fabricated metals, boats.

It is obvious from the list that in every country, at the big majority of low-tech products the increase of intra-industry trade has been due to the worsening of the trade balance. On the contrary, it can hardly be found any high-tech products where the IIT increase stemmed from the growth of the foreign trade deficit. This means that in these cases the reason of the intensification of the intra-industry trade is something else.

4. THE EFFECTS OF FOREIGN DIRECT INVESTMENT

The impact of foreign direct investment (FDI) on foreign trade has been an increasingly important issue in the nineties as for a continuously growing part of the international trade is being realised by multinational enterprises (for an overview of theoretical evidence in this respect see for example (*Cantwell-Bellak*; 2000)). In the early theories of foreign direct investment and multinational firms, FDI and foreign trade were considered to be substitutes. First *Mundell* (1957) built a model where both FDI and foreign trade were based on the price differences of products and production factors were determined by the different factor endowments of the countries. The product-cycle theory of *Vernon* (1966) was also based on this substitution principle, where foreign direct investment replaced the export as the product matured.

Still based on the traditional comparative advantage theory, *Kojima* (1975) introduced the concept of trade-oriented (pro-trade) and anti-trade-oriented FDI based on the theory of comparative advantages. According to this, one can speak about trade creating, or pro-trade FDI if the investment is undertaken from the home country's comparatively disadvantaged industries into the host country's comparatively advantaged industries.

Both countries gain from the following trade creation. In the case of anti-trade FDI, however, investment is undertaken by a firm of the home country's comparative advantage industry into the host country's comparative disadvantage industry. In this way the home country has an excess demand for importable goods and an excess supply of exportable goods. The two countries are competing in importing and exporting capacities, thus FDI can even destroy trade.

At the end of the seventies 'new international trade' theories emphasize, however the complementary relationship between FDI and foreign trade (see for example *Krugman*; 1990 and 1991, *Venables*; 1996). This is the result of introducing new aspects in the models like increasing returns to scale, product differentiation, technology-differences among nations. Allowing for these factors and assuming identical relative factor endowments *Markusen* (1983) proved that factor (capital) movements between two economies lead to an increase in the volume of trade.

The different kind of investments have different effects on the foreign trade (*Dunning*; 1993).¹² The resource based investment aims to exploit some kind of natural resources. The efficiency-seeker or export-oriented investment aims to exploit the low cost resources and to provide export markets by concentrating production to a few locations. These are 'internationally integrated' investments (*Cantwell-Bellak*; 2000, p.122.) which involve the local affiliate in the international corporate group. As they state, resource based and internationally integrated investments are generally net trade-creating since they establish international connections by trade.

Those companies belong to the *market-oriented* investors, who invest in a country or into a region in order to supply these markets with their goods or services. The increase of the market or economic policy changes in the aimed country can promote the foreign company to invest. The aim of the investment is to preserve or gain market shares. The products made by the affiliate are sold in the local or regional market. These kind of investments can have both trade creating and trade replacing effects. Market-oriented firms may worsen the trade balance, if their exports are negligible and many of their inputs are imported. In principle, the size of the host country is likely to influence the trade strategy of foreign investors. Thus, big countries tend to be more suitable for market-oriented companies. Whereas small host countries appearing to be more suitable for export-oriented FDI because, apart from having a small domestic market, they use to have a higher degree of openness (ratio of trade to GDP) than large countries. The country-size is just one factor, however. Generally, the export propensity of foreign subsidiaries depends on a lot of industry and firm variables (see more details in *Rojec*; 2000).

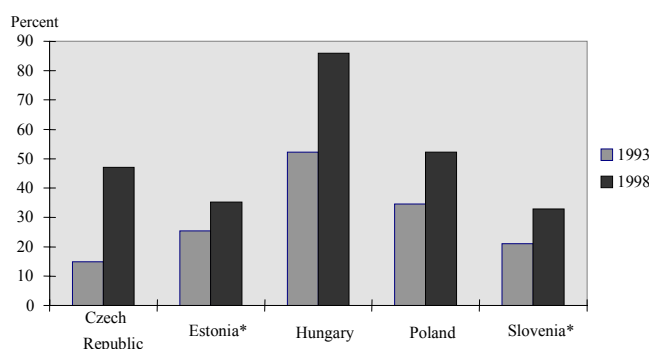
The foreign trade balance situation is and has been an important issue in the economic policy of the CEECs. Presumably the contribution of foreign investment firms to the trade balance in manufacturing has been different in the time being. In the first half of the nineties the import of foreign participation (in many cases greenfield) firms was very high in great part required by the building up of production capacities. Later on, however, the exports of these firms has become so significant that they exerted a positive effect on the foreign trade balance. Best examples for this phenomenon are the so

