EASTERN ENLARGEMENT' OF THE EUROPEAN UNION – CHANGES IN TRADE STRUCTURE AND ITS INSTABILITY

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ABSTRACT

The present paper studies changes in trade structures of the European Union (EU) member states, before and after the 'Eastern enlargement' of 2004. It focuses on geographical and commodity structures of trade of both old and new members in 2003 and 2011. It concludes that the 'Eastern enlargement' has led to a significant level of convergence of trade patterns between the two groups of countries. Effects on instability of the geographical structure of trade are also studied, but no systematic changes are detected.[2]

Key words: European Union, 'Eastern enlargement', integration, trade structure

JEL Code: F15

INTRODUCTION

In 2004, the European Union underwent the largest enlargement in its history. Eight post-communist countries (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia) and two Mediterranean islands (Cyprus and Malta) entered into the Union, thus increasing the number of members by 67 per cent. Entry of two other post-communist countries (Bulgaria and Romania) followed in 2007. The European Union has not only grown in size, but has also increased its cultural, religious, political and economic heterogeneity. In 2007, eleven of the twelve new member states had lower income per capita than all the old member states with the sole exception of Portugal. For example, Bulgaria's GNI per capita was six times lower than that of Luxembourg. These economic differences are at the core of the debate on effects of economic integration: Are they European Union's strength or its weakness?

This paper focuses on differences between trade structures of old and new member states. It deals with both geographic and commodity structures of trade. Specifically, our aim is to analyze the development of new members' foreign trade after entering into the EU. We expect to find evidence of significant changes that demonstrate themselves by convergence of trade patterns between old and new members, both in geographical and commodity structure. An important part of our research is the study of trade structure instability.

The remainder of the paper is structured as follows: In section 1 we offer a brief overview of the steps leading to the 'Eastern enlargement' of the European Union. Section 2 reviews literature on economic effects of this enlargement. Section 3 shows differences in trade structures of old and new member states before the enlargement of 2004. Section 4 compares geographic structure of trade of the new members before and after their entry into the EU, identifies the changes and looks at the member countries' instability of geographic

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structure of trade. Section 5 applies a similar approach to the commodity structure of trade. Finally, the last section offers conclusions.

1. THE 'EASTERN ENLARGEMENT' OF 2004

The fall of the Iron Curtain and defeat of communism in the majority of Central and Eastern European countries in the end of the 1980s sparked the wave of democratization and optimism throughout Europe. The Eastern bloc disappeared and the European Union had to adjust itself for a new future. It was widely expected that post-communist countries of Central and Eastern Europe would sooner or later express their interest to participate in the European integration. However, it became immediately obvious that the EU can only open its doors to those post-communist countries which are able to prove that they adhere to the rules of democratic governance (Wieclawski 2010) and are willing to introduce a full market economy. The provision in article O of the Maastricht treaty which opened the EU membership to any European state was clearly unsatisfactory. Therefore, in 1993 the European Union adopted a set of rules that each potential candidate country had to fulfill in order to become a full member of the organization. These rules became known as the Copenhagen criteria: "stability of institutions guaranteeing democracy, the rule of law, human rights and respect for and protection of minorities, the existence of a functioning market economy as well as the capacity to cope with competitive pressure and market forces within the Union" (European Council 1993).

Adopting the Copenhagen criteria had a dual importance: first, it protected the Union from entry of unprepared countries, and second, it motivated the post-communist states to embrace reforms. From this time on, Eastern enlargement was no longer a question of 'if,' but 'when' (Novotna 2007). This approach was complemented by financial support of reforms by means of the PHARE pre-accession instrument and later by ISPA and SAPARD programs. Between years 1990 and 2002, PHARE alone contributed more than 15 billion euros to restructuring efforts of Central and Eastern European countries (O'Brennan 2006). While this is a considerable amount, Pflueger (1995) showed that in the first half of the 1990s its efficiency was extremely low and only 10 per cent of the PHARE funds resulted in real investment, the rest having been spent on consulting and other management-related expenses. No matter how efficient (or inefficient) it was, its results were straightforward: by the end of the 1990, mere ten years from the fall of the Iron Curtain, the majority of Central and Eastern European countries was fulfilling the Copenhagen criteria. It is hard to expect that the countries would be able to achieve this result without EU funding.

A combination of a clear set of rules, EU financial assistance and political will on the side of potential candidate countries led to the December 1997 decision by the European Council of Luxembourg to give a green light to open accession negotiations with six countries: Cyprus, the Czech Republic, Estonia, Hungary, Poland and Slovenia. The negotiations with these countries started in spring 1998. The other six countries' progress was deemed insufficient and they had to wait for two more years, until finally the European Council decided to invite them for negotiations on joining the EU on its summit in Helsinki in December 1999. Even though six countries of the so-called first group had a headstart of two years, Latvia, Lithuania, Malta and Slovakia managed to catch up with them and the ten countries closed their negotiations in December 2002. Between March and September 2003, referendums on accession to the EU were held in nine of the potential new members, with the exception of Cyprus. Referendum results were all in favor of joining (table 1) and

after a problem-free ratification process the candidates became full members of the EU on May 1st 2004.

