Poland and other European Union new member countries as partners in international competitiveness

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1. Introduction

After implementing the single market in 1993, the European Union (EU) extended in 1995 membership to Austria, Finland and Sweden. The Maastricht Treaty set the stage for monetary union in 1999 and in 2000 the Lisbon Strategy was announced with the main aim to increase the overall international competitiveness of the EU-15. In the meantime, at the Copenhagen Summit in 1993, the EU-15 heads of state issued a firm commitment to the so-called eastern enlargement and on May 2004 ten new countries joined the European Union, and among them—omitting Cyprus and Malta—eight East and Central European countries (Estonia, Lithuania, Latvia, Poland, the Czech Republic, Slovakia, Slovenia and Hungary) labeled further as Eastern New Member States (NMES-8). There were many reasons of this enlargement but —quite surely—one of them was to increase EU international competitiveness on the long-run.

Remarkable and in various economic analyses relatively well explained shift of NMES-8 countries' foreign external relations (including trade) from East to West, and especially towards EU countries has started relatively early (in the case of Poland after 1970), but the turning point was evidently the beginning of the respective transformation periods (in the case of Poland since January 1990). This was due to many gravitational forces depending on different factors, including traditions of cooperation, geographical proximity, economic complementarity and—last but not least—specific process of extension of political and economic relations between EU-15 countries and NMES-8 as well as between EU-15 and other Eastern and Central European Countries (e.g. Bulgaria, Croatia and Slovenia). Anyway, the upgrading economic relations between EU-15 and NMES-8 have evolved in four stages: a) removal of discriminatory measures aimed specifically against state trading countries; b) granting of preferential market access under the General System of Preferences (GSP); c) concluding of so-called Europe Agreements by mid 1990's and d) formal, still controversial accession since May 2004.

The main aim of the paper is to present and evaluate intensity and structure of Poland's and other NMES-8 countries' trade with other countries of the EU-15, to compare NMES' countries efforts in order to increase EU-25 international trade competitiveness as well as to assess the main factors differentiating trade competitive position and trade competitiveness of the separate NMES-8 taking into account the up-to-date achievements of the respective theory. Of special importance are lessons from theory of location of economic activities and from the theory of international trade.

It is well known (e.g. from various well-known analyses based on gravity models) that integration in trade between the EU member countries in their previous line-up (EU-15) and the new countries in Central and Eastern Europe was begun years before the latter's formal accession. This has been accompanied by integration in other areas, especially in factors of production, a process initially led by Poland (Buch (2003); Borbely, Gern (2003); Rosati (2005); Misala (2006)). In the meantime, a lot has changed, however, and just the respective changes are of special concern in the presented paper in order to draw additionally some conclusions and recommendations for respective policy-makers.

One of the most distinguishing features of the presented analysis is their concentration on trade performance of the NMES-8 on the markets of the extended European Union (EU-25). Such an analysis is limited in scope, however. This is due to the fact that the respective comparable data delivered by Eurostat encompass period 1999–2005 only. Anyway, they are of great importance and their application help to access trade integration of the EU-25 countries just before and two years after last European Union enlargement. Such an assessment seems to be reasonable in order to understand more from the essence and logic of economic and political integration in Europe.

2. Position in international and intra EU trade

In the whole period of transition value of external trade of NMES-8 increased almost four times faster than the global trade of the EU-15 and even faster than the value of the world trade and it has been accompanied by no less increase of trade openness; e.g. exports to GDP ratio in NMES-8 increased from 29.3% in 1995 to 48% in 2005 compared to increase from 20.5% to 27.0% in the case of EU-15 and from 16.1% to 22.5% in the case of the world total. The same tendencies and discrepancies were observed in the more carefully analysed period 1999–2005 (see table 1).

Increasing openness of the NMES-8 countries and their growing activity in the international division of labour enabled the EU-25 countries to maintain their share in the world trade and especially in the world merchandise exports treated usually as the important measure of international competitiveness. Quite clearly, the intensity of respective involvement of separate NMES was differentiated, however.

Table 1.

Share of NMES-8, EU-15 and EU-25 in world merchandise trade in selected years of 1999–2005 (%)

Countries/group of countries	Imports			Exports		
	1999	2004	2005	1999	2004	2005
Estonia	0.07	0.09	0.12	0.05	0.07	0.08
Lithuania	0.08	0.13	0.16	0.05	0.10	0.12
Latvia	0.05	0.08	0.12	0.03	0.01	0.04
POLAND	0.79	0.97	1.14	0.48	0.83	1.02
Czech Republic	0.48	0.74	0.94	0.46	0.75	0.99
Slovakia	0.19	0.32	0.43	0.18	0.31	0.39
Slovenia	0.17	0.19	0.24	0.15	0.18	0.20
Hungary	0.48	0.65	0.67	0.44	0.62	0.71
NMES-8	2.31	3.17	3.82	1.84	2.87	3.55
EU-15[a)]	35.97	34.48	35.49	38.03	36.55	35.85
EU-25[b)]	38.28	37.65	39.31	39.87	39.42	39.40

[a)] Including intra-EU trade.
[b)] In its line-up as of May 1, 2004 including intra-EU trade.
Source: Eurostat database; own calculations.

In the analysed period 1999–2005, the NMES-8 countries actively participated among others in the development of intra-EU trade, which, notably, accounted for almost 70% of these countries, total trade. It was especially true after NMES-8 formal accession to the European Union (see table 2).

Table 2.

