Changes in Export Patterns of the Czech Republic, Hungary and Poland.

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Abstract.

The paper aims to show the changes in export pattern of the Czech Republic, Hungary and Poland's manufacturing industries from the EU-25 market perspective and due to differentiational changes in export competitiveness across industries (third digit level of NACE Rev. 1.1 classification) during the period prior to their EU membership (1996-2003). It demonstrates that these changes were differentiated across time, among industries, in terms of the quality of segments and between the three countries overall. A drop in the productivity gap between the manufacturing industries of the three accession and the incumbent EU countries played the major role in improvement of the AC-3 in the EU-25 export shares. The paper shows that changes in exports shares of the AC-3 industry reflect changes in relative (as compared to foreign) productivity rather than differences in level and changes in productivity among their industries. Taking into account the quality of exported goods helps verify the evaluation of changes in exports pressure. The increase in the share of a given industry on export markets may be accompanied by differentiation of export pressures among quality segments of this market. Focusing also on AC-3 industries that increased export pressure on the EU market the most, the paper presents some features of AC-3 export patterns.

JEL codes : D24, D40, F14, F15, J24, L10, L60

Introduction.

As a result of diminished world trade barriers and increased exports in many countries, business people, labour leaders, and policymakers have become more concerned with the competitiveness of their countries' exports and its differentiation across industries, which result in changes in export patterns and export performance. Basing on Revealed Comparative Advantage indicator (RCA) the literature contains a lot of analysis of the characteristics of export patterns of the new member states, especially the Czech Republic, Hungary and Poland, which are also compared to the trade specializations of the four cohesion countries (Greece, Ireland, Portugal, Spain). It concentrates on factors like the content of trade flows and the quality of the sector in which industries operate [Landesmann, 2000; 2002; Havlik, 2000; Borbely 2004, 2005]. According to most estimates, Poland, as does Greece and Portugal and to a lesser extend Spain, specialises in labour-intensive and resource-intensive products and Poland still has a comparative disadvantage in differentiated and science-based goods. The Czech Republic and Hungary have comparative advantage in some labour-intensive,

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resource-intensive industries and in differentiated goods. Changes in export patterns measured by a revealed comparative advantage indicator are seen as a reflection of changes in export competitiveness across industries and countries.

In this paper the export performance and export patterns of the three accession countries (AC-3) - the Czech Republic, Hungary and Poland - are analysed from different perspectives. Looking at AC-3 exports to the EU-15 from the perspective of the EU market, and referring to the title of the conference, we concentrate on the effects and factors of change in export competitiveness of the AC-3 against EU industries, its differentiation across industries and the results for the export patterns of the AC-3. As an effect of AC-3 export expansion, the process of "pushing out" the EU-15 industries that took place in the pre-accession period and the determinants of this process will be shown. Focusing also on AC-3 industries that increased competitive pressure on the EU market the most, we present some features of AC-3 export patterns and their effects for potential AC-3 growth.

The paper contains four sections. The opening section presents the analytical framework used. The second section shows the exports performance and export patterns of the Czech Republic, Hungary and Poland since the mid-1990s, when the European Agreement came into force and the most intensified liberalisation of trade relations took place. Changes in the export pressures of the three new member states' manufacturing on the EU market are also included. The third section then turns to the fundamental factors responsible for differentiation of this pressure across industries and countries. Based on statistical analysis, section 4 focuses on two types of "gainers" which increased EU-25 market shares the most. Conclusions follow.

1. Export competitiveness and its measurements

Although export competitiveness (competitive advantage) is a word often used in the literature, it is seldom to be found in economic textbooks, which prefer the term comparative advantage. However, competitive advantages and comparative advantage do not overlap. Competitiveness is a category used more in business and management than in economics. The former, if seen in the context of ability to win competition on the microeconomic level, has become synonymous with competitive advantage, as opposed to comparative advantage. In economics, competitiveness is an ambiguous notion and is understood in various ways. It is limited to signifying growth, foreign trade performance and efficiency. This category is attached to theories of growth and trade theory, although none of these theories have ever used competitiveness as an explanatory variable [Gomory, Baumwall, 2000].

There are at least three major approaches to competitiveness: macro, micro and trade. Defining competitiveness as "the ability of an economy to provide its population with high and rising standards of living and high rates of employment on a sustainable basis" [the European Commission [2000-2004] or "the ability of a nation's economy to make rapid and sustained gains in living standard" [The Global Competitiveness…. 1996, p.8], in the macro economic approach the competitiveness of a country's entire economy, a kind of "aggregate competitiveness," is evaluated. Based on indicators commonly used in the evaluation of economic development, in this approach competitiveness is synonymous with the level and factors of development.

The trade approach to competitiveness is based on the classical theories of international trade – the Comparative Advantage Theory and the Factor-Proportions Theory. The subject of research is foreign trade performance, especially the structure of exports or specialization of a given country. The concept of "Revealed Comparative Advantage" (RCA), created by Balassa to measure specialisation, is used. However, according to Balassa, "competitiveness means the ability to sell, to compete on the market. But since international trade is determined by relative rather than absolute advantages, this concept does not fit well into classical comparative-cost theory" [Balassa 1963, p. 29]. Balassa, similarly to Porter, rejects the validity of using the theory of international trade to assess competitiveness. Porter introduces the notion of competitive advantage, which is principally different from the notion of comparative advantage [1986, p. 15,17-18]. The latter is derived from the theory of international trade, which, according to Gomory and Baumol [2000, p. 4], does not consider the competition processes, and should therefore be modified. Gomory and Baumol stress, "there are in fact inherent conflicts in international trade (…). An improvement in the productive capacity of a trading partner that allows it to compete effectively with a home country industry, instead of benefiting the public as a whole, may come at the expense of the home country overall" [p.4]. They are the first to introduce processes of competition into foreign trade models and thus to modify the classical theory of trade .

In the micro approach to competitiveness, the framework of microeconomic and competition theory is applied. In this approach the subject of analysis is the tradable sector and its parts (industries and companies). Competitiveness reflects the companies' ability to compete; that is to retain and strengthen their market position. Since, on the one hand, the effect of competition among players is the "seizure of subject's market by other subjects" [Reynauld, Vidal 1998, s. 59], then the result of competition is the change of competitive position on the market [Frischtak 1999, s. 86]. On the other hand, a company is competitive if it is willing to accept the return available from selling its product at the prevailing market price. Uncompetitive companies make inadequate returns and are therefore forced to withdraw from the market. As competitiveness is the other side of competition [Glikman, Lipowski 2005], forms and factors of competitiveness are defined by forms and factors of competition. This includes rivalry in prices, in improved production techniques for the given market, and for productive resources. Since prices are affected by costs and the productivity of factors of production, these factors are also analysed.