Table 1: European Union membership referendums of 2003

Country	Date	Turnout	For	Against
Malta	March 8th	90.9 %	53.6 %	46.4 %
Slovenia	March 23rd	60.2 %	89.6 %	10.4 %
Hungary	April 12th	45.6 %	83.8 %	16.2 %
Lithuania	May 10th – 11th	63.3 %	91.0 %	9.0 %
Slovakia	May 16th – 17th	52.2 %	92.5 %	6.2 %
Poland	June 7th – 8th	58.9 %	77.5 %	22.6 %
Czech Republic	June 13th – 14th	55.2 %	77.3 %	22.7 %
Estonia	September 14th	64.1 %	66.8 %	33.2 %
Latvia	September 20th	71.5 %	67.0 %	32.3 %

Source: National bureaus of statistics.

In hindsight, it is obvious that the 'Eastern enlargement' of 2004 was a political as well as an economic decision. Western European countries kept their political promise from the beginning of the 1990s and welcomed the Eastern European new members as soon as they were able to fulfill the Copenhagen criteria and close the admission negotiations. From the economic perspective, the 'Eastern enlargement' constituted a proof of EU's adherence to the principle of solidarity, given the enormous differences between per capita GDPs of old and new members. However, this solidarity is actually driven primarily by a thorough analysis of long-term economic costs and benefits and as Baldwin et al. (1997) demonstrated well before the actual enlargement took place, the results of this analysis are unambiguously positive. The same conclusion is valid for Bulgaria's and Romania's entry into the Union on January 1st 2007.

2. LITERATURE REVIEW

Nine years have passed since the EU enlargement of 2004 and a considerable number of studies on its economic effects are already available. Although the debate in Western media usually highlights increasing levels of immigration and their negative social impacts on host countries, academic researchers see the enlargement in a broader economic perspective and their conclusions are mainly positive.

Vojinovic, Oplotnik and Prochniak (2010) studied sigma and beta convergence of per capita GDP among the 10 countries which joined the European Union in 2004. Their research confirmed the existence of both types of convergence in the period 1992-2006 and showed that the income gap between poorer and richer new member states has been narrowing. Moreover, they found evidence of accelerating speed of convergence which indicates effective integration going on among the new member states as well as between new and old member states.

Lindenblatt and Feuerstein (2012) applied a test for sigma convergence on retail food prices before and after the 'Eastern enlargement'. They conclude prices within the EU as a whole as well as within the eight post-communist countries that joined the EU in 2004 converged significantly after the enlargement, whereas prices within the old member states diverged slightly. Price convergence can be an indication of a well-functioning economic integration; however it should be complemented with wage convergence. In the absence of

wage convergence, the fact that food prices in old and new member states are moving toward each other would be a sign of a weakening purchasing power in new member states.

Wage convergence after the enlargement of 2004 was studied by Ucak (2012). He used panel unit root and OLS regressions to assess whether wages in the eight post-communist countries that joined the EU in 2004 converged to wages in Germany, chosen as a representative country for the old EU member states. Analyzing data for 2007-2011, he found evidence that the catch-up process is indeed taking place and that the gap between German and new member states' wages has been shrinking. However, there are significant differences among countries and sectors. Use of different research methods makes it impossible to compare Ucak's analysis of wages with Lindenblatt and Feuerstein's analysis of prices.

A major concern was that once old members open their labor markets to new entrants, millions of workers would emigrate from new member states and will flood old members' labor markets. This concern did not materialize. While it is true that the number of nationals from 12 new member states living in old member states increased from 1.6 million at the end of 2003 to more than 5 million in 2010, it still represents only about 1.3 % of the total population of old member states (European Commission 2012), which is significantly lower than the share of third-country nationals (4.7 %) or the share of nationals of old member states living in other old member states (1.8 %). The effect on wages and unemployment was negligible. As Wieclawski (2010) puts it: "The social consequences of the enlargement have appeared less serious than feared in the Western part of Europe".

Moreover, there is some evidence that migration does not promote convergence and as a consequence it is in the interest of old member states to support migration. Huber and Tondl (2012) found that a 1 percentage point increase in immigration increases GDP per capita in immigration regions by 0.44 % in the long run and decreases GDP per capita in emigration regions by approximately the same amount. Therefore, it seems that migration strengthens old members' dominant economic position within the EU. Galgoczi and Leschke (2012) indirectly support this conclusion by showing that immigrants from the new member states are over-qualified, their skills are underutilized and consequently they serve as labor market buffers in the sense that their job positions are among the first ones cut in times of crisis, hence protecting job positions of the nationals of old member states.

Several studies have focused on effects of the 'Eastern enlargement' on trade. According to the philosophy of the neo-classical trade theory, the more countries are members of a free trade area, the more benefits it brings. From this perspective, enlarging the EU from 15 to 27 countries should have clearly positive impacts on trade. Hornok (2010) found evidence that the EU enlargement has led to a significant trade creation. Egger and Pfaffermayr (2013) assessed trade creation and trade diversion effects with a special focus on the evolution of trade within and between the core and the periphery countries of the EU. They came to the conclusion that EU enlargements did not cause any kind of intra-EU 'peripherality', because intra-core trade tends to grow at slower rates than intra-periphery trade and its core-periphery counterpart. Curran and Zignago's research (2012) focused on trade with intermediate goods. They found that the new member states have become an important source of intermediate goods for old members and their importance in trade with final goods is on the rise as well. This is not entirely positive, as it increases dependence of new member states on the EU home market and makes them more vulnerable to economic crises. No research to date has attempted to provide a complex

picture of how new members' geographical and commodity structure of trade changed after their entry into the EU.