¹² The author differentiates among four main types: efficiency-seekers, resource-seekers, market seekers and strategic asset seekers.

called industrial free zones,¹³ where majority or completely foreign owned firms, multinational affiliates were established. These firms produced USD 2091 million surplus in 1999, giving 43 percent of Hungarian exports and 30 percent of imports. The main direction of the exports is the EU. A considerable part of this trade consists of deliveries to other affiliates or to the mother company in EU countries (mainly Germany).

To the end of the nineties foreign capital has a considerable weight in the manufacturing sectors of the CEEC-5. Foreign penetration in the industry increased rapidly in all fields, let it be gross value-added, net sales revenue, investments, employment, etc. The increase has been really spectacular in the case of exports. In 1993 foreign investment firms were responsible for 15-50 percent of the manufacturing exports in the examined countries and in 1998 this increased to 33-86 percent (see Figure 4). Hungary had and still has by far the highest share of foreign investment enterprises (FIE) in exports. Slovenia and Estonia are similar with around 35 percent and Poland and the Czech Republic with around 50 percent.

Figure 4. Share of foreign investment enterprises in the manufacturing exports



* The base year is 1994 in the case of Slovenia and 1995 in the case of Estonia.

Source: WIIW database on foreign investment enterprises.

There are certain sectors where the share of FIEs is very high in all of the countries: these are the telecommunication equipment, office and electrical machinery (high-tech) and motor vehicle branches (medium-tech). In the case of low-tech products the share of FIEs in exports is generally lower than the average but there are cases of quite high FDI-participation (tobacco, paper).

The available evidence on how FDI affected trade specialisation patterns of Central European host countries is rather scarce. In the case of intra-industry trade, according to certain studies it seems that FDI increases the share of IIT. *Aturupane-Djankov-Hoekman* (1997) for example found on the basis of an econometric analysis of EU-CEEC trade, after controlling for country-specific factors, a positive and significant relationship between FDI and both vertical and horizontal intra-industry trade.

¹³ Based on the XXIV/1988 law of foreign investment companies with foreign participation may establish their own industrial-free zones under the control of the customs authorities, within which they are regarded as foreigners for the purposes of exchange control and foreign trade. There are around 100 industrial-free zones spread throughout Hungary, the majority of which belongs to the machinery industry. The regulation of these zones will have to be changed after the accession of the country to the EU (see *Éltető*, 1998).

Table 3

The ten most important export products to the EU in 1998
(thousand euros and percentage of total exports)

Poland			Slovenia			Hungary			Czech Republic			Estonia		
SITC	euro	share	SITC	euro	share	SITC	euro	share	SITC	euro	share	SITC	euro	share
78 120	762 860	4.75	78 120	693 082	13.31	71 322	1 877 844	12.89	78 120	1 472 892	10.10	76 432	144 831	8.23
76 110	444 331	2.77	82 119	208 879	4.01	75 270	637 267	4.37	78 439	346 706	2.38	33 440	82 638	4.69
32 121	426 217	2.65	78 219	103 915	2.00	76 381	507 533	3.48	82 119	306 375	2.10	24 820	81 239	4.61
82 116	410 771	2.56	78 439	92 336	1.77	78 120	431 248	2.96	78 432	227 825	1.56	24 740	74 871	4.25
82 159	280 495	1.75	68 412	76 601	1.47	75 997	369 257	2.53	77 313	192 010	1.32	33 419	72 191	4.10
68 212	276 225	1.72	77 521	64 993	1.25	77 313	362 130	2.49	69 969	164 344	1.13	24 752	64 403	3.66
78 219	256 554	1.60	71 690	60 607	1.16	76 110	327 014	2.24	24 820	154 078	1.06	33 430	57 487	3.27
32 500	219 538	1.37	77 586	57 589	1.11	78 439	261 510	1.80	69 119	152 546	1.05	75 997	57 211	3.25
63 599	200 670	1.25	78 432	52 833	1.01	75 260	210 548	1.45	93 190	129 317	0.89	76 493	33 321	1.89
78 439	199 641	1.24	74 315	51 488	0.99	71 323	207 536	1.42	71 631	109 376	0.75	82 159	30 954	1.76
Total 10	3 477 302	21.66	Total 10	1 462 323	28.08	Total 10	5 191 887	35.64	Total 10	3 255 469	22.33	Total 10	699 146	39.71