In our analysis of the export competitiveness of the AC-3 against the EU-15, the Schumpeterian approach is used. In a Schumpeterian world, the concept of competition is grounded in cost and quality advantage, which Schumpeter felt to be much more important than the price competition of transitional theory. This produces an internal efficiency, one of the key bases of the "creative" destruction of the capitalist economic process. On the one hand, competition is a source of internal efficiency within a firm and plays a crucial role in its economic expansion. On the other hand, the issue of quality, incorporated into economic theory, has become an economic variable at least as important as price, along with product differentiation (Abbott, 1955, p.108).

To select a range of competition, markets are divided into segments. The demand for each segment is determined and added together. Both intra- and inter segment competition exist within a market consisting of multiple segments. Competitors compete within segments by offering products with similar functional characteristics in an attempt to better attract the buyer within each segment. However, firms challenge not only those consumers already present in their products' market, but also others, as well as their disposable incomes. Firms want consumers to buy their products instead of goods even from outside the same branch. Therefore, competition takes place not only within single branches but also between them. This stems from the continuously higher differentiation of products and the fight for consumers' disposable incomes. Intra-segment competition is the most common form of competition between products that are positioned in the same segment. The products within the segment are broadly similar to each other and compete for the same customers. For example, high-income consumers tend to buy high quality variants and the number of variants produced within vertical product differentiation depends on the income spread. Inter-segment competition involves highly differentiated products positioned in different segments that are competing for different customers. The differences in consumers' disposable incomes and changes that take place in them have an impact on the range of competition between producers. Selection of markets into quality segments enables a determination of the range of competition.

In this paper we presume that competitiveness derives from competition and thus directly reflects the competition struggle. It includes the process of some firms pushing other firms (and therefore the goods produced by them) out of the market, that is selection on the market. It results in changes in the international specialisation of the market agents. Change in export competitiveness results in change in export patterns, although both notions differ considerably.

Since competitiveness reflects the ability to compete and competition is a selection process then, first, changes in export competitiveness are reflected in changes in export market shares. Second, this also implies that export competitiveness is a relative term. The assessment of competitiveness of export of a product through, for example, its productivity should be related to the productivity of its rivals on the market where the competition takes place. Third, the forms and methods of competition (price and non-price) are reflected in the forms and methods of changes in competitiveness. In a Schumpeterian world, great importance is given to both improving relative costs and the quality of products. However, we should keep in mind that higher quality enables higher price without losing market share. Consequently, in the framework of monopolistic competition, by increasing the quality of goods produced, a country can at the same time shift its import demand curve inwards and its export demand curve outwards. It follows from this that an increase in market share may reflect not only an improvement in the relative productivity of the substitute but also an upward shift in the quality ladder. This makes possible entry into a more dynamic part of the market stimulated by an increase in the disposable income of consumers.

However, we should keep in mind that changes in export market shares as a measure of changes in export competitiveness are distorted by changes in market orientation (domestic or foreign) of production, export and import dynamics as compared to production dynamics, differences in demand dynamics between domestic and foreign markets and shifts in quality of products.

Deriving competitiveness from the concept of rivalry, and thus treating it as a relative category, implies the need to introduce relative (AC-3 as compared to EU-15) factors of change in competitiveness. Depending on the availability of data (third digit level of NACE Rev. 1.1 classification), the focus is on three factors analysed in a relative manner, i.e. as relating to rivals. The average EU-15 value of all the analysed indicators will be considered as a point of reference[2]. The following indicators have been chosen: RULC (Relative Unit Labour Costs), RUEV (Relative Unit Export Value), and IR (Investment Rate, i.e. investment related to turnover). Unit Labour Costs (ULC) is calculated as the labour compensation (wages and salaries plus social contributions) of a particular industry (on a three digit level, NACE classification) related to its total sales. Relative ULC (RULC)[3] is derived by dividing ULC in the AC-3 by ULC in the EU-15 for each of the industries. Whenever RULC is above one (ULC in AC higher than in the EU) the efficiency of the use of labour costs in the AC-3 is lower than in the EU. RUI is the relationship between the AC-3 and the EU-15 investment rate (share of investment in sales).

The competition approach to competitiveness discourages us from using value added per employee as a measure of labour productivity, as firms do not compete via value added but by lowering their costs and/or improving the efficiency of production. Such steps allow

[2] Due to the lack of data for 2003 (and partly for 2002) when this analysis was being undertaken, we have based our research on data estimates for turnover, wages and labour costs and investments for the EU-15 manufacturing sector. These estimates were based on Eurostat preliminary results and also on certain Eurostat forecasts and estimates for the dynamics of given indicators.

[3] In the literature, relative labor productivity is often determined as a relation of an industry's productivity to total manufacturing's productivity.

lower prices (price competition), expansion and the gathering of resources to finance quality enhancement necessary to win the competition battle via horizontal and vertical differentiation. This also enables higher dynamics of production growth.

A comparison of unit labour costs across countries tells a different story than a comparison of productivity growth. The former is a more comprehensive indicator of export competitiveness than the latter, as it shows whether changes in productivity counterbalance increases in wages and salaries. Relatively high productivity growth may have been accompanied by even higher wage increases. In such a situation, despite productivity growth, the RULC would have worsened. Similarly, an increase in productivity may be accompanied by a decrease in unit labour costs because wages do not rise. Rather, the compensation of another input, such as capital, may increase. This would amount to a redistribution of income among the factors of production. For example, an increase in the compensation of labour relative to the return to capital may induce a company to make labour-saving investments. This would raise labour productivity and moderate the change in unit labour costs. In general, changes in labour cost and labour productivity do not have a simple, direct effect on unit labour costs. A change in unit labour costs can always be traced, in an accounting sense, to a change in productivity or labour costs, but this tracing may or may not reveal the underlying causal influence. In the analysis we consider factors influencing changes in productivity and quality like changes in investment rate, employment and production dynamics.

Unit values of export reflect the valuation of goods by consumers and therefore are directly linked to the potential for quality competition and vertical differentiation. As a proxy for product quality we use Unit Export Value (UEV). Their calculation is base upon the ratio of nominal values to physical volumes. Its measurement is centred on products and reveals information about vertical differentiability, product quality, irrespective of labour productivity [OECD Proceedings 1998. p. 94]. In the literature [Aiginger 1998] it is suggested that the unit export value is for many countries a good "overall" quality indicator, since it comprises many different aspects of product quality. Although it reflects changes in quality and other value-enhancing features (service component, design and advertising) it is not free from some deficiencies[4]. We use the relative RUEV as the measure of the quality position of AC-3 exports to the EU-15 as compared to EU-15 intra-exports for each of the manufacturing industries. The increase in RUEV is a sign of an improvement in the quality of products or a widening of the range of exported commodities within the more differentiated industries. Based on RUEV, the AC-3 manufacturing industries were divided into three quality segments. The first covers industries in which UEV was similar to the EU average (RUEV >0.85). The second segment covers industries in which RUEV was between 0.45 and 0.85 (middle quality), while the third segment has the lowest quality products (RUEV<0.45).

