

# **EU-CEECs convergence in trade structures: Does international fragmentation of production matter?**

**Lucia Tajoli**

FLOWENLA DISCUSSION PAPER








**24**

Hamburgisches Welt-Wirtschafts-Archiv (HWWA)  
Hamburg Institute of International Economics

**2003**

ISSN 1616-4814

## Partners of the FLOWENLA-Project

-  • HWWA, Hamburg, Germany (coordinator)
-  • Università Commerciale 'Luigi Bocconi' Milano, Italy
-  • University of Surrey Guildford, UK
-  • Università degli Studi di Parma, Italy
-  • WIIW, Vienna, Austria
-  • CEPS, Brussels, Belgium
-  • Institute of Economics, Hungarian Academy of Sciences

Hamburgisches Welt-Wirtschafts-Archiv (HWWA)  
Hamburg Institute of International Economics  
Neuer Jungfernstieg 21 - 20347 Hamburg, Germany  
Telefon: 040/428 34 355  
Telefax: 040/428 34 451  
e-mail: [hwwa@hwwa.de](mailto:hwwa@hwwa.de)  
Internet: <http://www.hwwa.de>

The HWWA is a member of:

- Wissenschaftsgemeinschaft Gottfried Wilhelm Leibniz (WGL)
- Arbeitsgemeinschaft deutscher wirtschaftswissenschaftlicher Forschungsinstitute (ARGE)
- Association d'Instituts Européens de Conjoncture Economique (AIECE)

# **FLOWENLA Discussion Paper**

## **EU-CEECs convergence in trade structures: Does international fragmentation of production matter?**

**Lucia Tajoli \***

FLOWENLA Discussion Paper 24  
<http://www.eastwestmigration.org>

\* Dipartimento di Ingegneria Gestionale, Politecnico di Milano, and CESPRI, Università Bocconi

This paper has been prepared in the context of the EU-5th Framework Project: “EU-Enlargement: The Impact of East-West Migration on Growth and Employment” (acronym: FLOWENLA, Contract: HPSE-CT2001-00064). It was prepared for the 1<sup>st</sup> FLOWENLA workshop, May 31 – June 1, 2002 in Milano.

The paper is assigned to the HWWA’s Research Programme „International Mobility of Firms and Labour“.

Edited by Andreas Kopp and Thomas Straubhaar

**FLOWENLA DISCUSSION PAPER 24**

**December 2003**

**EU-CEECs convergence in trade structures:  
Does international fragmentation  
of production matter?**

Lucia Tajoli  
Politecnico di Milano  
Department of Management, Economics and Industrial Engineering  
Via Giuseppe Colombo 40 - 20133 Milano, Italy  
E-mail: [lucia.tajoli@polimi.it](mailto:lucia.tajoli@polimi.it)

## 1. Introduction

European integration, which started over 40 years ago, is widely believed to be one of the most remarkably successful examples of regional integration. In spite of periods of slowdown and obstacles, economic integration in Europe has proceeded rather smoothly over the years, and there is a consensus that benefits have outweighed costs in this process. Integration has also occurred apparently without creating significant adjustment costs for old members or newcomers. Will it be the same in the new phase of European enlargement to include the Central and Eastern European countries (CEECs)?<sup>1</sup> In this paper I try to answer this question by looking closely at the trade patterns of the Central and Eastern European countries applying for membership to the European Union (EU) and comparing them to those of the current members of the EU.

The main assumption behind the analysis presented is that similarity in production and trade structures among countries will ease the integration process. More than one reason can be put forward to justify such assumption. An explanation often acknowledged for the ease of European integration in the past is that there was little trade diversion and that the countries involved displayed many similarities. This meant that a large increase in intra-industry trade (IIT) occurred, and the distributional consequences associated with increased intra-industry trade are usually considered to be more benign than those associated with increased inter-industry trade.<sup>2</sup> Another reason to believe that similar countries integrate more easily is that they are more likely to fall in the same cone of diversification and produce the same bundle of goods, therefore achieving factor price equalization through trade.<sup>3</sup>

---

<sup>1</sup> The European Commission is negotiating with Poland, Czech Republic, Hungary, Slovenia, Slovakia, Romania, Bulgaria, Estonia, Latvia, Lithuania, Malta and Cyprus their accession to the European Union. With all these countries – except Romania and Bulgaria – negotiations are expected to close by the end of 2002, so to have these countries joining the EU by 2004. These same countries already signed agreements with the EU liberalizing to a large extent their bilateral trade flows.

<sup>2</sup> For a discussion of distributional consequences of economic integration in Europe see, for example, Neven (1995).

<sup>3</sup> This will occur under certain (restrictive) assumptions. See for example Deardorff (1994).