Name of SITC numbers: 24 740: coniferous wood in the rough 24 752: non-coniferous wood 24 820: wood of coniferous species 32 121: bituminous coal, not agglomerated 32 500: coke and semicoke of coal, of lignite 33 419: light oils from petroleum or bituminous minerals and products therefrom 33 430: gas oils, 33 440: fuel oils n.e.s. 63 599 manufactured articles of wood 68 212: refined copper 68 412: aluminium alloys, unwrought 69 119: metal structures and parts of iron and steel 69 969: articles of iron or steel n.e.s. 71 322: reciprocating piston engines of a cylinder capacity exceeding 1000 CC, 71 323: compression-ignition engines (diesel or semi diesel) for road vehicles 71 631: electric motors of an output exceeding 37.5W, 71 690: parts for use solely or principally with electric motors, generators 74 315: compressors used in refrigerating equipment 75 260: input-output units in data processing, 75 270: storage units for data processing 75 997: parts of automatic data processing machines, magnetic or optical readers 76 110: television receivers, colour or sound and video recorders, 76 381: video recording or reproducing apparatus 76 432: transmission apparatus for radiotelephony, radio broadcasting, incorporating reception apparatus 76 493: parts of television and radio broadcast receivers, transmission apparatus for radio telephony 76 499: parts of sound recorders and TV image and sound recorders or reproducers, 77 313: ignition and other wiring sets used in vehicles, 77 521: refrigerators, household type 77 586: electric ovens and cookers, cooking plates, grillers 77 821: filament lamps, 78 120: motor vehicles for the transport of persons, 78 219: motor vehicles for the transport of goods, 78 432: other parts and accessories of motor vehicle bodies 78 439: parts and accessories for motor vehicles 82 116: seats n.e.s. with wooden frames 82 119: parts of seats n.e.s. 82 159: furniture n.e.s. of wood 84 130: men's jacket, woven, 84 140: men's trousers, woven, 84 230: women's jacket of woven textile, 84 270: blouses, shirts of woven textile, 85 148: footwear of leather, 85 190: parts of footwear 93 190: special transactions.

As it was spectacular, the most important and radical change has been the gain of high-tech products in the exports and in the trade specialisation of the CEEC-5. Let us examine the single products traded. Table 3 shows the first ten export products of the CEEC-5 to the EU.

It can be seen that the most important export products are mainly telecommunication, electronic equipment, office machinery products (high tech) and several motor vehicles and components. In the case of Hungary the 'first ten' consists of only machinery and transport equipment products (SITC 7). These are the products which have caused the changes in the export structure, so behind the industries with spectacular development (like office machinery or motor vehicles) in reality there are a small number of products. Exports in the nineties experienced a high and increasing product-level concentration, which is also present at the company level.¹⁴ These products are overwhelmingly produced by multinational affiliates like IBM, Phillips, Renault, Volkswagen, Elcoteq or other major foreign firms.

Keeping this in mind, one can presume that there is a correlation between the participation of FIEs in the exports of the manufacturing sectors and the export performance of the sectors. Table 3 shows a set of possible correlation coefficients. These coefficients relate the 1998 sectoral export-share of the FIEs and the sectoral export value quotient of 1998–1993. Such a way a positive correlation was found, although the extent of the correlation is not too strong and rather different according to countries. What is the reason of the fact that despite the 'obvious' determining role of foreign companies in exports (seen on the product level) strong correlation can hardly be detected on the sectoral level?