2. Changes in exports performance and exports patterns of the Czech Republic, Hungary and Poland

Among the new member states (NMS), the analysed countries are the most important players on the EU market, as they constituted 75% of NMS trade with the EU-15. The increase in this share in 1996 – 2003 from 70.8% to 74.9% suggests that the AC-3 took over a part of the increase in EU-25 demand for the ten new member states goods. The increase in the share of the AC-3 in EU-15 external imports from 6.2% in 1996 to 10.6% in 2003 implies that the AC-3 also took over a part of the increase in the EU-15 demand for non-EU goods. Given also the slowdown in EU GDP growth (2000-2003) and in EU-15 intra-export

[4] Changes in unit export values for a given product category may reflect both changes in product quality and changes in product bundle [Aw and Roberts 1986]. The problem is the more serious, the more aggregated the product is. It may be different from the unit prices since it represents a unit of weight rather than price of any unit [Rosati 1998].

dynamics, this also demonstrates that the analysed three countries took over a part of the increase of EU demand for its goods and were pushing out some EU and non-EU producers from the EU market. This, therefore, suggests an improvement in the analysed countries exports competitiveness, defined as the ability to compete in comparison with its EU-15 counterparts.

Table 1. Changes in the share of AC3 exports to EU15 in the EU25 internal exports (in %)

		1996	**1997**	**199 8**	**1999**	**2000**	**2001**	**2002**	**2003**
Share in EU internal exports	AC-3	2.7	3.0	3.3	3.6	4.0	4.5	4.7	5.1
	Poland	1.0	1.1	1.2	1.2	1.4	1.5	1.6	1.8
	Czech Rep.	0.9	1.0	1.1	1.2	1.3	1.5	1.6	1.8
	Hungary	0.8	1.0	1.1	1.3	1.3	1.5	1.5	1.5

In an estimation of EU-25 intra exports, trade between the 10 ACs was omitted due to the lack (until 1999) of such data in the Comext. The 10 ACs exports are underestimated by the value of their exports to other ACs. However, trade among AC plays an increasingly important role. This is particularly interesting in the case of the Czech Republic, as its share in EU-25 intra exports - at the level of 2.15% (while omitting trade with the AC – 1.8%) in 2003 - is in a quarter based on its trade with other ACs, while in Poland this is 2.2 and 1.8 respectively and in Hungary this is 1.62 and 1.54%.

Source: Comext database, own calculations

However, the three countries' share of EU-25 internal exports was highly differentiated across countries, industries and in time (Table 1). Hungary experienced the highest increase in EU market share in 1996-2000. In the subsequent years the increase has been much more modest, especially if compared to changes in Poland and the Czech Republic. The latter countries intensified their exports to the EU-15 only after 1999. Although the improvement in the EU internal exports of Poland was considerable, one should keep in mind that this was still low when one considers that Poland's total GDP was higher than that of both other countries combined[5]. Differentiation of EU exports share among the three countries and in time is crucial for our analysis, which, due to data availability (for Hungary and the Czech Republic) concentrates on the 1998 – 2003 period, when Poland and the Czech Republic were catching up, whereas Hungary experienced a slowdown in its export dynamics.

The increase of Poland's and the Czech Republic's share in EU internal exports was accompanied by a radical increase in the inflow of FDI and its share in exports of both countries to the EU. Since the mid-1990s, inflows of FDI to both countries have increased considerably, much more than in the case of Hungary, and have caught up with low FDI inflows in the earlier period[6]. A slowdown of FDI inflow to Hungary after the middle of the 1990s accompanied a slowdown in the increase of this country's share in EU internal exports. Flows of FDI into Poland and a reorientation of activity from domestic toward foreign markets since the end of the 1990s has impacted Polish export performance and the differentiation across industries of changes in the share of Polish exports in EU-25 intra-exports [IKC, 2005]. The correlation between the intensity of FDI inflows over time and changes of the AC-3 in the EU-25 internal exports share, and the increase in the share of foreign-owned exports in Poland and the Czech Republic, confirms the increasing role of

[5] Although the share of exports in GDP increased from 23.7% to 34.7%, while that of imports from 21.5% to 36.9%, the major role in economic growth is played by domestic demand.

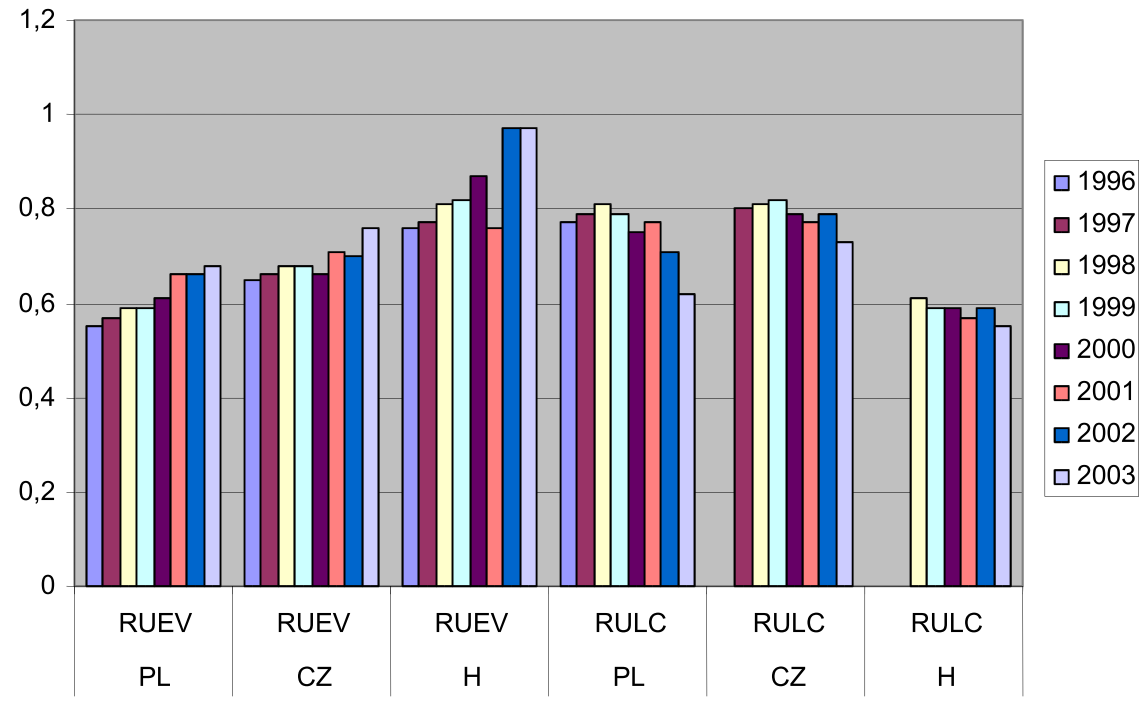
[6] The increase in cumulated FDI (in 1996-2003) in Poland reached $42 billion, in the Czech Republic $33 billion, while in Hungary $23 billion

these firms in both shaping the export patterns of the analysed countries and in changes in their pressure on the EU market.