Convergence in factor prices implies that incentives to factor mobility will be reduced. In the European context, this would attenuate concerns about the potential migration flows expected from the CEECs to the EU, currently one of the main issues under discussion in the enlargement process. An evaluation of the similarities between the economies of the CEECs and the EU is therefore useful to assess the impact of the future enlargement.<sup>4</sup>

On the basis of the past experience, some argue that worries about the integration of CEECs into the EU are unjustified, both as far as trade flows adjustments and as far as immigration flows, as the position of the CEECs is similar to the one of Spain and Portugal at the time of their accession (Cadot and de Melo, 1995; Boeri and Brucker, 2001). When the “Southern enlargement” of the EU took place, with Greece in 1980, and Spain and Portugal in 1986 becoming members of the EU, worries arose about the consequences for the more advanced countries in the EU having to cope with new members that were very different from the European average in terms of real incomes and factor endowments, and that appeared to be very competitive in terms of labor costs. After more than a decade, it is possible to say that adjustment to the new entrants was fairly painless for the older EU members even in the short run, and beneficial for all in the medium-long term (Cadot and de Melo 1995). But there are others thinking that the situation of the former Socialist economies is so peculiar that it is impossible to compare it readily with past experiences (van Brabant 1996).

One way to assess the similarities between the CEECs and the EU is by comparing their trade patterns, and determining the direction in which the CEECs’ production and trade specialization is moving. In particular, this paper focuses on countries’ specialization as suppliers for the EU market. The analysis compares the structure of exports directed to the European Union market from EU members and members-to-be, and in making this comparison, I will try to assess which kind of division of labor and which kind of competition can be foreseen within the enlarged EU. In the paper I argue that when considering such evidence it is important to explicitly examine the phenomenon of international fragmentation of production, which is affecting the

---

<sup>4</sup> The conditions for accession to the EU, requiring that applicants reach an economic, political and institutional situation comparable to the one of the EU members, is precisely motivated by the assumption that convergence will ease integration.

CEECs' trade patterns. International fragmentation of production (IFP), generating trade flows of parts, semi-finished and intermediate goods between the EU and the CEECs, should be considered for theoretical and empirical reasons. On one hand, models of trade with international fragmentation of production suggest that fragmentation produces specific effects on factor prices (Arndt, 2001) and might increase the likelihood of factor price equalization expanding the cone of diversification (Deardorff, 2001). Therefore, in a world with IFP, countries can be different in terms of endowments and still be producers in the same industries (even if producing different parts of the goods) and might display a tendency toward factor price equalization. In this context, "similarity" between countries and between trade patterns takes a different meaning. On the other hand, when we empirically observe convergence in trade structure, if this is only due to trade caused by IFP, trade data might "overestimate" the similarity in the economic structure of the trade partners. Therefore, in the following analysis, I will look at the CEECs trade patterns both in terms of total trade flows and in terms of final trade only (i.e. trade netted of processing trade flows directly linked to IFP), to see whether the inclusion or exclusion of IFP makes a difference.

## **2. A little background**

Overall, the economic weight of the CEECs appears to be still relatively small. The candidate countries' GDP amounts to about 5% of the EU GDP. It is therefore not surprising that studies on the integration of the Eastern economies with the EU find that the impact on the Union should not be strong (Brown et al. 1997, Baldwin et al. 1997, Francois 1998). In terms of trade flows, the CEECs in 2000 accounted for about 9.5% of total EU imports from non-EU countries and for about 12% of exports toward non-EU countries. These shares have been growing rapidly during the past decade and are expected to grow even more.

Early studies using a gravity model to predict trade flows (Hamilton and Winters, 1992; Wang and Winters, 1994) showed the existence of a considerable "trade gap" between the potential volume of trade between the CEECs and the EU and the actual

trade volumes. Winters and Wang (1994) calculated that potential CEEC trade with France, Germany and Italy was at least four times as large as actual trade at the time. Considering that the share of the CEECs in EU trade has approximately doubled since 1993, if these estimates are correct, further expansions in these trade flows should be expected.

Much of the early work on EU-CEECs trade however did not say much about the specific pattern of trade to be observed. There are some problems when assessing the trade patterns of the CEECs, as there are reasons to believe that the trade specialization observed in the past decade might not necessarily be the one that will characterize the long-run equilibrium. It is debatable whether former socialist countries have completed their transition, and whether their current international specialization is inherited from the past, rather than reflecting – at least to some extent - their current comparative advantages and future specialization. As observed by Landesmann and Szekely (1995), until 1989 the CEECs had a dual export structure. The composition of commodities sold to the Western markets was quite different from the composition for the Council for Mutual Economic Assistance (CMEA) markets. While mechanical engineering products and other machinery constituted nearly half of total exports to other Eastern European countries, these sectors were much less relevant in trade with Western countries. It is not yet entirely evident which direction the unification of this dual structure will take in the different CEECs in the medium to long-run. According to Landesmann and Szekely (1995), the economic transformation taking place in Eastern Europe involves a major conversion of the existing production structure, which may take up to 20 or 30 years. The post-liberalization phase that is under way thus undervalues the skill and technological potential of CEEC producers. This occurs because there are large inefficiencies in the utilization of factor skills and technology in the industries that use intensively these factors. At the beginning of transition, light industries suffered less from the overall decline in manufacturing and thus could improve their relative positions. Furthermore, in the early years of transition, the adjustment in trade was highly asymmetric: the structure of imports from the EU underwent quite radical changes, while the adjustment in the structure of exports to the EU was much less

dramatic, leading to conclude that major changes still were to be observed (Halpern, 1995).