Share of NMES-8, EU-15 and EU-25 in the intra-EU 25 trade in selected years of 1999–2005 (%)

Countries/group of countries	Imports			Exports		
	1999	2004	2005	1999	2004	2005
Estonia	0.2	0.3	0.3	0.1	0.2	0.2
Lithuania	0.2	0.3	0.4	0.1	0.2	0.3
Latvia	0.1	0.2	0.3	0.1	0.1	0.1
POLAND	2.1	2.8	2.9	1.4	2.4	2.6
Czech Republic	1.3	2.3	2.4	1.4	2.4	2.5
Slovakia	0.5	1.0	1.1	0.6	0.9	1.0
Slovenia	0.5	0.6	0.6	0.4	0.4	0.5
Hungary	1.3	1.7	1.7	1.3	1.7	1.8
NMES-8	6.2	9.2	9.7	5.4	8.3	9.0
Belgium	7.7	8.5	8.9	8.7	9.3	9.6
Denmark	2.2	2.0	2.1	2.2	2.1	2.2
Germany	20.3	19.2	19.2	21.9	23.0	23.0

Countries/group of countries	Imports			Exports		
	1999	2004	2005	1999	2004	2005
Greece	1.4	1.3	1.2	0.4	0.3	0.3
Spain	6.2	7.2	6.8	4.8	5.4	5.0
France	14.1	13.4	12.9	13.1	11.7	10.8
Ireland	1.9	1.7	1.8	3.0	2.6	2.6
Italy	9.3	8.8	8.5	9.2	8.4	8.1
Cyprus	0.1	0.2	0.2	0.0	0.0	0.0
Luxembourg	0.6	0.6	0.6	0.4	0.6	0.6
Malta	0.1	0.1	0.1	0.1	0.0	0.0
Netherlands	7.7	7.0	6.9	11.1	11.3	11.9
Austria	3.8	4.0	3.9	3.1	3.4	3.2
Portugal	2.1	1.7	1.8	1.3	1.1	1.1
Finland	1.4	1.4	1.5	1.7	1.4	1.4
Sweden	3.2	3.0	3.0	3.3	2.9	2.8
United Kingdom	11.6	10.8	11.0	10.2	8.0	8.1
EU-25	100.0	100.0	100.0	100.0	100.0	100.0

Source: Eurostat database.

Remarkable upgrading of trade performance, also of export performance, of the NMES-8—especially in the last years—is really worth to mention. From the Poland's point of view there is to add that the commercial activity of the new EU members was rather more correlated to their share in the overall gross product than to their share (e.g. of Poland) in NMES-8 total population. This should not be surprising because, at least theoretically, there is dependency between the intensity of foreign trade and the level of economic growth. This is anyway one important reason why with regard to export expansion, Poland was rather behind not only EU-15 member countries but also most new EU-25 members. However, some additional factors seem reasonable to present and to discuss.

3. General determinants of the European Union new member countries exports' upgrading

Due to the respective theory a country's exports may grow more or less rapidly as the world or regional average for many reasons. According to the authors of the so-called constant-market-share analysis (CMS—analysis) of exports' growth just this growth can be attributed to: a) the general rise in world (regional) exports; b)the commodity composition of A's exports; c) the geographical distribution of A's exports; and d) a residual reflecting the difference between the actual exports growth and the growth that would have occurred if A had maintained its share of the exports of each commodity to each country. Therefore it is necessary and possible to distinguish and to es-

timate: a) pure market effect; b) commodity effect; c) geographical or spatial effect and d) pure international competitiveness effect reflecting among others level of the price competitiveness, differential rates of quality improvement, differential rates of improvement in the efficiency of marketing, exports promotion etc.[1]

Constant-Market-Share analysis seems to be reasonable to apply in the presented study with two general remarks. Firstly, the above—mentioned analysis refers only to the intra-EU trade of 25 member countries in 1999––2005. And consequently, assuming that in that period we had to do with free trade between these countries—which is only partly true—the geographical (regional) effect of the analysed trade flows can be omitted. Respective results are presented in table 3.

Table 3.

Components of NMES-8 exports within EU-25 without geographical effect in 1999–2005 (%)

Countries	Real exports' growth		Components in %		
	Thousands of €	%	Market effect	Commodity effect	Competitiveness effect
Estonia	3,993,887.7	100.0	110.3	–0.8	–9.5
Lithuania	3,116,891.6	100.0	84.5	7.5	8.0
Latvia	1,235,356.9	100.0	142.1	0.3	–41.8
POLAND	9,390,659.9	100.0	112.1	–23.2	11.1
Czech Republic	26,105,422.4	100.0	115.6	–9.7	–5.9
Slovakia	10,370,456.3	100.0	114.3	0.1	–14.4
Slovenia	4,330,764.3	100.0	188.1	–18.7	–69.4
Hungary	16,107,096.6	100.0	168.0	–46.8	–21.2
NMES-8[a)]	58,704,509.4	100.0	129.4	–11.4	–17.9

[a)] unweighted values
Source: Eurostat database; own calculations.

With regard to respective exports' upgrading and their role in economic development in value terms the Czech Republic was clearly the leader among the NMES-8 followed by Hungary, Slovakia and—next only—Poland with real exports' growth almost two times higher than in Slovenia and three times higher than in the cases of Estonia and Lithuania. According to the results of the C-M-S analysis, the winners were smaller countries in economic terms but much more open and clearly more quickly opening—up their national economies than Poland.

[1] See more: Leamer, Stern (1970) and the bibliography quoted there. In Poland the CMS analysis was applied initially by Misala (1981) in studying changes in the market shares of Poland in the years 1971–1978. Examples of some other applications can be find in Dicke, Foders (2000).

Due to the constant-share norm the NMES-8 countries (with except of Lithuania) enjoyed in 1999–2005 positive effects of growing EU-25 internal market (positive market effects but—once again—relatively small in the case of Poland). Anyway, the opening-up of the enlarged European Union member countries were clearly much more used by exporters from Slovenia and Hungary and even Latvia, than from exporters from Poland. The latter's simply misused to some extent a lot of such clear gravity forces as proximity of markets, their complementarity, increasing demand and absorptiveness etc.

Constant-Market-Share analysis provides a useful tool for analyzing export performance by allowing achieved export growth to be separated additionally into commodity effect and competitiveness effect. With regard to these effects respective results seem to be rather negative for all the NMES-8 countries but still differentiated among them. It is especially true with regard to the so-called commodity effect, which suggests further studies.