Not only among the analysed three countries was the export pattern differentiated in terms of quality of products exported to the EU-15, but also there were quite considerable differences in the quality of goods exported to the EU-15 as compared to the AC. Poland and the Czech Republic tend to export to the EU-15 products of a quality much lower than in the EU or Hungary (Graph 1). In contrast, Hungary's exports were composed to a large degree of products of a quality corresponding to the EU level and, in terms of the product quality gap between Hungary on the one hand and the Czech Republic and Poland on the other increased.

The difference in domestic demand in terms of quality of goods between the AC and the EU-15 corresponds to the difference in the quality of goods exported to the EU-15 as compared to the AC. For example, unit export value (UEV) of Polish exports to the EU-15, as compared to the average UEV traded among the EU-15, increased from 0,51 in 1999 to 0,66 in 2003. UEV of Polish goods exported to the AC as compared to the average UEV of goods traded among the EU-25 was much lower (0,42) and did not change. Although UEV of Polish exports to the AC was much lower than UEV of goods exported to the EU-15, it remained very high (1,2 in 2003) as compared to the UEV of goods traded among the AC. The export pattern of the ACs adjusted to differences in the characteristics of demand between both groups of countries.

Graph 1. RULC and RUEV of the Czech Republic, Hungary and Poland in 1996-2003



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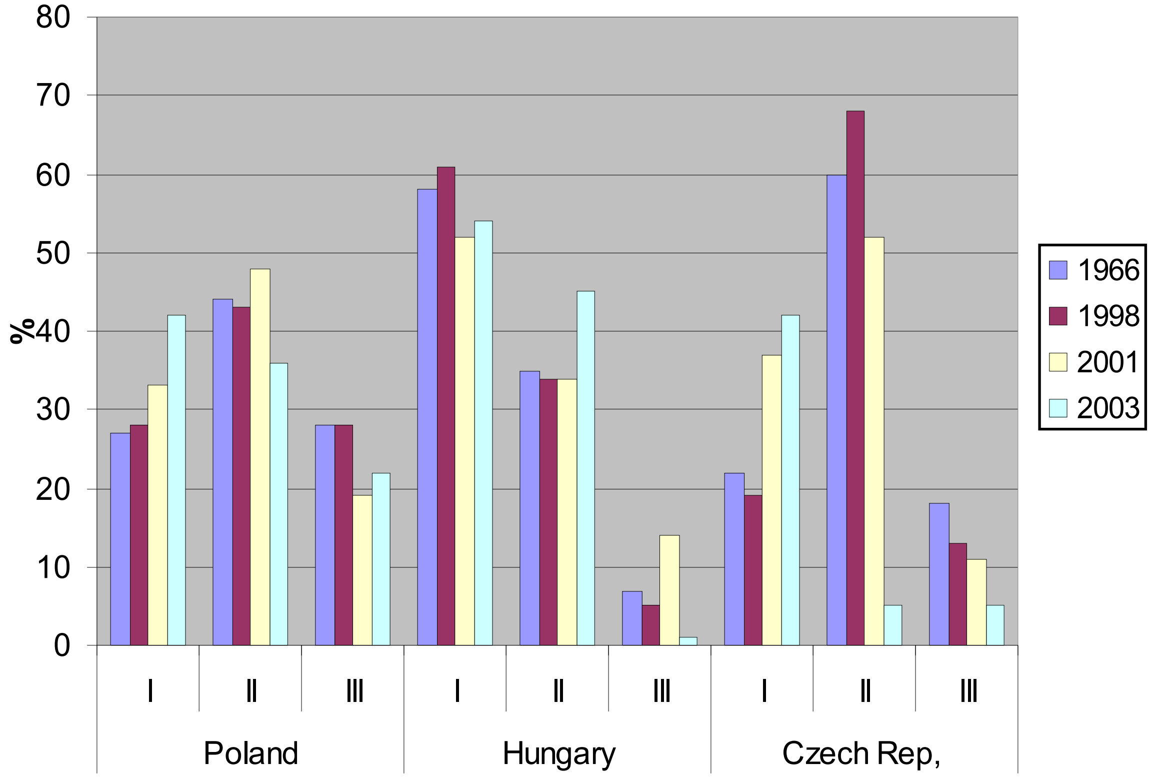
[7] In Poland the number of industries in the highest quality segment increased from 13 to 27, in the Czech Republic from 22 to 32 and in Hungary from 24 to 47.

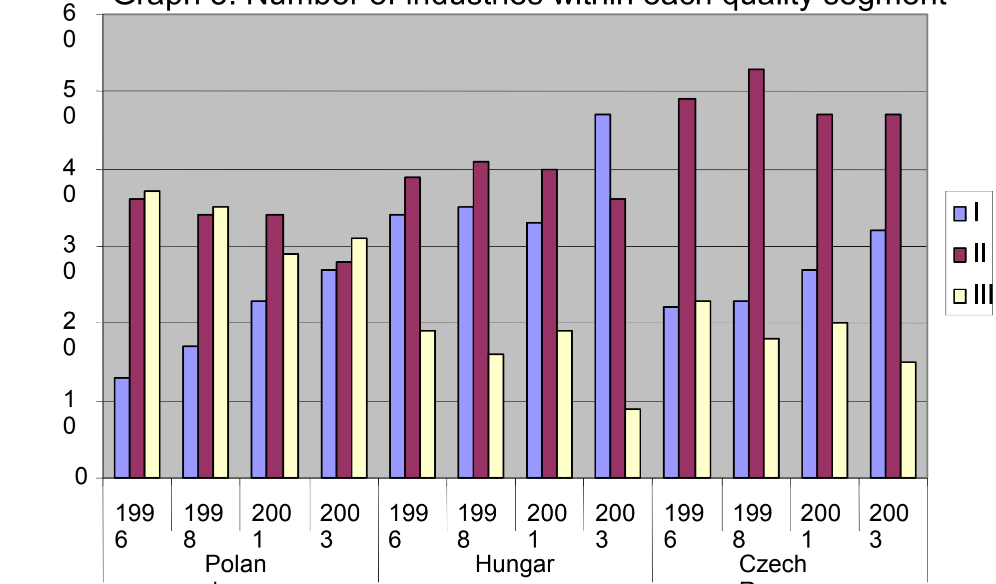
Graph 2. Structure of exports of the AC-3 to EU-14 by quality segments