Indeed, if we compare the pattern of total exports of the CEECs toward the EU market in 1994 and in 2000 (Table 1) it is evident that many important changes occurred and it was difficult to infer from the past pattern of trade the current one. In most countries we can see a sharp decrease of the share of most basic industries, such as agriculture, minerals and metals, and an increase in more advanced sectors such as machinery, but these changes are far from being uniform across countries.

In the early and mid-1990s, it was also possible to observe for the CEECs a large comparative difference between trade patterns and manufacturing output structure. If we observe the output and export structures of the major European countries, measured in share terms, the two appear to be consistent, with a correlation coefficient between 0.75 and 0.89, depending on the country examined. Similarly, for the South European countries in the mid-1980s, the correlation was about 0.70. In contrast, the correlation between the output and export structures in the CEECs in the mid-1990s was surprisingly low, varying between 0.15 and 0.35. This dichotomy between production for the internal market and production for export is quite unusual and it was probably in part inherited from the dual structure of the formerly planned economies. This divergence has decreased as the transition proceeded, but the correlation between production and export structures in the late 1990s was still lower than for most EU countries.

Finally, another peculiarity of the CEECs' trade structure is the difference between the pattern of total exports and final exports, due to trade flows linked to IFP. European trade statistics record trade flows generated by a specific form of international fragmentation of production, that is processing trade. This is a particular trade regime of the EU,<sup>5</sup> allowing to record, separately from final trade flows, the international flows of goods that are imported or exported temporarily in order to be processed, to be eventually re-exported to or re-imported by the country of origin. This regime allows collecting data on temporary exports of goods exported by a EU country to be processed in a non-EU member and re-imports by the EU of the

---

<sup>5</sup> Similar trade regimes exist in a number of other countries, albeit with different names.

processed goods. These flows measure the so-called outward processing trade (OPT). As shown in Table 2, OPT was extremely relevant for a number of countries in the mid-1990s, and it is still far from negligible for some of them.<sup>6</sup>

Given the weight of OPT, it is not surprising to observe that the CEECs' trade structure appears quite different when considering total trade rather than final trade only (Table 3). For example, the relevance of some traditional sectors in CEECs' exports to the EU, most affected by OPT, is very high when looking at total trade flows, but is diminished considering final flows, while the role of agricultural goods is underestimated when looking at total trade flow. The difference between the two trade structures is confirmed by tests showing that the series have statistically different mean and variance. Therefore, it is important when analyzing the CEECs' trade structure to clarify which trade flows are considered. There is not an a-priori reason to prefer one or the other, but it depends what we want to look at. Trade in final goods only should better represent the economy's domestic characteristics, while total trade also takes into account an increasingly important part of trade and specialization (that is trade in parts and "fragments" of goods) that directly links an economy to foreign producers.

### **3. Comparison with former enlargements**

---

<sup>6</sup> International flows on processing trade from official statistics, like the ones used in the paper, need to be interpreted carefully. These flows necessarily underestimate the phenomenon because not all trade flows generated by fragmentation of production are officially recorded as trade for reasons of processing, especially after 1996. In fact, starting from January 1<sup>st</sup> 1997, tariffs on goods coming from the countries that signed the Association Agreements with the EU were virtually abolished. As one of the main reasons for a firm to record trade flows under the PT regime was the exemption for tariff payment when the processed good was re-imported to the EU, the elimination of tariffs removed one of the most important incentives to adopt this procedure, involving a relevant amount of red tape. Therefore, statistical records of OPT underestimate the phenomenon of fragmentation of production, especially since 1997, while these statistics tend to inflate the amount of trade recorded as final. The apparent decline of the ratio between processing and total trade in the last years of our sample is due to the fall of processing trade and to the corresponding increase in final trade because of the statistical

To assess how far apart are the CEECs from the EU, a first comparison can be made between the CEECs and the countries that entered the EU in the 1980s. Focusing on convergence in trade patterns and production specialization, the similarities to be considered relate to the actual trade structure and to those variables that determine countries' specialization. In the analysis, it is useful to observe how each group compares to the EU members, as in studying trade patterns what matters are the *relative* characteristics of the trading partners.

Starting with such basic economic variables as population, GDP and GDP per capita, there are some similarities and some differences between the Southern and Eastern enlargements. In spite of the fact that the number of countries involved presently is higher, the economic size of the CEECs compared to the EU is similar to that of the Southern European countries. The total population of the CEECs is larger than the total population of the countries involved in the second European enlargement. In terms of GDP per capita, the Eastern European countries are poorer than the countries that joined the EU in the 1980s, while in terms of geographical distance from the "core" of the EU, the position of the CEECs is equivalent or closer.