4. Inter and intra—industry complementarity between NMES-8 and other EU-25 member countries

4.1. Complementarity of export and import structures

Large-scale deagrarization, deindustrialization and tertiarization have taken place in the transition countries since 1989 and it has clearly influenced their specialization patterns (Landesmann (2000); Rosati (2005); Misala (2006)). Therefore, there has also changed the degree of these countries' export supply structures adaptability to the import demand structures of the partners.

The complementarity of export and import structures defined as adaptation of the export supply structure to the partners' demand structure can be observed and analyzed in reference to a specific period t as well as to a specific time bracket $t_1 - t_n$. Indicators of respective correlations are often used in that case. Additionally, the indices of structural complementariness of trade are often used, as proposed by M. Michaely (1996). The adaptation of the export supply structure to the import demand structure is reflected by indices calculated according to the following formula:

$$C_{jK} = 1 - \left(\sum \left| m_{iK} - x_{ij} \right|\right) \div 2 \qquad (1)$$

where:

m_{jK}—means the share of imports of product (commodity group) i in the overall imports of country (group of countries) K,

x_{ij}—means the share of export of product (commodity group) i in the overall exports of country (group of countries) j.

The C_{jK} index ranges from 0 to 1, where 0 means that products (commodity groups) i exported by country j (for example, Poland, Estonia or the Czech Republic) are not at all the subject of importation to country (group of countries)

K (in our case, imports of other member countries of the enlarged EU). In turn, index C_{jK} has maximum value of 1 when the shares of imports of products i, ..., n of the analysed group of countries K, i.e. EU-24, are exactly the same as the corresponding shares in the exports of the analysed country j (for example, Poland) to other member countries of the enlarged EU, i.e. EU-24. Of course, the higher the index C_{jK} the more adapted is the export supply of the analysed country (for example, Poland) to the import demand structure of its partners from the enlarged EU (table 4).

Table 4.

Indicators of the adaptation of the export supply structure of the new EU member countries to the import demand structure of EU-25 countries in selected years of the 1999–2005 period by 2-digit SITC classification

Country	1999	2004	2005
Estonia	0.57	0.59	0.59
Lithuania	0.42	0.48	0.51
Latvia	0.35	0.44	0.50
POLAND	0.68	0.75	0.73
Czech Republic	0.75	0.76	0.73
Slovakia	0.73	0.72	0.74
Slovenia	0.69	0.70	0.68
Hungary	0.63	0.65	0.70
Simple average for the above countries	0.60	0.64	0.65

Source: Eurostat database; own calculations.

In the analysed period, the improvement in the adaptation of the export supply structure to the partners' import demand structure was a significant, positive feature characteristic of the development of mutual trade among the EU member countries. This was first and foremost the result of a deepening intra-industry division of labour. This also applied to Poland, which joined Slovakia, the Czech Republic, Hungary and Slovenia as leaders from this point of view among the new member countries from Central and Eastern Europe. The adaptation of the export supply structure to the partners' import demand structure also increased considerably in the case of the Baltic countries, especially Latvia and Lithuania. However, among these countries, the highest indicator in 2005 was in Estonia, a country intensively developing the intra-industry division of labour, especially with Scandinavian countries, Germany and Great Britain.

4.2. Structure of trade by factors' intensities

Deagranization, deindustrialization and tertiarization of the NMES-8 countries are also reflected in their foreign trade structures, which can be

analysed using extensions of the Heckscher-Ohlin-Samuelson model and specifically the so-called neo-factor accounts of international trade relaxing the assumption that all countries have the same technologies and allowing for international productivity difference, introducing demand functions that permit home biases in consumption, incorporating trade costs etc. In such analyses traded products are usually classified into: a) raw material-intensive, b) labour-intensive, c) capital-intensive, d) technology-intensive and easy to imitate and e) technology-intensive and difficult to imitate[2].

The commodity breakdowns of the new EU member countries' imports from other countries of the enlarged EU were similar in the analysed period[3]. New member countries focused primarily on importing technology-intensive goods, including those difficult to imitate as they were necessary in transforming and modernizing their economies. In their imports from other member countries of the enlarged EU, a significant role was also played by capital-intensive goods. The situation in export was different, reflecting the export—oriented specializations of each country, with a slightly different evolution (table 5).

Table 5.

Structure by type of new EU member countries' exports to other countries of the enlarged EU in selected years of the 1999–2005 period (%)

Country	Year	Type of products						Total
		Raw material-intensive	Labour-intensive	Capital-intensive	Technology-intensive		Unclassified	
					Easy to imitate	Difficult to imitate		
Estonia	1999	18.2	29.6	11.2	4.6	30.7	5.7[a)]	100.0
	2004	17.8	26.1	11.5	5.4	33.0	6.2[a)]	100.0
	2005	18.2	31.1	11.8	22.8	15.6	0.5	100.0
Lithuania	1999	35.9	39.2	13.1	3.6	6.4	1.2	100.0
	2004	45.2	29.5	10.6	4.1	9.7	0.9	100.0
	2005	48.7	28.0	6.7	6.6	10.1	0.0	100.0
Latvia	1999	44.0	38.1	6.4	4.3	3.8	3.4	100.0
	2004	37.5	33.0	14.7	4.7	5.5	4.6	100.0
	2005	42.0	29.3	15.4	5.0	7.9	0.4	100.0

[2] Some economists, referring directly to the achievements of the theory of international trade, call raw material-intensive goods "Ricardo goods", labour- and capital-intensive goods "Heckscher-Ohiln goods", and technology-intensive goods "Schumpeter goods". Schumpeter goods include mobile and immobile goods. A criterion for the distinction is spatial ties between research & development and production. In the opinion of these economists, the distinction between these spheres is possible in the case of mobile goods, while in the case of immobile goods—due to the need to maintain diverse and comprehensive ties between such zones—their separation is difficult if not impossible. This means that the possibilities of transferring know-how in the case of mobile Schumpeter goods are much greater than in case of immobile goods. See: Laaser, Schrader (2005).