Source: *Comext database (Eurostat), own calculations*

On the other hand, it is worth mentioning that although the number of industries exporting high quality goods in Hungary increased, their share of Hungarian exports in 2000, as compared to the 1990s, diminished. Either some of the highest quality products - in order to compete with EU goods - were sold at lower prices or, in maintaining prices, turnover and exports fell. Increasing productivity and a drop in RULC (Table2, Graph 1) allow for such a strategy of maintaining EU market share.

Graph 3. Number of industries within each quality segment



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of measured cost competitiveness need not have negative implications for trade performance if increased international demands for a given country's products were the root cause of the rise in relative domestic costs. In such circumstances, a given country's prices can rise faster than foreign prices and an improvement in exports performance and a deterioration in the measures of price and cost competitiveness can be observed at the same time.

During the period analyzed, the RULC of the AC-3 improved considerably - the most in Poland and the least in Hungary. However, over the whole period, RULC in Hungary was the lowest, reflecting the lowest productivity gap of the three countries against the EU-15 (Graph 1).

Changes in the RULC of the AC-3 were differentiated between two sub-periods: up to 1999 and after, as well as between Hungary as compared to the Czech Republic and Poland. Essentially flat RULC till 2001 in Hungary accompanied an increase in RUEV and considerable improvements in EU-25 exports shares. The deterioration of RULC of the Czech Republic and Poland up to 1999 was accompanied by a small improvement in the quality of exported goods and a small increase in EU-25 export share. Afterwards, the quite considerable improvement in RULC and quality of exported goods of Polish and Czech manufacturing were in line with considerable improvements in both countries' EU export shares. This accompanied a drop in the investment rate and continuous large inflows of FDI into both countries. The key question is whether FDI is an addition to domestic investment or pushes it back in time. The evidence from the AC-3 is not conclusive.

The role of exchange rate in changes in export competitiveness is important. Low or declining productivity growth can always be offset by depreciation of the exchange rate, thus maintaining the competitiveness of the tradeables sector. The appreciation of the AC-3 national currencies against the euro during the 1990s did not result in a worsening of exports performance and RULC. Appreciation of the exchange rate was offset by increasing productivity growth and a declining productivity gap between the AC-3 and the EU-15. This also created an incentive to upgrade export products in terms of quality and technological sophistication, which is a strategy to offset upward price pressure from the appreciation of the currency. However, it is unrealistic to assume that AC-3 firms can quickly upgrade export products in terms of quality of product or innovativeness. The adjustment time or learning phase required depends on the general ability of the firms to adjust, the level of sophistication already required (and hence the presence of foreign investors) and the share of skilled workers available. Anyhow, a drop in the productivity gap, and the fact that appreciation of the exchange rate was counterbalanced by improvements in productivity, allows for improvements in competitiveness of AC-3 exports to the EU-15. Among the analysed countries, the highest rate of growth in productivity was found in Hungary and the lowest in the Czech Republic (Table 2).

Drop in RULC of the AC-3 resulted from a combination of a drop in the productivity gap against the EU-15 (column 2, Table 2) and a slower rate of growth of wages than that of productivity in all AC-3, especially in Poland but also in the Czech Republic. The opposite was the case in the EU-15 (Table 2, column 5). If wages rise faster than productivity improvement, profitability falls. Gradually capital will move between industries in response to different rates of return, so that reduced relative profitably will lead not only to less employment with a given capital stock but also to lower output as investment in the industry falls off.

Table 2. Average changes in wages, productivity, turnover and employment of AC-3 and EU manufacturing in 1998-2003 (in current prices).

Country	Wages per employee	Turnover per employee	Turnover	Employment	Differences between changes in wages and productivity (in percentage points)
	1	2	3	4	5
Hungary	93%	94%	82%	-6%	1
Czech Rep.	56%	69%	58%	-6%	13
Poland	38%	82%	48%	-19%	44
EU15	30%	20%	16%	-5%	-10

Source: own estimation based on national statistic of the AC-3 and Eurostat.

While productivity growth improved in each AC-3 country, and the gap in productivity against the EU diminished, these gains were accompanied by declines in employment in virtually every case and high dynamics of production growth of the AC-3 (Table 2) as compared to the EU-15. Increases in AC-3 productivity were brought about by rising output and falling labour input, and a higher investment rate than in the EU-15, although diminishing over time. The 1998-2003 productivity gains recorded by the Czech Republic, and especially by Hungary, resulted more from output increases than from declining employment. The considerable increase in Poland's unemployment rate was linked to the rapid growth of labour productivity. The EU-15 unit labour cost increase was primarily the result of a reluctance to adjust changes in wages to that of productivity and to not react quickly or fully to cut total labour costs in the face of slow dynamics of growth of production and productivity. All in all, the decline in the productivity gap was the main factor of improvements in RULC of the AC-3. The role of changes in employment in productivity gains differentiated among the AC-3.

As we are concerned with sectoral, not overall national, competitiveness, our focus is on changes in competitiveness across the manufacturing industries of the three analysed countries.

4. Gainers among the AC-3 manufacturing industries in EU-25 internal exports

Most AC-3 industries increased their EU market share. This was reflected in a drop in the productivity gap between them and the incumbent EU countries and an improvement in RULC. The focus of this section is the industries of the AC-3, which most increased competitive pressure on EU markets, and the causes of this process. The focus are two types of AC-3 gainers in terms of the increase in the competitive pressure on the EU market:

- Large gainers: Industries whose competitive pressure on the EU market was the strongest and dynamically increased. These are industries in the AC-3 whose share of EU-25 internal exports was high (at least double the manufacturing average) and increasing. It includes 9 large gainers in Hungarian manufacturing, and 20 Czech and Polish manufacturing industries, out of 96 total industries.
- Small gainers: Industries whose share of the EU market was low but dynamically increasing (dynamics of EU shares at least double the dynamics of EU manufacturing share growth in each respective country). This covers 11 Hungarian industries, 23 Polish industries and 8 Czech industries.