3. TRADE STRUCTURES OF OLD AND NEW MEMBERS BEFORE 2004

It is well understood that one of the main benefits of economic integration is trade creation. Countries that are members of the same customs union apply free trade among themselves and a common external tariff on imports from third countries. As a result, customs union members often find it more advantageous to exchange goods with each other than to import them from third countries, even though foreign countries might possess comparative advantage in producing those goods. Another factor that increases the mutual trade potential of customs union members is their homogeneity – the more similar the countries are, the more similar are their preferences and consequently the higher should be their mutual volume of intra-industry trade. From this perspective, it might be expected that the majority of foreign trade of EU members is intra-communitarian and that the 'Eastern enlargement' will alter trade structures of the new members.

In the following sections, we will analyze geographical and commodity structures of trade of the 15 old member states of the EU and 8 post-communist countries of Central and Eastern Europe in 2003, several months before the 'Eastern enlargement'. The old members include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. While there are significant differences between the levels of economic development of the countries and their lengths of EU membership, we follow the literature and classify them into the same group, as EU-15. The eight post-communist countries (CEE-8) included in this research are the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia, all of which were part of the 'Eastern enlargement' in 2004. (The other two countries of the 2004 enlargement, Malta and Cyprus are not a part of the study, due to their small size, and geographic and political remoteness to the CEE-8.)

Before the enlargement, 61 per cent of the old member states' trade was intra-communitarian and further 5 per cent constituted trade with the eight post-communist countries (table 2). Approximately one third of the total trade was trade with the rest of the world, dominated by trade with the United States, Switzerland, China, Russian Federation and Turkey. On the EU-wide level, there were no significant differences between geographical structure of exports and geographical structure of imports. However, situation in the individual member states varied greatly.

In general, countries with the most significant share of trade with third countries included Greece, Italy, Finland, Sweden and the United Kingdom, averaging 40 per cent. This comes as no surprise and can be attributed to their geographical position in the periphery of the European Union. Conversely, countries closer to the core of the EU, such as Luxembourg, Belgium or Austria exhibited much lower shares of trade with third countries, ranging from 12 to 27 per cent. A minor exception from this rule was Portugal; a peripheral country with a share of extra-communitarian trade of less than 20 per cent. This was caused by its large trade with neighboring Spain, reaching approximately one fifth of exports and one third of imports. Geographical factors can also easily explain different shares of trade of old member states with the CEE-8 countries. The largest share (over 12 per cent in both exports and imports) was observed in Austria – the only country that shares borders with four members of the CEE-8 (the Czech Republic, Hungary, Slovakia and Slovenia). It was followed by Germany and Finland, the former bordering the Czech Republic and Poland and investing in the CEE-8 countries heavily, and the latter being the

EU-15 member state lying closest to the Baltic countries of Estonia, Latvia and Lithuania. Located in the Western-most part of the EU, Ireland and Portugal conducted almost no trade with CEE-8 countries.

The CEE-8 countries had a higher share of trade with the EU-15 and a considerably lower share of trade with third countries than the old member states. On average, the position of third countries was more dominant in the structure of imports than in the structure of exports, which was caused mainly by CEE-8's dependency on imports of oil and gas from Russia. An obvious exception from this rule was Slovenia – a huge exporter of goods to the Western Balkans.

Table 2: Geographical structure of trade of EU-15 and CEE-8 countries in 2003

Partner Economy	Export			Import		
	EU-15	*CEE-8*	*ROW*	*EU-15*	*CEE-8*	*ROW*
EU-15	*61.4%*	*4.9%*	*33.7%*	*63.4%*	*4.7%*	*31.9%*
Austria	59.8%	12.6%	27.7%	72.1%	12.0%	15.9%
Belgium	74.4%	2.4%	23.2%	71.7%	2.1%	26.2%
Denmark	60.6%	3.4%	36.0%	71.3%	5.2%	23.6%
Finland	51.4%	6.9%	41.7%	59.7%	5.4%	34.9%
France	62.8%	3.2%	34.0%	71.4%	2.5%	26.1%
Germany	55.5%	8.4%	36.1%	57.9%	11.0%	31.1%
Greece	47.3%	3.1%	49.6%	62.3%	1.8%	35.9%
Ireland	61.3%	0.8%	37.9%	65.5%	1.1%	33.4%
Italy	54.2%	5.4%	40.4%	59.9%	3.8%	36.4%
Luxembourg	85.0%	2.7%	12.3%	84.3%	1.6%	14.1%
Netherlands	76.6%	2.7%	20.7%	52.9%	2.4%	44.7%
Portugal	78.8%	1.6%	19.6%	79.9%	1.7%	18.4%
Spain	71.1%	2.9%	26.0%	71.2%	1.9%	26.9%
Sweden	53.5%	4.4%	42.2%	70.2%	6.2%	23.7%
United Kingdom	55.6%	2.2%	42.3%	57.7%	2.3%	40.0%
CEE-8	*66.9%*	*13.5%*	*19.6%*	*64.6%*	*12.2%*	*23.2%*
Czech Republic	69.3%	16.2%	14.5%	69.8%	12.7%	17.5%
Estonia	64.2%	13.0%	22.8%	53.6%	10.8%	35.6%
Hungary	70.9%	8.2%	20.9%	63.7%	8.1%	28.2%
Latvia	61.8%	17.4%	20.8%	42.8%	22.5%	34.7%
Lithuania	42.1%	18.5%	39.4%	45.5%	19.7%	34.8%
Poland	69.4%	11.8%	18.9%	69.4%	8.3%	22.3%
Slovakia	62.4%	22.9%	14.7%	54.6%	27.3%	18.1%
Slovenia	58.4%	8.4%	33.2%	74.6%	8.3%	17.1%

Note: ROW – rest of the world.
Source: UNCTADStat database.