[3] For details of the applied commodity breakdowns see Misala (2006, p. 90)

Country	Year	Type of products						Total
		Raw material-intensive	Labour-intensive	Capital-intensive	Technology-intensive		Unclassified	
					Easy to imitate	Difficult to imitate		
POLAND	1999	15.0	39.6	20.5	6.5	18.4	0.0	100.0
	2004	15.7	30.0	23.5	6.5	23.9	0.1	100.0
	2005	16.6	28.7	25.0	6.7	22.8	0.1	100.0
Czech Republic	1999	9.3	23.2	26.4	11.4	29.2	0.5	100.0
	2004	6.9	19.0	25.6	16.2	31.4	0.9	100.0
	2005	8.2	24.1	27.2	14.2	26.3	0.0	100.0
Slovakia	1999	12.1	24.3	29.2	14.1	20.3	0.0	100.0
	2004	12.0	22.0	33.8	11.2	19.3	1.7	100.0
	2005	14.4	21.8	31.9	12.4	19.3	0.2	100.0
Slovenia	1999	3.5	36.5	28.6	5.6	25.8	0.0	100.0
	2004	3.6	30.8	30.5	6.1	29.0	0.0	100.0
	2005	5.9	27.8	34.8	5.8	25.7	0.0	100.0
Hungary	1999	9.4	19.0	18.3	23.2	30.1	0.0	100.0
	2004	8.7	13.5	17.3	23.3	36.2	0.1	100.0
	2005	10.0	13.7	13.6	24.9	37.7	0.1	100.0
Simple average for the above countries	1999	19.5	29.4	19.0	10.3	20.2	1.6	100.0
	2004	19.7	24.1	20.5	11.0	22.7	2.0	100.0
	2005	20.5	25.6	20.8	12.3	20.7	0.1	100.0

[a)] This involves special and confidential transactions that are not included in the relevant comparative statistics of the countries compared.
Source: Eurostat database; own calculations.

Comparing Poland to other new EU member countries, it should be pointed out that in 1999–2005 Poland displayed an excessive export-oriented specialization in the area of capital-intensive and labour-intensive goods and a relatively underdeveloped specialization in technology-intensive goods, especially those easy to imitate. In both cases, there were especially clear differences in comparison with Hungary. Furthermore, in Poland's export to other member countries of the enlarged EU, the share of technology-intensive goods difficult to imitate was also lower than in the corresponding exports of Estonia and the Czech Republic.

4.3. Revealed comparative advantages' pattern

International competitiveness can be measured with revealed comparative advantage (*RCA*) indicators. To assess the past structures of *RCA*'s of Poland and other member countries of the enlarged EU on the EU market (disregarding the issue of profitability of trade) the following formula is used:

$$RCA_i = \ln\left[\frac{x_{ij}^K}{m_{ij}^K} \div \frac{X_j^K}{M_j^K}\right] \tag{2}$$

where:
x_{ij}^{K}—exports of commodity group i from country K to group j
m_{ij}^{K}—imports of commodity group i to country K from group j
X_{j}^{K}—global exports of country K to group j
M_{j}^{K}—global imports of country K from group j
i—SITC section
K—analysed country (i.e. Poland)
j—other member countries of the enlarged EU

The interpretation of individual RCA_i indicators in period t as well as their averages (simple and weighted) is important. An RCA_i greater than zero points to revealed comparative advantages and to the intensity of this advantage. An RCA_i below zero denotes the absence of the revealed comparative advantage with either smaller or greater intensity. The logarithmical form of the formula makes it possible to maintain the symmetrically of the positive or negative RCA_i indicators in a range hovering around zero (table 6).

Table 6.

Revealed comparative advantage indicators (RCA_i) for the new EU member countries' trade with other countries of the enlarged EU by factor of production in selected years of the 1999–2005 period

Country	Year	Type of product					Simple average	Weighted average[a)]
		Raw material-intensive	Labour-intensive	Capital-intensive	Technology-intensive			
					Easy to imitate	Difficult to imitate		
Estonia	1999	–0.18	0.27	–0.30	–0.43	–0.56	–0.24	–0.18
	2004	–0.77	–0.37	–0.95	–0.93	–0.89	–0.78	–0.69
	2005	0.11	0.16	–0.58	–0.46	–0.86	–0.33	–0.24
Lithuania	1999	0.19	0.68	–0.92	1.14	–1.52	–0.09	3.16
	2004	0.47	0.45	–0.68	1.25	–1.40	0.02	3.77
	2005	0.15	0.29	–0.72	–0.39	–0.33	–0.34	0.04
Latvia	1999	–0.75	0.66	–0.66	–0.10	–2.10	–0.59	–4.10
	2004	–0.07	0.79	0.12	0.22	–1.61	–0.11	3.47
	2005	0.09	–0.28	0.55	–0.75	–0.95	–0.49	–0.24
POLAND	1999	0.33	0.37	0.46	–1.16	–0.63	–0.14	0.40
	2004	–0.05	0.12	0.00	–1.10	–0.58	–0.34	–3.63
	2005	–0.07	0.05	0.08	–1.11	–0.47	–0.30	–0.16
Czech Republic	1999	–0.09	0.18	0.03	–0.81	–0.17	–0.17	–2.01
	2004	–0.63	–0.06	–0.01	–0.45	–0.08	–0.25	–3.11
	2005	–0.12	–0.10	–0.13	–0.45	–0.25	–0.21	–0.20
Slovakia	1999	–0.75	0.12	–0.34	–0.54	–0.53	–0.41	–8.30
	2004	–0.35	0.08	–0.49	–0.54	–0.59	–0.38	–7.29
	2005	–0.33	0.07	–0.69	–0.44	–0.52	–0.38	–0.41

Country	Year	Type of product					Simple average	Weighted average[a)]
		Raw material-intensive	Labour-intensive	Capital-intensive	Technology-intensive			
					Easy to imitate	Difficult to imitate		
Slovenia	1999	–2.66	0.05	0.28	–1.04	0.02	–0.67	–0.95
	2004	–1.64	0.02	–0.23	–1.11	0.06	–0.64	–3.68
	2005	–1.21	–0.09	–1.08	–1.10	0.00	–0.70	–0.54
Hungary	1999	0.03	0.36	–0.35	1.26	–0.32	0.19	4.06
	2004	–0.35	–0.15	–0.94	1.52	0.29	0.07	4.92
	2005	–0.25	–0.36	–0.74	–0.20	–0.25	–0.36	–0.32

[a)] The shares of the analysed groups of goods in exports to other member countries of the enlarged EU were used as weights.