Table 3. Share of large gainers, small gainers and losers of AC in EU intra exports

EU share (weighted)	Hungary				Czech Republic				Poland			
	96	98	01	03	96	98	01	03	96	98	01	03
Large	1.9	2.8	4.2	5.4	1.9	2.5	3.8	4.3	4.5	5.1	6.5	7.1
small	0.2	0.3	0.5	0.7	0.3	0.4	1.2	1.9	0.5	0.7	1.5	1.9

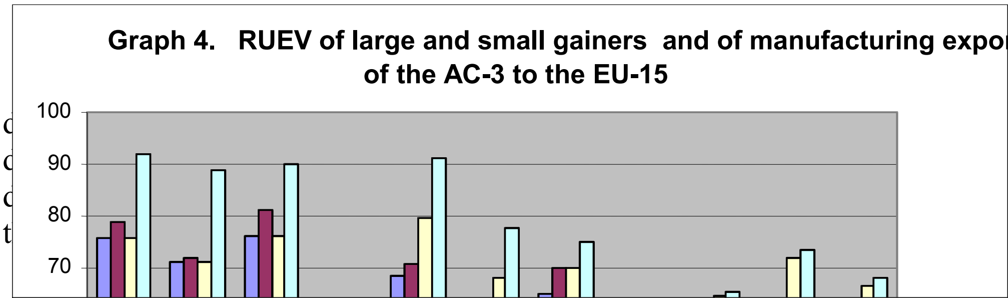
Manufacturing	0.8	1.1	1.5	1.5	0.9	1.1	1.5	1.8	1.0	1.2	1.5	1.8

Source: Comext, own calculations.

In 1998-2003, the EU export share of <u>the large gainers</u> of the AC-3 increased considerably (Table 3). With a few exceptions[8] these shares ranged from 3% to 8%. If the large gainers in the AC-3 were the same and their quality similar, one could expect some of them to dominate EU markets and push out EU goods. However, the composition of the group of large gainers in each AC-3 country and the quality of their products was different. Half of the Polish and the Czech large gainers overlap. Given that quality in the Czech firms was higher than in the Polish ones, this implies that they operate in different markets in terms of quality and were rivals in the EU market for different products in terms of quality. This was similar in the case of the Hungarian and Czech large gainers (Graph 4). The differentiation of large gainer industries across the three countries (cf. Annex), and the high differentiation in terms of the quality of exported goods (cf. graph 4) meant that the AC-3 exporters of these goods were targeting different EU markets. Since these deliveries were complementary, the cumulated pressure of the AC-3 industries in question on the respective EU industry counterparts did not take place. Therefore, despite a relatively high and increasing share of large gainers in the EU-25 intra exports, their sales did not constitute a threat to the functioning of the respective industries in the EU incumbent countries. Such a threat may be the case only in particular industries of a handful of EU countries and across various quality segments of the European market.

In terms of quality of goods exported to the EU-15, large Hungarian and Czech gainers differ considerably from those of Poland (Graph 4). The former produced high quality products while the latter produced medium quality ones.

Graph 4. RUEV of large and small gainers and of manufacturing exports of the AC-3 to the EU-15



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Graph 5. RULC of small and large gainers and of AC-3 manufacturing

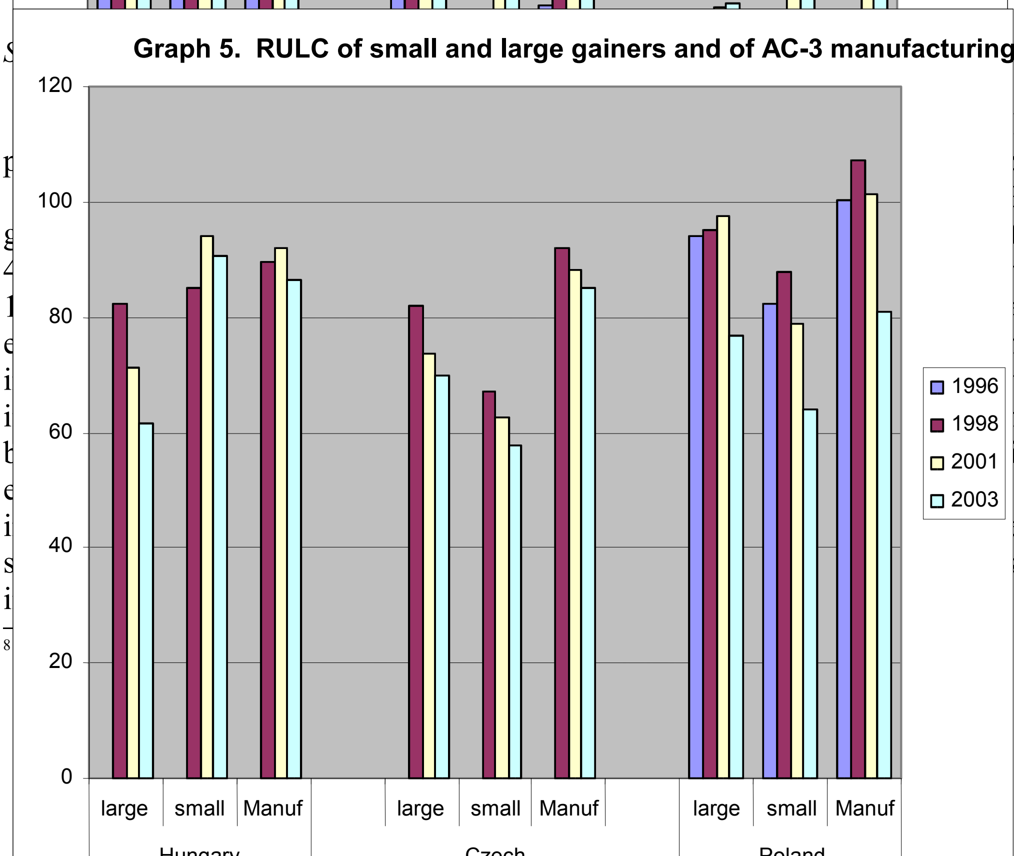

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Table 4: Levels and changes in wages and productivity in AC-3 gainers and their EU counterparts in 1998 and 2003 (in different currencies).

	wages			Productivity		
	level		changes	level		changes
	1998	2003	1998-2003	1998	2003	1998-2003
Average of manufacturing						
Hungary	1179(HUF)	2272(HUF)	93%	41.5 €	80.4€	94%
Czech	5.4	8.4	56%	34.6	58.5	69%
Poland	24.1	33.3	38%	155	282	82%
EU-15	28	37	30%	0.159	0.191	20%
Large gainers						
Hungary	1179(HUF)	2272(HUF)	92%	45.8€	130.1€	184%
EU-15 counterparts	33	46	39%	176	202	15%
Czech	5.3	8.3	56%	28.6	53.0	86%
EU-15 counterparts	26	34	29%	115	135	17%
Poland	22.0	29.5	34%	121	211	75%
EU-15 counterparts	22	29	30%	109	123	12%
Small gainers						
Hungary	1491 (HUF)	2718 (HUF)	82%	38.9€	76.6 €	97%
EU-15 counterparts	33	43	30%	171	211	23%
Czech	5.3	8.2	56%	35.3	74.7	111%
EU-15 counterparts	27	39	43%	150	192	28%
Poland	27.6	38	37%	210	368	75%
EU-15 counterparts	32	41	28%	177	210	19%

Source: Eurostat and national statistics.