Authors such as Halpern (1995) or Landesmann and Szekely (1995) point out that even though the factor endowments and trade structure of the CEECs are closer to that of the Southern European countries than to Northern EU, there are still important differences. Similarities and differences emerge by looking at the available data. The endowments of capital per worker (as calculated by Summers and Heston in the Penn World Tables) of Greece and Spain at the time they entered the EU show that these countries had a K/L ratio that was about half that of Germany and approximately two-thirds that of France and Italy, while Portugal was lagging even further behind. Unfortunately, the capital per worker endowment for the CEECs is not available from the same source. Nevertheless, some approximate calculations together with the available evidence suggest that the CEECs' capital/labor ratio in the early 1990s was in between those of Spain and Portugal.<sup>7</sup>

---

reasons mentioned. Still, this detailed data set is the only official measure of EU international fragmentation of production.

<sup>7</sup>It is especially difficult to calculate the value of the CEECs' capital stock, because of the obsolescence of their equipment, so that the available measures are at best approximations. For more details on such calculations see Tajoli (1998).

Where there seems to be a large difference with Southern Europe is in the skill level of the work force. The existing evidence supports the view that the CEECs are relatively well-endowed in human capital (Winters and Wang, 1994; Halpern, 1995). Average years of schooling are comparable to the OECD average, and the percentage of population having completed secondary or higher education is sizable, as indicated by Barro and Lee (1993) database.

A comparison between the Southern and Eastern enlargement of the EU can be effected by looking directly at the trade patterns of the two groups of countries. Keeping the analysis at a fairly aggregated level, some similarities and differences emerge. A first difference is that the South European economies are much more specialized in agricultural products than most CEECs. Focusing on the manufacturing sectors, at the time of their entrance into the EU, the export patterns of Greece and Portugal (and Spain to a lesser extent) were oriented towards traditional sectors such as food, textiles, apparel and leather. In contrast, even though CEECs' exports are also biased towards the labor-intensive industries when compared with the European average, machinery and metal products constitute nearly one third of CEECs' exports to the EU, a much larger share than for Greece and Portugal.

Moving to observe specifically the trade effects of the enlargement, Spain and Portugal experienced a large increase in trade volumes with the EU after their accession. In the period 1988-94, Spanish imports and exports increased by 58% and 23% respectively in real terms, while Portuguese imports and exports increased by 192% and 64%. Still, in spite of the increase in trade, Greece, Spain and Portugal in over a decade did not fully converge to the EU average in terms of trade structure. The correlation between Greece and the EU in terms of exports is still very low and it actually decreased over time (Figure 1). Also Spain shows some divergence, even if it is much more similar to the EU average export pattern than Greece. Correlation in export patterns increases only for Portugal, which had an export structure very close to the Greek one, but it is now closer to the EU average. Hence, it seems that

convergence in trade patterns is not a strictly necessary condition to avoid major frictions between integrating countries.<sup>8</sup>

#### 4. Convergence in trade patterns between the CEECs and the EU

In spite of mixed evidence emerging more recently on this issue, as mentioned, an assumption often made is that the more similar the production structures and trade patterns of integrating countries, the smaller the adjustment costs due to the opening of trade will be. Some theoretical motivations for this assumption have been developed in the literature.<sup>9</sup> In what follows, I maintain the assumption that “similarities” between countries will ease the process of integration, but in presence of IFP it is not just similarity in the structure of production and export of *final goods* that matters. Rather, convergence and economic integration are fostered by similarity and complementarity in the *production processes* even if only some phases of such processes are undertaken in each country (Arndt, 2001).

From this perspective, I compare different types of trade flows of the CEECs and of the EU members, looking at their export pattern toward the EU internal market.<sup>10</sup> There is no obvious measure to compare trade patterns to determine whether they tend to become more or less similar. Each measure has its pros and cons, therefore I will use two different indices to test robustness of results.<sup>11</sup>

The first measure is a simple correlation index, measuring the correlation between the export structure of country *j* (defined as the share of each sector in total exports toward the EU) and the average export structure of the EU member countries at a

---

<sup>8</sup> It may be observed though that even if major tensions did not arise, at least for the case of Greece, the lack of convergence in trade is correlated with a weak convergence in broader economic terms.

<sup>9</sup> Krugman (1981) has a model in which the amount of IIT between two trading countries depends on similarities in relative factor endowments, and he shows that more IIT implies fewer redistributive problems for the economies involved. Menon and Dixon (1997) argue too that the adjustment costs associated with trade liberalization depend on the extent of IIT, and they suggest a measure of changes in trade flows that can be used to assess the extent of adjustment costs.

<sup>10</sup> To consider only exports directed to the same market removes the effects due to the geographical composition of exports and allows to better focus on the division of labor and competition in the enlarged EU.

<sup>11</sup> The indices are measured at the level of industry disaggregation reported in Table 3. Other disaggregation levels were also tested, without major changes in the split between converging and non-converging countries.

given point in time. A higher correlation implies more similarity in export structures, in the sense that the export vectors move together and higher shares for country  $j$  are associated with higher shares for the EU on average.