The commodity structures of trade of EU-15 and CEE-8 countries in 2003 were similar (table 3). The most important part of their exports constituted manufactures with medium skill and technology intensity (medium-tech) followed by manufactures with high skill and technology intensity (high-tech). While in the EU-15 countries, exports of hi-tech goods reached almost 30 percent of the total, in the CEE-8 it was only 19 per cent,

indicating that old member states tend to export more sophisticated products than the new members. Moreover, in the CEE-8 countries, approximately one fifth of the exports were labor-intensive and resource-based manufactures, double the share of labor- and resource-intensive exports from the EU-15. This further hints at the higher level of sophistication of production in the old member states. To mention but a few differences between individual members, an astonishing 75 per cent of Irish exports were high-tech goods, but their share was only 9 per cent in Latvia. Portugal, Latvia, Estonia and Italy's exports were dominated by labor- and resource-intensive manufactures (25 to 34 per cent). Greece and Latvia had a high percentage of exports of primary commodities (35 to 40 per cent), whereas their share was a mere 7 per cent in the Czech and Slovak Republics. The only major exporter of fuels was Lithuania with a 19-per-cent share on total exports.

Table 3: Commodity structure of trade of EU-15 and CEE-8 countries in 2003

Commodity group	Export				Import			
	from EU-15		*from CEE-8*		*to EU-15*		*to CEE-8*	
	World	*EU*	*World*	*EU*	*World*	*EU*	*World*	*EU*
Primary commodities, excluding fuels	12.3%	14.0%	10.8%	10.2%	14.1%	14.5%	9.9%	9.3%
Fuels	3.9%	4.1%	3.9%	3.7%	9.0%	4.4%	8.6%	2.9%
Pearls, precious stones and non-monetary gold	0.8%	0.3%	0.0%	0.0%	0.9%	0.3%	0.0%	0.0%
Labor-intensive and resource-based manuf.	11.9%	12.7%	18.0%	18.7%	12.7%	12.4%	13.0%	14.7%
Manufa. with low skill and technology intensity	7.2%	7.7%	11.1%	10.9%	6.6%	7.5%	9.9%	11.0%
Manuf. with medium skill and technology intensity	32.1%	31.2%	36.1%	37.7%	26.2%	31.3%	32.4%	38.5%
Manuf. with high skill and technology intensity	29.3%	27.8%	18.7%	17.4%	28.2%	27.3%	24.6%	22.0%
Unclassified	2.5%	2.2%	1.4%	1.3%	2.3%	2.2%	1.6%	1.7%
All products	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0 %*

Source: UNCTADStat database.

Commodity structure of imports in 2003 was similar to the commodity structure of exports. The high level of intra-industry trade copied the trend in the majority of other non-agriculturally oriented developed countries of the world. Imports of all the 23 studied countries were dominated by medium-tech and high-tech goods.

4. CHANGES IN GEOGRAPHICAL STRUCTURE OF TRADE

To identify changes in geographical structure of trade of the countries which entered into the European Union in May 2004, a thorough comparative analysis is needed. First, we will focus on the trends in new member countries' exports and imports. Second, we will look into the changes in the instability of geographical structure of trade.

As we have already explained, one of the major effects of economic integration is creation of new trade among participating countries. Interestingly, this does not seem to have happened between the CEE-8 and EU-15 countries. Conversely – CEE-8's share of

trade with third countries increased from 20 per cent in 2003 to almost 30 per cent in 2011, lowering the share of their intra-EU trade to slightly above 70 per cent (table 4). This can be explained by the fact that the 'Eastern enlargement' of 2004 was only a *de jure* integration of already *de facto* well-integrated countries. Moreover, increased level of extra-communitarian trade was a general trend in the European Union, with a rise of five percentage points in its share on total trade of the old member states over the period of eight years. On the other hand, effects of trade creation can easily be seen on the mutual trade of the CEE-8 countries – while in 2003, its share on total trade was approximately 13 per cent, in 2011 it was already more than 17 per cent in both exports and imports. CEE-8 countries also slightly increased their importance in trade structure of old member states, rising from below 5 to over 6 per cent of the EU-15 total trade.