Source: Eurostat database; own calculations.

According to 2-digit SITC classification, in 1999–2005 a convergence process took place in the structures of the revealed comparative advantages and/or disadvantages in the trade of the new EU member countries with other EU members. In the last two years, the greatest similarity in these structures occurred in the case of Poland and the Czech Republic. Poland's structure was vastly similar to the corresponding structures of the trade of the Baltic countries and Slovenia with other EU member countries. On the other hand, despite certain changes, the situation in Poland and Hungary was completely different. Compared with Hungary, Poland primarily stood out in revealed comparative disadvantages in most technology-intensive goods, both those easy and those difficult to imitate.

In the analysed period, Poland's structure changed. Generally, Poland's advantage decreased substantially in raw material-, labour- and capital-intensive goods; but at the same time its disadvantage in technology-intensive goods decreased. Most other new member countries of the enlarged EU displayed similar changes.

In the first year of the analysed period, the pattern of Poland's revealed comparative advantages in trade with other member countries of the EU-25 was most similar to that of the Czech Republic. Like Poland, the Czech Republic did not have a revealed comparative advantage in the area of technology-intensive goods, especially those easy to imitate. On other hand, both countries had such an advantage in the area of labour-intensive and capital-intensive goods.

By contrast, in 2005 the *RCA* pattern in trade with other member countries of the EU-15 was different in the case of Poland and Hungary. Even though both countries had positive *RCA* in the trade of raw material-intensive and labour-intensive goods and lack of such advantages in technology-intensive goods, but the situation was differed in the trade of capital-intensive goods and technology-intensive goods difficult to imitate. In the analysed year, Po-

land had a revealed comparative advantage in capital-intensive goods and a disadvantage in technology-intensive easy to imitate goods, while in the case of Hungary the situation was reversed.

If the average—especially weighted average—indicators of the revealed comparative advantage (RCA_i) are to be treated as composite indicators of international inter-industry competitiveness, it is easy to conclude that in Poland's case, the level of this indicator decreased. A decrease in international inter-industry competitiveness measured in this way was also observed in the case of most new EU member countries, especially Hungary, which earlier had its highest level among NMES-8.

In intra-EU trade, Poland and most other new EU member countries displayed the highest revealed comparative advantage indicators in cases of the relatively low-value-added goods. This primarily applied to raw material-intensive, including land-intensive, goods. From this point of view, the structure of these advantages in the case of Hungary was the most favourable.

Due to a relative shortage of capital, Poland has been moving away in recent years from capital-intensive specialization in exports to other member countries of the enlarged EU. This specialization (in addition to raw material-intensive and labour-intensive) was characteristic of the period preceding system and economic transformation[4]. There has also been a move away from specialization in raw material-intensive goods and—though slightly less markedly—in relatively labour-intensive goods, especially simple labour. However, at the same time, the role of human capital necessary for the manufacture of technologically advanced goods has not changed as fast in Hungary or Estonia. These countries, as well as the Czech Republic and Slovenia, are still ahead of Poland in terms of the rate of increase in comparative advantages (specifically by reducing the scope and intensity of the disadvantages) in technology-intensive goods, including those easy to imitate. From this point of view, of considerable importance are the numerous drawbacks of the development of technical progress in Poland (underdevelopment of the R&D sector due to limited expenditures), accompanied by the still relatively low intensity of international cooperation and external technological ties. This is confirmed by the structure of Poland's intra-industry trade with other countries.

4.4 Intensity and structure of intra—industry trade

In contemporary international exchange, a significant and generally increasing role is played by intra—industry trade (also known as two-way trade), which is based on parallel imports and exports by a specific country or group

[4] A certain exception is the export-oriented specialization in transport equipment, which is classified here among capital-intensive products, although it is known that its production also requires considerable labour force involvement, especially employees with appropriate qualifications.

of countries of finished products and/or their parts and components coming from the same sector in a given period, usually during a year. The intensity of such trade is most often measured with the use of an index developed by H. Grubel and P.J. Lloyd:

$$IIT_i = \frac{x_i + m_i - |x_i - m_i|}{x_i + m_i} \tag{3}$$

On the whole, in 1999–2005, the average intensity of intra—industry trade in NMES-8 with other EU-25 member countries showed an upward trend. This means that intra-industry division of labour increasingly replaced inter-industry one (table 7).

Table 7.

Intra-industry trade indicators (IIT_i) in turnover of the new member countries of the enlarged EU with other EU countries by factor of production in selected years of the 1999–2005 period

Country	Year	Type of products					Simple average	Weighted average[a)]
		Raw material-intensive	Labour-intensive	Capital-intensive	Technology-intensive			
					Easy to imitate	Difficult to imitate		
Estonia	1999	0,33	0,51	0,47	0,50	0,40	0,44	0,41
	2004	0,29	0,49	0,49	0,43	0,41	0,42	0,39
	2005	0,44	0,71	0,50	0,48	0,51	0,53	0,55
Lithuania	1999	0,34	0,39	0,31	0,52	0,24	0,36	0,35
	2004	0,44	0,40	0,36	0,53	0,31	0,41	0,50
	2005	0,57	0,65	0,53	0,71	0,72	0,64	0,61
Latvia	1999	0,32	0,40	0,42	0,46	0,14	0,35	0,35
	2004	0,30	0,48	0,53	0,45	0,20	0,39	0,40
	2005	0,43	0,51	0,48	0,47	0,39	0,46	0,51
POLAND	1999	0,55	0,62	0,55	0,44	0,43	0,52	0,55
	2004	0,55	0,70	0,68	0,51	0,62	0,61	0,65
	2005	0,62	0,69	0,69	0,51	0,61	0,62	0,65
Czech Republic	1999	0,62	0,71	0,76	0,58	0,89	0,71	0,75
	2004	0,67	0,78	0,68	0,61	0,91	0,73	0,75
	2005	0,62	0,76	0,73	0,67	0,87	0,73	0,76
Slovakia	1999	0,52	0,73	0,68	0,75	0,66	0,67	0,68
	2004	0,53	0,77	0,63	0,70	0,72	0,67	0,60
	2005	0,56	0,80	0,59	0,67	0,73	0,67	0,67
Slovenia	1999	0,29	0,73	0,72	0,48	0,83	0,61	0,72
	2004	0,64	0,73	0,71	0,43	0,85	0,67	0,73
	2005	0,41	0,71	0,68	0,47	0,82	0,62	0,70