Polish, and to some degree Czech, large gainers experienced a different situation and different changes. Although both countries increased their competitive pressure on the EU market in large gainers' industries, their productivity and the quality of the labour force employed was comparatively low (lower than the average of manufacturing) and this gap increased. However, since their productivity increased more than wages and than productivity in their EU counterpart industries (Table 4 and 5), RULC dropped and EU export shares increased (Table 3). Unlike Hungarian and Czech large gainer industries, Polish ones pushed out of the EU market mostly producers of low and medium quality goods and only to a small degree those of higher quality ones. Although an improvement in the quality of the Czech large gainers allows them to compete in the high quality segment, the basis for out-competing EU counterpart industries was an improvement in cost competitiveness, rather than an improvement in quality of goods.

The improvement in RULC and the EU market shares of both Polish and Czech large gainers stemmed from their narrowing the labour productivity gap vis-à-vis the EU-15 and not from the comparative advantage of the Polish and Czech industries in question over other industries in both countries. The slower labour productivity growth in the analysed EU-15 industries, which was accompanied by shallow employment and wage adjustments, created advantageous conditions for non-EU and AC–3 competitors to export to the EU market. The weakness of the European counterparts of the Polish and Czech large gainers was the basis for improvement in the latter's strength on the European market. The trade liberalisation of the AC-3 and the EU-15 was, therefore, not the source of economic problems in the manufacturing sector in EU, but rather revealed the weakness of economic performance and progress in various EU industries. It accelerated the structural changes taking place in some of the EU incumbent countries' manufacturing, but did not instigate them.

Table 5. Average changes in wages, productivity, turnover and employment of AC-3 and EU manufacturing in 1998-2003 (in current prices).

Country		Turnover	Employment	Differences between changes in wages and productivity (in percentage points)
Average of manufacturing				
Hungary		82%	-6%	1
Czech Republic		58%	-6%	13
Poland		48%	-19%	44
EU15		16%	-5%	-10
Large gainers of a given AC-3 and their EU counterparts				
Hungary (HUF)	large gainers in Hungary	281%	34%	92
	EU-15 counterparts	5%	-9%	-24
Czech (EUR)	large gainers in Czech Rep.	103%	10%	29
	EU-15 counterparts	15%	-1%	-12
Poland (PLN)	large gainers in Poland	78%	-1%	41
	EU-15 counterparts	11%	-1%	-18
Small gainers of a given AC-3 and their EU counterparts				
Hungary	Small gainers in Hungary	16%	-4%	-65
	EU-15 counterparts	20%	-3%	-7
Czech	Small gainers in Czech Rep.	111%	0%	56
	EU-15 counterparts	15%	-10%	-14%
Poland	Small gainers in Poland	55%	-11%	37%
	EU-15 counterparts	17%	-2%	-9%

Source: national statistic of the AC-3 and Eurostat.

The basis of thee competition struggle among the AC-3 large gainers and EU counterparts was competition by productivity – and not by wages (Table 5). It was mainly Hungarian and Czech – seldom Polish products – that, owing to considerable improvements in productivity, increased competitive pressure on EU high quality products. Improving the quality of Polish large gainers' products will, therefore, be the key factor in determining the possibilities for pushing their European rivals out of the market in the future. The extent of this competitive struggle will be shaped by similarities in the quality of exported goods.

Summing up, Hungarian export specialisation in a relatively small number of large gainer industries reflected its comparative advantage over other Hungarian industries, as well as its competitive advantage over EU goods. The latter, operating in the same quality segment as the Hungarian, faced increasingly strong competitive pressure from Hungarian counterparts. Large Polish gainers operated in a lower quality segment of the EU market than their EU counterparts. The increase in their competitive pressure on the EU markets stemmed mainly from the weak progress made by the incumbent EU countries' counterpart industries rather than from strong progress made. The productivity of theses industries was smaller and increased less than the average for manufacturing. In other words, Polish and Czech large gainer industries made a larger step forward in terms of improvement in export competitiveness than their European counterparts. Improvements in the competitive advantage of these industries over the EU resulted from a weakness in EU progress. Poland increased competitive pressure the most in the industries that had relatively low productivity and quality of goods. Slower demand for these will impact future export performance. Moderate investment rates imply a limited shift of resources to these industries and raises the problem of their future expansion.

The group of industries grouped under the banner "small gainers" differed in many aspects from the "large gainers" discussed above. This was observed in terms of level (in 1998) and changes over the analysed period in RULC, its factors, the quality of exported goods and EU market shares. Small gainers and large gainers from Poland and the Czech Republic differ quite considerably from those of Hungary.

Surprisingly, although the EU market share of small gainers' industries in the AC-3 was quite low in 1998[9] (Table 3), the RULC of Polish and Czech small gainers' industries was lower than both the average of manufacturing and of the large gainers in both countries (Graph 5). Labour productivity in Polish and Czech gainers and their EU counterparts was also higher than the average productivity of these countries in manufacturing (Table 4). If one sought to characterise these industries in 1998, they would be seen as competitive but also as producing low quality products. This implies that the range of competition with EU products was limited to the lower and, later, medium quality segment of the market. However, during the analysed period, AC-3 small gainers' industries increased their EU market shares quite considerably (Table 3). This was accompanied by considerable improvements in the quality of goods and a considerable drop in their RULC. In the case of Poland, the drop in RULC was higher than that of the large gainers.

The changes in RULC were influenced by interdependencies between wages and productivity changes in the AC-3, as compared to the EU. On the one hand, with the exception of Hungary, the increase in the quality of the labour force and in the productivity of Polish and Czech small gainers' industries and their EU counterparts was higher than the average for manufacturing and the large gainers' industries (Table 4). A drop in labour input plays the key role in productivity improvement only in the 1990s. IN subsequent year the role of investment increased. On the other hand, the productivity growth dynamics of small gainers from Poland and the Czech Republic exceeded that of the average of each countries' manufacturing and that of their EU counterpart industries. The increase in the productivity gap

[9] It varied from 0,15% to 3,5%

between small gainers and the average for manufacturing was accompanied by a drop in the productivity gap between the small gainers of both countries and their EU-15 counterparts. Significantly higher productivity than wage growth in Poland and the Czech Republic lead to a decrease in RULC. The changes in Hungary and the EU were in contrast to this.