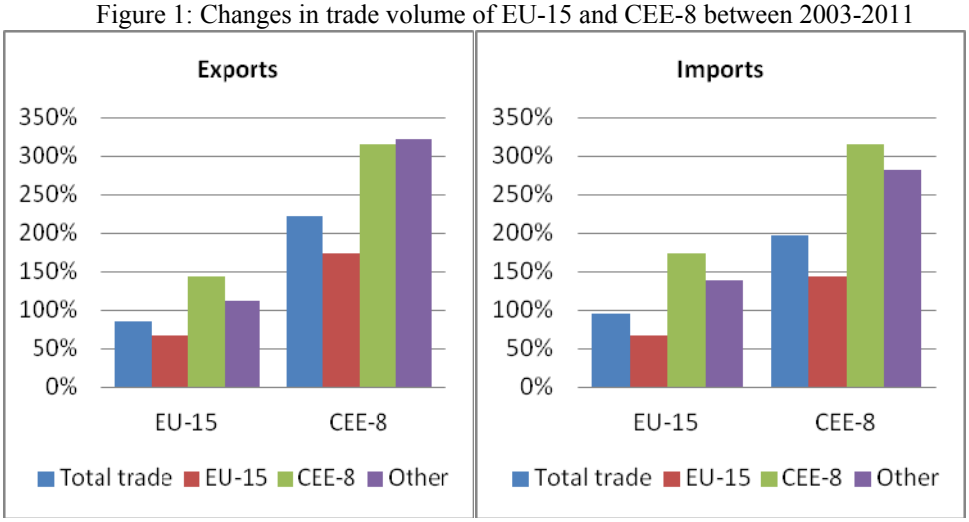
Table 4: Geographical structure of trade of EU-15 and CEE-8 countries in 2011

Partner Economy	Export			Import		
	EU-15	*CEE-8*	*ROW*	*EU-15*	*CEE-8*	*ROW*
EU-15	*55.2%*	*6.4%*	*38.4%*	*54.3%*	*6.6%*	*39.1%*
Austria	55.2%	15.3%	29.5%	67.6%	14.5%	17.9%
Belgium	67.9%	3.7%	28.4%	65.0%	2.8%	32.2%
Denmark	54.1%	4.7%	41.2%	62.5%	7.7%	29.7%
Finland	45.6%	7.5%	46.8%	52.3%	7.2%	40.4%
France	55.8%	4.0%	40.2%	63.8%	4.6%	31.6%
Germany	46.9%	10.1%	43.0%	53.1%	12.9%	34.0%
Greece	32.5%	3.1%	64.4%	48.0%	3.0%	49.0%
Ireland	55.7%	1.6%	42.7%	70.2%	1.9%	28.0%
Italy	46.3%	6.6%	47.1%	46.5%	5.5%	48.0%
Luxembourg	77.1%	4.9%	18.0%	80.8%	2.4%	16.8%
Netherlands	73.5%	5.1%	21.4%	40.8%	3.5%	55.7%
Portugal	67.8%	2.3%	30.0%	68.8%	2.2%	29.0%
Spain	64.0%	4.0%	32.0%	55.2%	3.8%	41.0%
Sweden	48.6%	5.6%	45.7%	63.3%	9.4%	27.3%
UK	49.6%	3.0%	47.4%	46.9%	4.4%	48.6%
CEE-8	*56.9%*	*17.4%*	*25.7%*	*53.0%*	*17.1%*	*29.9%*
Czech Republic	63.8%	17.3%	18.9%	58.3%	19.5%	22.2%
Estonia	50.3%	14.9%	34.8%	41.4%	25.2%	33.4%
Hungary	54.3%	13.8%	31.9%	51.7%	15.5%	32.8%
Latvia	31.8%	39.1%	29.1%	22.6%	23.0%	54.4%
Lithuania	35.9%	25.1%	39.0%	34.5%	22.7%	42.8%
Poland	61.2%	13.9%	24.9%	59.9%	10.3%	29.8%
Slovakia	53.1%	29.1%	17.8%	42.2%	31.6%	26.2%
Slovenia	48.2%	8.8%	43.0%	59.6%	10.0%	30.4%

Note: ROW – rest of the world.
Source: UNCTADStat database.

In absolute numbers, total exports of EU-15 increased by 86 per cent and total imports by 95 per cent over the studied period (figure 1). These numbers were dwarfed by a 222-per-cent increase in CEE-8's exports and a 196-per-cent rise in CEE-8's imports. The majority of the growth was recorded in trade with third countries and within the CEE-8 countries themselves.

Figure 1: Changes in trade volume of EU-15 and CEE-8 between 2003-2011



Source: UNCTADStat database.