Country	Year	Type of products					Simple average	Weighted average[a)]
		Raw material-intensive	Labour-intensive	Capital-intensive	Technology-intensive			
					Easy to imitate	Difficult to imitate		
Hungary	1999	0,34	0,52	0,55	0,41	0,49	0,46	0,47
	2004	0,47	0,56	0,50	0,32	0,57	0,48	0,48
	2005	0,59	0,71	0,71	0,62	0,78	0,68	0,70

[a)] The shares of the analysed groups of goods in exports to other member countries of the enlarged EU were used as weights.
Source: Eurostat database; own calculations.

In terms of the intensity of intra-industry trade turnover with other EU member countries, Poland occupied an average position among the new members. On the one hand, it trailed the Czech Republic, Slovakia and Slovenia, but on the other hand it was ahead of other countries, especially Lithuania and Latvia, which with other EU-25 member countries primarily developed intra-industry trade. In the case of Poland, the importance of intra-industry trade in the exchange of labour-intensive, capital-intensive and difficult to imitate technology-intensive goods was relatively high and rising. Similar trends were observed in the trade of most new EU member countries, especially the Czech Republic and Slovakia (table 8).

Table 8.

Products with the highest intra-industry trade indicators (IIT_i) in Poland's exchange with other member countries of the enlarged EU in 1999–2005 according to the 1999 order

SITC sections	Commodity group	IIT_i		
		1999	2004	2005
	Raw material-intensive products			
07	Sugar and honey	0.95	0.62	0.82
06	Coffee. tea. cocoa. spices	0.93	0.84	0.82
29	Crude animal and vegetables materials	0.86	0.78	0.74
	Labour-intensive products			
69	Manufactures of metals	0.97	0.95	0.96
85	Footwear	0.84	0.93	0.81
83	Travel goods. handbags and similar containers	0.82	0.70	0.59
	Capital-intensive products			
62	Rubber manufactures	0.93	0.88	0.86
12	Tobacco and tobacco manufactures	0.79	0.66	0.90
78	Road vehicles	0.77	0.99	0.87

SITC sections	Commodity group	IIT_i		
		1999	2004	2005
	Easy to imitate technology-intensive products			
52	Inorganic chemicals	0.99	0.93	0.93
76	Telecommunications apparatus and equipment	0.73	0.98	0.94
51	Organic chemicals	0.68	0.62	0.58
	Difficult to imitate technology-intensive products			
77	Electrical machinery. apparatus and appliances	0.86	0.99	0.99
71	Power generating machinery and equipment	0.64	0.75	0.74
79	Other transport equipment	0.38	0.93	0.63

Source: Eurostat database; own calculations.

Research into the intensity and structure of intra-industry trade is at a preliminary stage in Poland. This explains why it is difficult to clearly and convincingly identify the main causes for the particularly high intensity of intra-industry trade in relations with other member countries of the enlarged EU, particularly in the case of products and product groups listed in table 8. This is often determined by differences in production costs, freedom of trade and the diversification of consumer preferences (for example, intra-industry trade in sugar and honey, coffee, tea, cocoa and footwear). It is accompanied by causes such as the diversified quality of products within individual sectors and diversification of investor and user preferences (for example, intra-industry trade of metal products or rubber products, specifically various kinds of tries). In the case of technology-intensive products, in addition to the above causes, one should additionally—and perhaps first of all—consider the effects of the international movement of capital and know-how and the accompanying specialization and cooperation ties. This applies, for example, to intra-industry trade in road vehicles and various transport equipment developed as a result of investments in Poland by companies such as Fiat, Volkswagen, Opel or Renault. To a large extent, the same also applies to intra-industry trade in power generating machines and equipment, telecommunications apparatus and equipment and electrical machinery and equipment. In these cases, of considerable importance are cooperation and technological ties with well-known foreign investors in Poland, such as France Telecom, Royal Philips Electronics, General Electric, Siemens, Marge B.V., Faurecia, Goodyear, Procter & Gamble, LG Electronics, Bosch and Lucchini. There are many more examples like this. Such ties have promoted a steady emergence and development of industrial clusters in Poland. But compared with the Czech Republic, Slovakia, Hungary, Slovenia or Estonia, these processes are still at an inceptive stage. This is especially true with regard to

vertical intra-industry trade which is still relatively underdeveloped but not only in the case of Poland. The same is rather true in the cases of other EU-25 new member countries, although to different degree. Anyway, Hungary, the Czech Republic, Estonia and Slovakia seem to be more involved in the EU-25 intra-industry trade of vertical type than Poland[5].

5. Competitiveness residual and total competitiveness' main driving forces

5.1. General remarks

While the Constant-Market-Share analysis provides a really useful method to explore export performance it is still questionable with regard to the so-called competitiveness residual. As E.E. Leamer and R.M. Stern (1970, p. 176) underline

> **the actual value taken on by the residual will of course result from the interaction of both demand and supply. As with the time-series analysis of demand, it may prove to be difficult to identify the separate influences of demand and supply [...]. The interpretation of the competitiveness residual is [...] clearly complicated by the nature of the general equilibrium system that lies behind it. It is further complicated by the necessarily arbitrary selections of a base period and the level of disaggregation of the commodity and market groups [...]. Possibly different conclusions will emerge on the relative importance of the various factors isolated if another choice of time period and level of aggregation is made.**

Anyway in the context of the presented statistical data some general observations seem to be clear.