The plot of correlation indices over time (Figure 2) shows that there is a group of countries that in the past decade quite clearly converged toward the average EU export pattern: these are Hungary, Poland, Czech Republic, Slovakia and Slovenia. In the year 2000 the correlation between the export pattern of these countries and the EU was above 0.80, much higher than the correlation of Greece and Portugal in the early years of their integration with the EU, and even higher than the correlation that the countries of the Southern enlargement display today. Within this group of converging countries, Czech Republic and Hungary have the highest correlation coefficients, but Poland and Slovakia are the countries that changed the most, moving from a correlation coefficient below 0.5 to more than 0.8. In the last years of the sample, Estonia shows convergence as well, approaching the first group of countries, while Romania, Bulgaria, Latvia and Lithuania display a structure of trade still very different from the EU. Bulgaria even seems to diverge, as in 1993 Bulgaria's correlation coefficient was higher than Slovakia's, but in 2000 the coefficient was just above 0.1.

The other similarity index used is the one proposed by Havlik (1996),<sup>12</sup> which is defined as:

$$D_{ij} = [\sum_k (sh_i^k - sh_j^k)^2 sh_i^k]^{1/2}$$

where  $sh_i^k, sh_j^k$  are the share of industry  $k$  in total exports of countries  $i$  and  $j$  respectively. The higher the value of the  $D_{ij}$  index, the more different are the trade structures of countries  $i$  and  $j$ . The advantage of this index, compared to the correlation index, is that it gives more weight to differences in the most important industries and it changes with the degree of exports' concentration (which provides useful indications but might distort the measurement of similarity). Results of the comparison using this index are reported in Figure 3. Even in this case we can see a converging group of countries, whose distance from the EU average export structure has declined in the past few years. It is interesting to observe though that there are

relevant differences with the previous picture. Like before, Poland, Czech Republic and Slovenia reduce their distance from the EU. More ambiguous is the case of Slovakia, alternating increasing and decreasing distance from the EU. But the most striking difference is for Hungary, which appears to become increasingly different from the EU, to the point of being in 2000 the second most distant country after Latvia (which confirms with the distance index the last position obtained with the correlation index). This apparently paradoxical result is due to one of the properties of the distance index: this measure gives a lot of weight to differences in the share of machinery exports, which is the most important sector in EU export pattern. Hungary in this respect is very different from the EU average, because the weight of machinery in its exports to the EU is above 50%, twice as high as for the EU member countries. In some respect, one could say that Hungary went beyond convergence in trade, being even more specialized than the EU in the EU main sector of specialization.

What is the role of international fragmentation of production in determining this pattern of trade? The converging group of countries displayed high shares of OPT over total trade in the early 1990s, but these shares are now quite small. Instead, the non-converging group still shows a large amount of OPT in 1999-2000. Furthermore, if for each country we compare the correlation index calculated in terms of total trade flows with the one calculated in terms of final flows only (that is, leaving out OPT exports), we can see that for nearly all countries the correlation is higher without OPT than with OPT. Preliminary empirical exercises show that the share of OPT is negatively correlated with the distance index, but the result is not robust. Overall, even if IFP affects trade structures as shown in Table 3, there is little evidence to say that IFP is correlated with stronger convergence in trade patterns.

A possible interpretation of this evidence is that EU member countries are shifting to the CEECs large parts of industries from which they are moving out. Therefore OPT from EU to the CEECs could be concentrated especially in sectors that are becoming less relevant for the EU. Even if in statistical terms international fragmentation of production does not produce correlation in trade patterns, this does

---

<sup>12</sup> Havlik (1996) uses this indicator to compare the CEEC export structure to Austria.

not mean that IFP hinders economic integration between the EU and the CEECs. Instead, the importance of OPT in the past for the countries that are now closer to convergence with the EU (and not only in terms of trade patterns), can indicate that this was an important vehicle for economic integration, bringing together production processes and technologies. Some evidence in support of this interpretation comes from the fact that IFP has influenced final trade flows as well, suggesting the existence of spillovers originated by this practice.

## **5. Conclusion**

How to measure convergence in trade structures is still an open question. In this paper it was shown that different measures of similarity in trade patterns can give quite different indications. Still, this is an important issue, as comparing trade patterns can provide indications on the impact of economic integration between countries on factor prices and on production structure.

Another open issue is which kind of convergence we should look at in presence of international fragmentation of production. Trade data show that the trade structure of countries can be quite different if we include or exclude international fragmentation of production from the picture. The CEECs' export patterns to the EU market display sizable difference with and without OPT, therefore a comparison between their trade flows and EU trade flows gives different results by looking at the two types of trade.

In this respect, the answer to the question in the title of the paper is affirmative, even if the evidence on how IFP matters is still weak. IFP should produce a kind of economic integration that is different from the one a unified market for final goods would bring. To find evidence of this, the analysis must be undertaken at a different level of disaggregation that links fragments of production processes. This will be the object of future research.