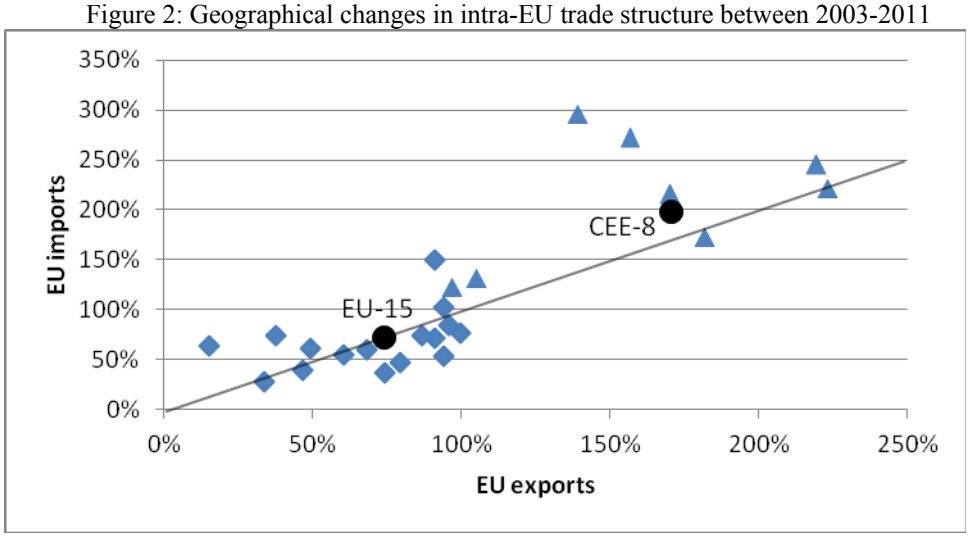
Increase in the trade with third countries was mainly due to trade with China which more than quadrupled between 2003 and 2011. Trade with other BRIC countries (Brazil, Russian Federation, India) trebled in the studied period. This development is in line with the experience of other major world economies and is an evidence of the rising trade dominance of the BRIC countries. (To compare, EU exports to the United States of America increased by only 41 per cent and EU imports from the USA by 74 per cent in the same period.)

A simple look at the geographical changes in intra-EU trade structure between the years 2003 and 2011 confirms that the growth of the CEE-8 portion of the intra-EU trade was much larger than the growth of the EU-15 trade. Horizontal axis of the figure 2 displays growth of intra-EU exports, while vertical axis displays growth of intra-EU imports. Points within the chart area represent individual countries – diamonds stand for EU-15 countries and triangles for CEE-8 countries. Diagonal line starting in point 0 is a line of constant intra-EU balance of trade. All points lying to the left from the line show that a country's intra-EU exports grew faster that the country's intra-EU imports, which means that its intra-EU balance of trade improved. All points lying to the right from the line indicate that a country's intra-EU exports grew slower that the country's intra-EU imports, which means that its intra-EU balance of trade deteriorated. The two black circles in the figure clearly show that while intra-EU trade balance of the CEE-8 improved in the period 2003-2011, the intra-EU trade balance of EU-15 worsened slightly.

From among the eight post-communist countries of Central and Eastern Europe studied, only Estonia's intra-EU imports grew faster than intra-EU exports. Therefore, it appears that CEE-8 countries' entry into the EU has led to enhancements to their balances of trade. The positive development was especially notable in Latvia and Lithuania, where intra-EU exports grew twice as fast as their imports from other members of the EU. Conversely, major economies of the EU-15 (France, Germany and the United Kingdom) had to deal with a worsening intra-EU trade balance. The reasons of this development are twofold: First, countries of the EU-15 are large investors in Central and Eastern Europe, and their subsidiaries generate significant exports to the old member states. Automotive industry is probably the best example: German Volkswagen has a production factory in

Slovakia and it also owns Skoda in Czech Republic, Peugeot produces cars in Slovakia, Fiat in Poland etc. These companies belong to the largest exporters from CEE-8 to EU-15. Second, CEE-8 countries have still not reached the level of economic development of Western Europe and consequently are growing at a faster average rate than their EU-15 counterparts. Given that their home markets are relatively small (the only exception being Poland), the growth has to be pulled by exports.

Figure 2: Geographical changes in intra-EU trade structure between 2003-2011



Note: ♦ - countries of EU-15, ▲- countries of CEE-8.
Source: UNCTADStat database.

We have already shown that in the period 2003-2011, exports of the CEE-8 have grown faster than imports (figure 1). Another interesting question is what happened to the instability of geographical structure of CEE-8's trade after the 'Eastern enlargement'.

Export instability generally implies that annual volumes of a country's exports deviate from the long-term trend. We take a different approach, following the paper by Grancay (2013): we consider a country's exports stable only if their geographical structure does not change in time. Consider country that exports goods to 20 countries and each of these countries has a 5 per cent share on the exports. Regardless of the changes in absolute value of exports, if the country's geographical structure of exports remains the same in the next trading period, we consider the country's exports stable. If the geographical structure of exports changes, e.g. one of the countries gets a disproportional share of the country's exports, then the exports are unstable. To determine instability of country A's export structure, we use the following equation:

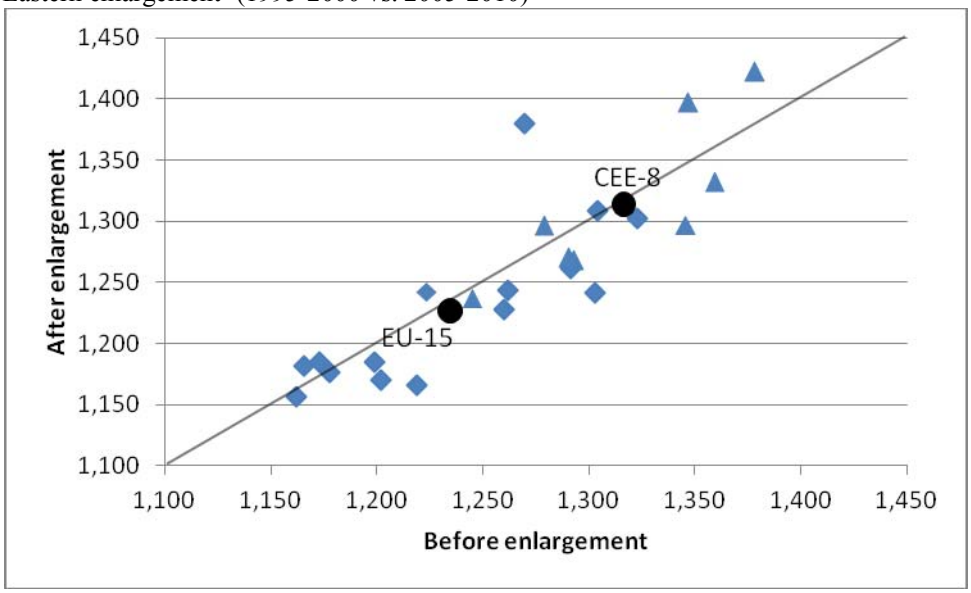
$$inst_A = MEDIAN_{i=1}^{n}\left\{\prod_{t=1}^{m}\left[2 - \left(\frac{MIN\left(\frac{X_{i(t-1)}}{\sum X_{(t-1)}}\middle|\frac{X_{it}}{\sum X_t}\right)}{MAX\left(\frac{X_{i(t-1)}}{\sum X_{(t-1)}}\middle|\frac{X_{it}}{\sum X_t}\right)}\right)\right]^{\frac{1}{m}}\right\}$$

where *Xi* stands for country A's exports to the i^{th} country, $\sum X$ for country A's total exports, *t* is current time period, *(t-1)* previous time period, *n* is total number of country A's export markets and *m* total number of time periods included in the study. By definition,

export instability takes values from 1 to 2, where 1 is perfect stability and 2 is perfect instability. A stable geographical structure of exports means the country's comparative advantages are static or they change at the same speed as in the country's export partners. An instable geographical structure of exports implies qualitative changes in the world economy or changes in the country's comparative advantages.

The following figure compares instability of geographical structure of exports of individual countries of the EU-15 and CEE-8 in two five-year periods: before the enlargement (1995-2000) and after the enlargement (2005-2010). Diagonal line in the figure is a hypothetical line of constant instability – countries lying close to the line had approximately the same instability of geographical structure of exports before and after the enlargement. Points to the left from the line represent countries whose export instability increased and points to the right show countries whose export instability decreased after the 'Eastern enlargement'.

Figure 3: Instability of geographical structure of exports before and after the 'Eastern enlargement' (1995-2000 vs. 2005-2010)



Note: ♦ - countries of EU-15, ▲- countries of CEE-8.
Source: UNCTADStat database.

In general, geographical structure of trade of the CEE-8 countries is more instable than that of the EU-15. While average instability of geographical structure of exports between 2005 and 2010 was 1.23 in the EU-15, it surpassed 1.31 in the CEE-8. This can be attributed to various factors: (1) smaller economies tend to have higher rates of structural instability, i.e. their structure of export and import markets undergoes changes more often, (2) exports of the CEE-8 countries are dominated by a few foreign direct investors from the EU-15, and (3) the level of diversification of CEE-8's exports is relatively low. It seems that the 'Eastern enlargement' has not led to any systematic changes in export instability. The number of countries whose export instability increased after the enlargement is approximately equal to the number of countries whose export instability decreased after the enlargement, without any specific pattern. The highest increase in instability was observed

in Luxembourg, Lithuania and Estonia; conversely, the highest increase in stability occurred in Portugal, Slovakia and Ireland.

5. CHANGES IN COMMODITY STRUCTURE OF TRADE

Changes in the CEE-8's geographical structure of trade were accompanied by changes in the commodity structure as well.