5.2. Some stylized facts from the past

There is a rather strong evidence that in the analysed period foreign market access was much more important source of NMES-8 export growth than their supply capacity growth (Redding, Venables (2003); Fugazza (2004), Rojec, Ferjancic (2006)). The same was also true in the cases of Lithuania and Poland even that these countries were in 1999–2005 exceptions among the NMES-8 when taking into account the results of the C-M-S analysis with regard to the sign and value of the so-called competitiveness residual (see table 3). Anyway, even in 2005 innovation capacity in Poland (probably also in Lithuania, and not only) was much smaller than the EU-25 average and even EU-10 average (see table 9).

Despite relatively intensive international capital flows as well international flows of embodied and disembodied technology we still have to do with

[5] See more Misala (2006) and sources quoted there.

specific gaps between EU-15 and EU-10 (including NMES-8) with regard to innovation capacity measured by input and innovation performance measured by output. However, influence of the respective flows on the overall competitiveness of the NMES-8 economies (including their productivity levels) can't be omitted.

Table 9.

Innovative capacity and output of Poland vis-à-vis other EU-25 member countries in 2005

Indicators	EU-25 average	POLAND	EU-15 best performing country	EU-10 best performing country
Public R&D expenditures as % of GDP	0.69	0.43	Sweden (1.02)	Slovenia (0.63)
Business R&D expenditures as % of GDP	1.26	0.16	Sweden (2.93)	Slovenia (0.90)
Population with tertiary education	21.9	15.6	Finland (34.2)	Estonia (31.4)
European patents applications (per million population)	133.6	2.7	Sweden (311.5)	Slovenia (32.8)
New EU industrial designs per million population	84.0	5.2	Denmark (199.1)	Slovenia (24.6)
Employment in medium-high and high-tech manufacturing (% of total workforce)	6.60	4.35	Germany (11.04)	Slovenia (8.94)
Employment in high-tech services (% of total workforce)	3.19	n.a.	Sweden (4.85)	Czech Republic (3.18)
Sales of new-to-market products (% of turnover)	n.a.	10.5	Luxembourg (9.1)	Slovakia (10.9)
Sales of new-to-firm not new-to market products (% of turnover)	n.a.	9.6	Denmark (25.6)	Poland (9.6)
Exports of high technology products as a share of total export	17.8	2.3	Ireland (29.9)	Malta (63.3)

Source: European Innovation Scoreboard, 2005 quoted in: Weresa (ed.) (2006, pp. 158–162).

5.3. Role of international capital and technology flows

Table 10.

The share of Poland and selected other new member countries of the European Union and EU-25 in global FDI inflows and outflows in selected years of the 1995–2004 period (%)

Country/Region	FDI inflow			FDI outflow		
	1995	2003	2004	1995	2003	2004
Estonia	0.1	0.1	0.1	–	0.02	0.04
Lithuania	0.0	0.1	0.1	–	0.01	0.4

Country/Region	FDI inflow			FDI outflow		
	1995	2003	2004	1995	2003	2004
Latvia	0.1	0.0	0.1	–	0.01	0.01
POLAND	1.2	0.7	1.0	0.01	0.03	0.11
Czech Republic	0.8	0.3	0.7	–	0.03	0.07
Slovakia		0.1	0.2	–	0.01	0.02
Slovenia	0.1	0.0	0.1	–	0.08	0.07
Hungary	1.4	0.3	0.6	0.01	0.27	0.07
Total for the above	3.7	1.6	2.9	–	0.46	0.43
European Union EU-25	–	53.5	33.4	–	60.36	38.32

Source: UNCTAD, selected editions; own calculations.

Due to factors such as low national savings and limited possibilities for investment, many former socialist countries, including Poland, showed an interest in foreign capital as early as the 1970s, but this interest met with little response among foreign investors. This attitude changed after the start of the transformation process; special interest was attracted by Poland and a few other countries in Central and Eastern Europe (Landesmann (2000); Rosati (2005); see table 10).

Poland is a leader among new EU member countries in the value and importance of FDI inflows as well as outflows—which, of course, are much smaller. However, smaller countries in term of area, human resources and raw material resources are bridging the gap. A similar trend can be noted for FDI inward and outward stocks (see table 11).

Table 11.

FDI stock in new EU member countries in selected years of the 1995–2004 period (%)

Country/Region	FDI inward stocks				FDI outward stocks			
	Share in global FDI stock (%)		Per capita in US $		Share in global FDI stock (%)		Per capita in US $	
	1995	2000	2004	2004	1995	2000	2004	2004
Estonia	0.02	0.05	0.11	7101	–	0.00	0.01	1042
Lithuania	0.01	0.04	0.07	1857	–	0.00	0.00	123
Latvia	0.02	0.04	0.05	1943	–	0.00	0.00	98
POLAND	0.30	0.59	0.69	1609	0.03	0.02	0.03	70
Czech Republic	0.14	0.37	0.63	5524	–	0.01	0.03	299
Slovakia		0.06	0.16	2693	–	0.00	0.01	115
Slovenia	0.02	0.05	0.06	2484	0.01	0.01	0.03	1227
Hangary	0.45	0.40	0.68	5971	0.01	0.02	0.05	443

Country/Region	FDI inward stocks				FDI outward stocks			
	Share in global FDI stock (%)		Per capita in US $		Share in global FDI stock (%)		Per capita in US $	
	1995	2000	2004	2004	1995	2000	2004	2004
Total for the above	0.96	1.60	2.45	3648	–	0.06	0.16	427
EU-25	–	37.62	45.24	8807	–	49.55	53.33	11,359

Source: as in table 10.