## References

- Arndt S.W. (2001), "Offshore sourcing and production sharing in preference areas", in S. Arndt and H. Kierzkowski, eds., *Fragmentation. New Production Patterns in the World Economy*, Oxford University Press.
- Baldwin R.E., Francois J. F., Portes R. (1997), "The costs and benefits of the Eastern enlargement: the impact on the EU and Central Europe", in *Economic Policy*, April, pp. 125-176.
- Barro R., Lee J., (1993), *International comparison of educational attainment*, NBER Working Paper no. 4349.
- Boeri T., Brucker H., (2001), *The impact of Eastern enlargement on employment and labour markets in the EU member states*, report for the European Commission.
- Brown D.K., Deardorff A.V., Djankov S.D., Stern R.M. (1997), "An economic assessment of the integration of Czechoslovakia, Hungary, and Poland into the European Union", in S. W. Black (ed.), *Europe looks East*, Cambridge University Press.
- Cadot O., de Melo J. (1995), "France and the CEECs: adjusting to another enlargement", in *European Union trade with Eastern Europe*, R. Faini and R. Portes eds., CEPR, London, pp.86-122.
- Deardorff A.V. (1994), "The possibility of factor price equalization, revisited", in *Journal of International Economics*, vol. 36 (1-2) pp. 167-175.
- Deardorff, A.V. (2001), Fragmentation across Cones, in S. Arndt and H. Kierzkowski, eds., *Fragmentation. New Production Patterns in the World Economy*, Oxford University Press.
- Francois J.F. (1998), *Scale economies, imperfect competition and the Eastern expansion of the EU*, Tinbergen Institute, Erasmus University Rotterdam, mimeo.
- Halpern L. (1995), "Comparative advantage and likely trade patten of the CEECs", in *European Union trade with Eastern Europe*, R. Faini and R. Portes eds., CEPR, London, pp.61-85.
- Hamilton C., Winters A., (1992), "Trade with Eastern Europe", *Economic Policy*, no.14, pp.77-116.
- Havlik P. (1996), *CEECs' export competitiveness in the manufacturing industry*, Vienna Institute for Comparative Economic Studies, mimeo.
- Hummels R., Levinsohn J. (1995), "Monopolistic competition and international trade: reconsidering the evidence", in *Quarterly Journal of Economics*.
- Krugman P. (1981), "Intraindustry specialization and the gains from trade", in *Journal of Political Economy*, vol. 89, no.5.
- Landesmann M., Szekely I. (1995), *Industrial restructuring and trade reorientation in Eastern Europe*, Cambridge University Press.
- Menon J., Dixon P.B. (1997), "Intra-industry vs. inter-industry trade: relevance for adjustment costs", *Weltwirtschaftliches Archiv*, Band 133, heft 1, pp.164-169.
- Neven D. (1995), "Trade liberalization with Eastern nations: how sensitive?", in R. Faini and R. Portes, eds., *European Union trade with Eastern Europe: adjustment and opportunities*, CEPR, London, pp.19-60.
- van Brabant J.M. (1996), *Integrating Europe. The transition economies at stake*, Kluwer Academic Publishers.

Wang Z., Winters A., (1994), *Eastern Europe's international trade*, Manchester University Press, Manchester.