Table 5: Commodity structure of trade of EU-15 and CEE-8 countries in 2011

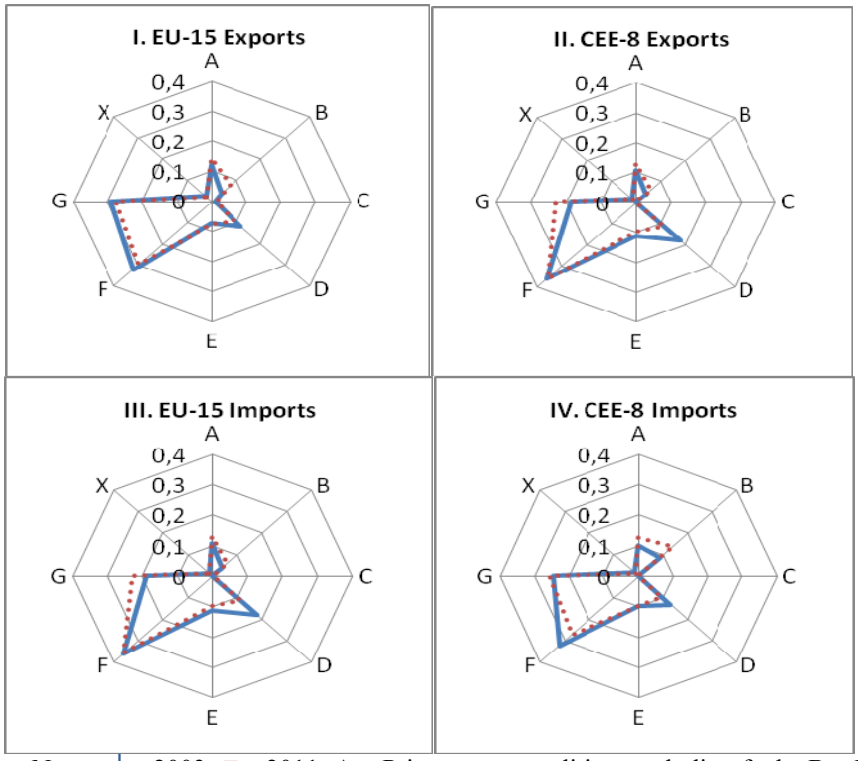
Commodity group	Export				Import			
	from EU-15		*from CEE-8*		*to EU-15*		*to CEE-8*	
	World	*EU*	*World*	*EU*	*World*	*EU*	*World*	*EU*
Primary commodities, excluding fuels	14.5%	16.8%	12.8%	13.2%	15.4%	16.8%	12.7%	14.1%
Fuels	7.7%	8.1%	5.9%	6.2%	17.3%	8.9%	13.9%	6.0%
Pearls, precious stones and non-monetary gold	1.2%	0.7%	0.1%	0.1%	1.1%	0.5%	0.1%	0.2%
Labor-intensive and resource-based manuf.	9.3%	10.3%	11.4%	11.8%	10.3%	9.5%	9.4%	10.0%
Manufa. with low skill and technology intensity	7.7%	8.4%	9.7%	9.6%	6.8%	8.0%	9.7%	11.4%
Manuf. with medium skill and technology intensity	29.7%	26.5%	35.8%	35.9%	21.7%	27.7%	27.2%	32.9%
Manuf. with high skill and technology intensity	27.6%	27.4%	22.9%	21.8%	25.5%	26.6%	25.8%	24.1%
Unclassified	2.2%	2.0%	1.3%	1.3%	2.0%	1.9%	1.2%	1.3%
All products	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0 %*

Source: UNCTADStat database.

Comparing CEE-8's commodity structure of exports in 2011 (table 5) to the structure in 2003 (table 3), it is immediately obvious that the most important growth occurred in primary commodities (including fuels) and high-tech goods. On the other hand, share of labor-intensive and resource-based manufactures on total exports fell by 7 percentage points. Higher exports of primary commodities stemmed from their higher prices on world markets and are therefore not evidence of any structural changes. However, increasing share of exports of high-tech goods substituting exports of less sophisticated products is a clear indication of ongoing development and of convergence of trade structures of old and new member states. Whereas in 2003, the sum of absolute values of differences between shares of respective product groups on exports of EU-15 and CEE-8 was 28 percentage points, in 2011 it was only 20. This trend can also be seen in the structure of imports. Imports of high-tech goods increased in the CEE-8 countries; yet this rise was smaller than the rise of their exports. Higher share of imports of primary commodities including fuels is explained by their higher prices.

Figure 4 compares commodity structures of trade of the studied groups in 2003 and 2011. Full lines represent trade in 2003 and dotted lines trade in 2011. Letters A through G stand for product groups, starting with primary products (A), fuels (B), precious stones (C), labor-intensive and resource based manufactures (D) and manufactures with low (E), medium (F) and high (G) skill and technology intensity. This classification is used as a proxy for the level of product sophistication. Higher letters mean higher level of product sophistication, and therefore can be associated with a higher level of development. The most developed countries will arguably have the highest shares of medium- and high-tech products on total exports and therefore will reach the highest values on F and G axes.

Figure 4: Shares of individual product groups in commodity structures of trade of EU-15 and CEE-8 2003-2011



Notes: | - 2003, □ - 2011; A – Primary commodities, excluding fuels; B – Fuels; C – Pearls, precious stones and non-monetary gold; D – Labor-intensive and resource-based manufactures; E – Manufactures with low skill and technology intensity; F – Manufactures with medium skill and technology intensity; G – Manufactures with high skill and technology intensity; X – Unclassified.

Source: UNCTADStat database.

Rightward shift of the EU-15 trade octagon in quadrant I. in combination with leftward shift of the CEE-8 trade octagon in quadrant II. show that old member states of the European Union lost a part of their comparative advantage in producing medium-tech and high-tech goods to new members. Hence a moderate level of trade convergence between old and new member states is visible from the figure. A similar conclusion can be reached after analyzing imports (quadrants III. and IV.).

CONCLUSIONS

In the present paper, we have analyzed changes to the geographical and commodity structures of trade that occurred in eight Central and Eastern European countries after their entry into the European Union in 2004. We have shown that the effect of trade creation can be seen on mutual trade of the CEE-8 countries and on the rising importance of Central and Eastern European export markets for old member states of the EU. However, trade with third countries increased at a faster rate than the intra-communitarian trade. This obviously means that the effect of trade diversion was limited.

Other topics covered by this study included instability of geographical structure of trade and post-enlargement changes to the commodity structure of trade. It was shown that the 'Eastern enlargement' had no unambiguous impact on instability of geographical structure of EU's exports – while instability was on the rise in some countries, it decreased in others. Commodity structures of old and new member states converged considerably. The share of high-tech exports from the new member states on their total exports increased to the detriment of the share of labor- and resource-intensive goods. All in all, it appears that the new member states have successfully integrated their trade patterns into the EU.

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