Many different factors, such as changes in political and macroeconomic stability, the advancement of economic reform, policy revisions and the intensity of privatization processes, caused changes in the value of FDI inflows to new EU member countries. In consequence, the shares of annual FDI inflows in gross capital formation also varied. The share of FDI inward stock in the GDP was more stable. At the end of the analysed period, Poland occupied an average position; it was considerably behind Estonia, Hungary and the Czech Republic, while ahead of Slovenia (see table 12).

Table 12.

Relations between FDI inward stock, FDI outward stock and GDP in NMES-8 and EU-25 countries in selected years of the 1995–2004 period (%)

Country/Region	FDI inward stock/GDP			FDI outward stock / GDP		
	1990	2000	2004	1990	2000	2004
Estonia	–	51.4	85.1	–	5.0	12.5
Lithuania	–	20.9	28.8	–	0.3	1.9
Latvia	–	29.1	32.9	–	3.4	1.7
POLAND	0.2	20.9	25.4	0.7	0.6	1.1
Czech Republic	3.9	38.9	52.7	–	1.3	2.9
Slovakia	0.5	18.4	35.4	–	1.6	1.5
Slovenia	3.8	15.3	15.1	1.5	4.0	7.5
Hungary	1.7	49.0	60.7	0.6	2.7	4.5
Total for the above countries[a)]	–	30.5	42.0	–	2.4	4.2
EU-25	10.7	26.4	31.7	11.5	37.0	40.9

[a)] simple average.
Source: as in table 10

Without doubt, inflows of foreign capital with technology meant here as "backward linkages" of the NMES-8 countries enabled them—quite clearly with different intensity across these countries—to increase the level of economic development, economic productivity and—last but not least—the level of overall competitiveness, respective restructurings including. On the other hand, NMES-8 countries—especially some of them—have started to build-up

respective "forward linkages", while their intensity can be measured by percentages of FDI outward stock in GDP.

The increasingly active participation of the new EU member countries in the international division of labour and the internationalization of their economic life caused among others the development of their own foreign direct investments abroad. Export of the production capital of these countries (transfers of their own resources abroad to secure profits) is still at preliminary stage of development, thought progress has been visible (see table 11).

Among the analysed countries, Poland displays the lowest tendency to invest abroad. So it is wonder that it ranks last among them in terms of the share of FDI outward stock in the GDP. Poland is especially outdistanced by Estonia as well as Slovenia, Hungary and the Czech Republic.

What's more, research by W. Wiliński (2004) shows that Poland's outward FDI stocks are smaller than the theoretical value resulting from the level of economic development. The reverse is true for many other analysed countries, especially Estonia and Slovenia. The basic causes of this state of affairs are the low level of savings in the Polish economy, higher investment attractiveness of the domestic market compared with foreign markets linked with higher rates of return, the relatively large domestic market with its tendency toward long-term growth, low internationalization of the economy, and higher risk connected with FDI compared with goods and service exports.

6. Summary and conclusions

According to the respective theory, regional economic integration is a long—run process leading to the increasing overall competitiveness and welfare of the involved countries and regions. All this seems to be true taking into account results of trade integration between NMES-8 and other countries of the enlarged European Union in 1999–2005. Anyway, position of NMES-8 in international and intra-EU trade has been increasing. This specific NMES-8 trade's upgrading was a positive net result of various factors, while improved access to the EU enlarged market seems to be of greatest importance. Additionally, since the beginning of transition—following deagrarization, deindustrialization and tertiarization processes—export structure of NMES-8 countries has undergone significant changes. Export restructuring has been characterized by theoretically expected specialization patterns between and within industries. The role of international capital and technology flows has been of great and growing importance strengthening backward and—to a lesser degree—forward linkages in regional and world—wide economic cooperation.

Poland's importance in the intra-EU and international division of labour is growing, both quantitatively and qualitatively. However, according to the theory of location of business activity as well as theory of international trade, Poland—the leader with regard to systemic changes in the early 1990's—be-

longs nowadays to a group of NMES-8 countries with relatively weaker links in the process of improving EU-25 international competitiveness.

Within the enlarged European Union, Poland so far has only made relatively limited use of the possibilities for deepening the international division of labour and using the respective advantages (e.g. relatively limited involvement in world and regional exports of goods and services, still outdated pattern of export specialization, relatively weak engagement in the intra-industry international division of labour) which is due among others to relatively upgraded backward linkages. On the other hand, Poland is still at a preliminary stage of creating a base for further broadly understood commercial expansion, including development of its own capital foreign investments and exports of technology to other countries.

Many NMES-8 member countries have better than Poland utilized chances connected with improved access to the EU-25 market and with broadly understood restructuring (exports including) and international flows of capital and technology. Therefore, taking into account respective theory, in the case of Poland (and not only), the problem of the speed of institutional changes seems to be clearly open. Anyway, some conclusions from the experiences of the leading NMES-8 countries can and should be drawn in Poland.

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Abstract **Poland and other European Union new member countries as partners in international competitiveness**

The last, so-called eastern enlargement of the European Union is still controversial issue also from the purely economic point of view. However, taking into account respective theory on the long-run it should strengthen the overall international competitiveness of the enlarged Union and there are even first insights supporting such an attitude.

Due to many gravitational forces the eight Eastern and Central European new member countries (NMES-8) of the enlarged European Union are on the way of deepening economic integration with their traditional partners upgrading among others trade, capital as well as technology dependence and interdependence. The role of intra-industry complementarity is clearly increasing with all the positive consequences. However, the differentiated intensity of respective restructuring processes between the NMES-8 countries can be observed when taking into account appropriate statistical data and results of various analyses concerning 1999–2005 period.

Within the enlarged European Union, Poland—the leader in the early years of systemic transformation—has so far made only relatively limited use of the possibilities for deepening and widening division of labour with other countries of the enlarged European Union. This is due to many reasons, while the relatively slow restructuring in comparison with other new EU member countries as well as some lags with regard to institutional changes seem to be of greatest importance. Therefore there is to learn a lot from other NMES countries' experiences.