*Correlation between FDI 'penetration'
in exports and the export performance of the sectors*

Country	Correlation coefficient*
Estonia	0.36
Hungary	0.35
Poland	0.56
Czech Republic	0.58
Slovenia	0.46

* Correlation coefficient: between the share of FIEs in the sectoral exports in 1998 and sectoral export value quotient in 1998/1993. Number of observed sectors is 18 (12 in Estonia).

The first reason is the lack of proper data. Available sectoral data on FIEs participation are too aggregated (ISIC 2 digit), they include sub-branches of different behaviour. The concept of Foreign Investment Enterprise is also too aggregated, it consists also of minority FIEs where the control is in domestic hands.

The second reason lies in the nature of foreign investments. As it was mentioned, CEECs experienced a mixture of export-oriented and domestic market oriented FDI inflow. In several sectors, like food, certain chemicals, paper and printing, minerals, etc. FDI penetration is significant (because of domestic sale possibilities, gain of strategic positions, etc.) but the level of exports and the increase during the nineties have been rather small as compared to other sectors.

¹⁴ 74 percent of the total high-tech exports of Hungary originated from three companies (Phillips, IBM, GE) in 1997 and 61 percent was the respective number for 1998. (Calculations based on the economic weekly 'Figyelő Top 200' database).

Apart from these, in case of Hungary the relatively low correlation can also be explained by the fact that in certain sectors the share of FIEs in the exports (FDI penetration) and similarly the export 'quantity' was already relatively high in 1993, so the increase has been small up to 1998. (Examples can be the food-tobacco, and other transport equipment sectors.)

5. CONCLUSION

This paper observed the development of the five CEECs' foreign trade with the EU. Apart from the simple export share analysis in the product structure it also examined the specialisation patterns and the development of intra-industry trade. The main results can be summarised as follows.

1. Between 1993 and 1998 the foreign trade structure of the CEEC-5 with the EU went through on considerable changes. The share of the high-tech products increased significantly, first of all in Hungary and Estonia, but also in other countries. Parallel to this process the share of traditional, low technology sectors decreased. Similar development can be observed in the foreign trade specialisation. The former specialisation of the CEEC-5 on low-technology, labour intensive goods strongly lessened and in certain cases new specialisation patterns have been developed among the high-tech products. The export increase of the high-tech products has been accompanied by an import increase in most cases and it is a result of assembly-like, lower value-added activity especially in office machinery, telecommunication equipment and electronic products.

2. The level of intra-industry trade increased in the manufacturing sector in each countries. This increase was the most spectacular in Slovenia and Estonia and the level of IIT is the highest between the Czech Republic and the EU. The increase of IIT in several cases meant product quality improvement at the same time, as the results of the unit value calculations showed. The increase of IIT can be considered a positive phenomenon in the case of several high and medium-tech products. Regarding low-tech products, however, in the majority of the cases the increase of IIT stemmed from the worsening of the trade balance.

3. Foreign direct investments and the activity of foreign investment companies have become increasingly significant in the CEECs in the nineties. FIEs contributed to the restructuring of the economy and of the manufacturing sector. Certain branches have been similarly attractive for foreign investors in the five countries, where the affiliates of major multinational companies are present. After having a look on the foreign trade structure at a very detailed product level it turns out that those – high and medium-tech – products are mainly responsible for the previously described changes in the foreign trade which are produced by these foreign companies. Statistical calculations are uncertain because of the lack of properly detailed data, but they still show a positive correlation between the extent of foreign presence in the exports and the extent of the successful export performance. It can be concluded that FDI exerts a determinant effect on the external competitiveness of the CEECs. The extent of this effect is obviously different among the countries due to their different FDI-attracting policies in the past and due to their different production and location-specific advantage structures. In spite of that one can suggest that the external activity of the foreign investment firms in the CEEC-5 has already integrated these economies to the European Union.

4. As the foreign trade patterns of the CEEC-5 are quite sensitive to the functioning of a few multinational affiliates, the economic policy should focus on the stabilisation and further improvement of recent trade structure and external advantages. Regarding the extensive penetration of foreign capital in these economies, foreign investors should be taken into account on the long run. In this respect the increase of the domestic value added and the maintenance of the attractiveness for foreign investors can be a reasonable policy.

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