**Table 1 - Total exports to the EU market**  
(million Ecu/Euro)

	1994									
	Bulgaria	Czech Rep.	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Slovakia	Slovenia
Fuels	22.20	182.00	37.60	58.83	343.54	274.43	721.80	75.17	7.29	0.12
Agriculture, food, beverages	198.72	255.63	18.17	798.44	10.21	33.55	869.19	104.23	48.36	70.96
Minerals	30.60	114.42	7.23	6.65	3.84	13.62	243.19	34.35	63.46	6.49
Chemicals	125.41	350.49	28.75	230.28	20.91	74.96	379.78	112.72	83.24	107.88
Rubber and plastic	43.50	357.19	1.22	253.16	4.76	2.71	218.05	36.59	128.59	130.87
Skin and leather	29.51	83.17	6.89	78.12	14.62	23.14	100.43	30.00	25.40	73.80
Paper and print	45.50	444.12	46.14	157.88	129.32	46.31	688.97	53.93	165.53	328.69
Textiles, apparel and shoes	309.24	861.73	40.30	927.61	75.27	116.10	1749.46	1067.35	372.51	672.87
Glass and ceramics	40.54	354.40	12.43	100.36	7.30	23.95	284.31	60.51	78.25	76.18
Metals and metal products	290.71	1058.19	39.96	586.13	91.28	92.45	1468.46	407.83	398.07	410.13
Machinery	138.66	1118.63	2.71	1239.01	7.71	18.17	795.04	170.92	216.43	654.97
Means of transportations	27.02	516.11	2.49	182.36	1.75	8.55	717.33	45.84	176.59	503.37
Precision tools	8.95	80.10	0.95	46.80	1.73	1.18	38.63	5.67	7.50	95.59
Other manufacturing ind.	29.95	543.95	18.49	237.17	18.70	17.36	775.30	284.36	89.20	277.86
Total	1340.50	6320.13	263.32	4902.78	730.95	746.48	9049.94	2489.47	1860.41	3409.76
	2000									
	Bulgaria	Czech Rep.	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Slovakia	Slovenia
Fuels	64.10	444.68	363.52	327.03	372.28	237.77	1111.82	31.63	240.17	1.09
Agriculture, food, beverages	208.65	467.59	71.49	1168.95	32.71	127.31	1372.03	202.03	85.39	67.15
Minerals	34.39	95.19	15.93	20.04	5.49	8.97	115.30	25.89	54.72	17.25
Chemicals	170.89	638.33	56.69	681.19	31.87	189.64	803.75	159.34	203.05	193.16
Rubber and plastic	76.33	1232.47	36.21	834.96	10.25	23.10	967.74	159.97	294.25	312.42
Skin and leather	32.31	82.92	18.28	98.93	9.14	39.15	161.31	99.85	49.08	85.08
Paper and print	91.35	1196.05	481.81	513.28	816.37	203.00	1668.23	310.45	433.30	493.51
Textiles, apparel and shoes	967.82	1503.51	351.59	1597.40	288.87	621.78	2605.32	3571.06	876.11	617.25
Glass and ceramics	81.13	883.36	62.45	233.83	21.63	166.59	631.17	149.58	159.94	127.09
Metals and metal products	908.21	2603.55	174.10	1292.84	140.95	121.77	2944.68	902.03	898.26	834.70
Machinery	263.97	6253.28	1236.24	11408.78	49.12	188.86	5036.14	1193.58	1643.26	1451.59
Means of transportations	42.25	4336.03	44.62	2470.57	9.84	66.77	3111.01	262.83	1687.27	1124.71
Precision tools	19.77	280.78	32.97	386.98	3.66	13.85	135.18	39.81	37.73	174.16
Other manufacturing ind.	92.11	1401.76	213.73	697.63	89.34	151.37	2431.64	520.70	252.24	695.60
Total	3053.26	21419.49	3159.61	21732.41	1881.52	2159.92	23095.31	7628.74	6914.77	6194.77

Source: Eurostat, Comext database

**Table 2 - Shares of OPT on total**

YEAR	Poland	Czech Rep.	Slovakia	Hungary	Slovenia	Romania	Bulgaria	Estonia	Latvia	Lithuania
1989	9.02	5.02	5.02	16.34	12.07	12.80	4.38			
1992	15.86	10.74	10.74	20.19	12.07	27.44	9.89	0.75	0.49	2.14
1993	18.56	12.41	13.45	20.25	11.88	29.74	13.61	4.64	2.84	6.58
1994	18.50	12.52	12.03	17.52	8.98	28.00	11.44	3.86	5.00	10.34
1995	15.35	10.76	9.28	12.90	6.45	25.45	11.25	6.39	4.91	12.94
1996	15.76	10.60	10.17	13.16	5.73	29.34	14.72	6.91	5.86	14.77
1997	11.76	8.48	9.35	10.12	5.16	27.15	13.28	6.23	6.68	16.55
1998	8.65	5.66	5.61	7.01	4.28	24.33	14.32	8.65	7.09	16.70
1999	6.97	4.45	5.40	5.74	3.25	23.44	14.68	12.73	6.93	14.45
2000	4.90	3.50	4.43	4.36	2.57	15.95	13.09	2.55	5.65	10.03

Source: Eurostat, Comext



Figure 1

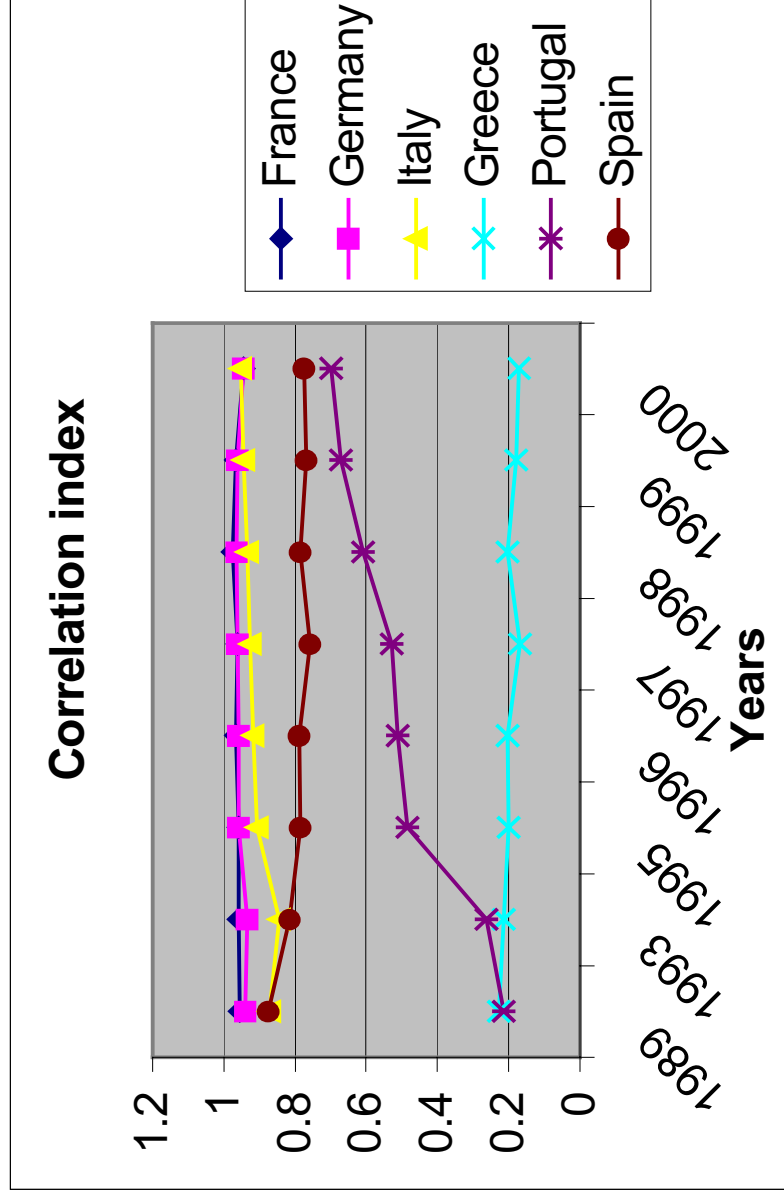


Figure 2

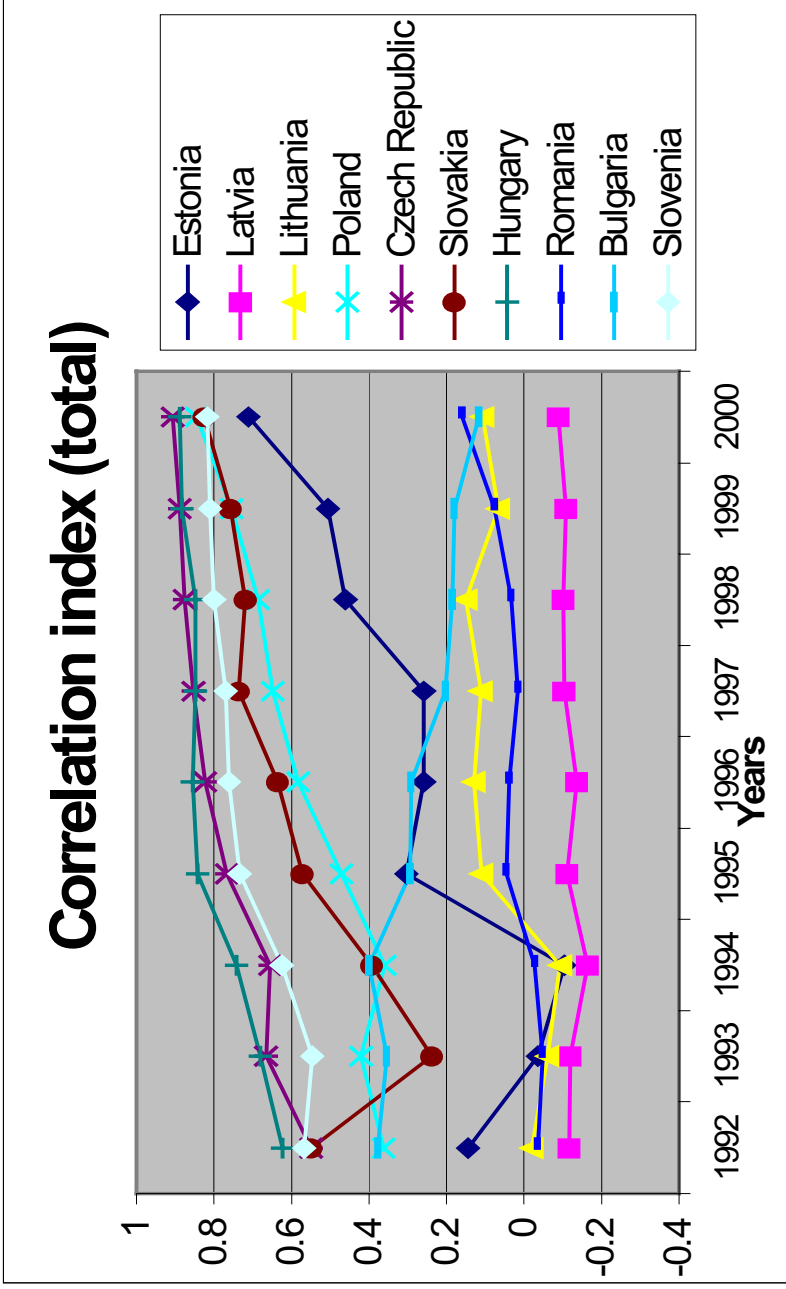


Figure 3