A more rapid improvement in the quality of Polish and Czech small gainer industries compared to both countries' large gainers, and to Hungarian ones, leads to a decrease in the quality gap vis-à-vis Hungary and all three countries' EU-15 counterparts. It also revealed new possibilities for export expansion onto the EU market, acquiring new markets in terms of quality, and contributed to export market share growth.

In Hungary in 1998 the level of labour productivity of the analysed industries was 40% higher than for average manufacturing. However, its growth dynamics during the analysed period were lower than average – and worse than its EU counterparts. In 2003, the level of labour productivity remained lower then the average for Hungarian manufacturing, while wages were quite high.

Summing up, among Polish and Czech manufacturing industries, a group of dynamic exporters distinguished itself. Its labour productivity and labour force quality was high and increased more rapidly than average manufacturing and its EU counterparts. These Polish and Czech industries gained competitive advantage on the EU market. Furthermore, significant increases in the quality of goods exported by these industries contributed to shifts toward more dynamic EU markets and an improvement in market shares.

Conclusions

In the pre-accession period (1998-2003), the AC-3 increased its competitive pressure on most of the manufacturing industries on the EU-25 market. Growth in the share of its manufacturing industries in the EU market, drop in RULC, the productivity gap and the increase in the quality of exported goods all confirm the improvement in the export competitiveness of AC-3 manufacturing industries. The increase in export pressure during the slowdown in the incumbent EU-15 countries also confirms the progress made by the AC-3.

Improvements in the export competitiveness of AC-3 manufacturing industries was differentiated across time, among the three countries (Hungary versus the Czech Republic and Poland), across manufacturing industries and across quality segments of the EU-25 market. The average quality of Hungarian goods, although highly differentiated among industries, was higher than Polish or Czech goods. The increase in the competitive pressure of the former was mainly seen in high quality goods. On other hand, the share of exports to the EU-15 of Polish and Czech high quality goods in their total exports to the EU-15 increased quite considerably. The opposite was the case for Hungary. This suggests increasing difficulty in exporting Hungarian high quality goods to the EU-15.

The major sources of improvement in the export competitiveness of the manufacturing industries of the analysed countries was a drop in the productivity gap in relation to the EU-15. The productivity growth dynamics of the AC-3 overtook those of wages, resulting in a drop in their RULC. The opposite was the case for the incumbent EU countries.

The share of exports of some of the AC-3 industries (large gainers) of EU-25 internal exports was quite large. However, these industries' general type in the AC-3 and the quality of their goods did not overlap. This implies that the cumulative competitive pressure of the AC-3 industries on the EU-25 market was not strong.

The specialisation of Hungarian exports on a few large gainers reflected both their comparative advantage over Hungarian manufacturing industries and their competitive advantage over EU industries. The latter, operating in the same quality segments as their Hungarians' counterparts, felt the increased competitive pressure of Hungarian goods.The increasing competitive advantages of the large gainers from both the Czech Republic and Poland over their incumbent EU counterparts was a result not only of the progress made in productivity by the AC-3 but also the small progress in productivity made by their incumbent EU counterparts. The level and improvement in productivity of the above mentioned Polish and the Czech industries was lower than the manufacturing average. .

The specialisation of Polish and Czech exports to the EU-15 on relatively less productive industries (large gainers) implies that the expansion of these exports to the EU-15 results in lower-than-potential economic growth in both countries. However, it seems that the future external liberalisation of the EU-25 market will hamper the further dynamic growth of some Polish and Czech large gainers.

In the analysed period, new dynamic exporting industries (small gainers) emerged among Polish and Czech exporters. They were characterised by higher and dynamically increasing productivity compared to their manufacturing average and to their incumbent EU counterparts. The improvement in the quality of their goods helped to improve their position on the EU market.

Structural changes took place in Czech and Polish exports to the EU-15. The share of dynamic industries (small gainers) in the EU-25 market, characterised by high productivity, increased, although this remained quite small.

Summing up, the increase in the EU-25 market share of both large and small gainers from the AC-3 was the outcome not only of improvements in their productivity but also the poor improvement of their EU-15 counterparts in this respect. This sheds new light on the competitive pressures of the AC-3 gainers on the EU-25 market.

Two conclusions emerge as a result of the above deliberations. First, changes in the competitive pressure of an industry of a given country on a foreign market reflect changes in relative (in comparison to foreign) productivity, rather than differences in productivity among industries of a given country. Smith's law of comparative advantage governs the mechanism of competition and the impact of changes in market share. Second, taking into account the quality of exported goods helps verify the evaluation of changes in competitiveness based on relative productivity and market share. The increase in the share of a given industry on export markets may be accompanied by differentiation of competitive pressures among quality segments of this market.

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Annex 1.

Large gainers:

HUNGARY	
157	Manufacture of prepared animal feeds
204	Manufacture of wooden containers
311	Manufacture of electric motors, generators and transformers
312	Manufacture of electricity distribution and control apparatus
313	Manufacture of insulated wire and cable
315	Manufacture of lighting equipment and electric lamps
316	Manufacture of electrical equipment n.e.c.
322	Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy
323	Manufacture of television and radio receivers, sound or video recording or reproducing apparatus and associated goods
CZECH REPUBLIC	
171	Preparation and spinning of textile fibres

174	Manufacture of made-up textile articles, except apparel
203	Manufacture of builders' carpentry and joinery
222	Printing and service activities related to printing
251	Manufacture of rubber products
261	Manufacture of glass and glass products
262	Manufacture of non-refractory ceramic goods other than for construction purposes; manufacture of refractory ceramic products
266	Manufacture of articles of concrete, plaster, cement
281	Manufacture of structural metal products
282	Manufacture of tanks, reservoirs and containers of metal; manufacture of central heating radiators and boilers
283	Manufacture of steam generators, except central heating hot water boilers
287	Manufacture of other fabricated metal products
311	Manufacture of electric motors, generators and transformers
312	Manufacture of electricity distribution and control apparatus
313	Manufacture of insulated wire and cable
316	Manufacture of electrical equipment n.e.c.
343	Manufacture of parts, accessories for motor vehicles
352	Manufacture of railway, tramway locomotives, rolling stock
355	Manufacture of other transport equipment n.e.c.
361	Manufacture of furniture
	POLAND
153	Processing and preserving of fruit and vegetables
174	Manufacture of made-up textile articles, except apparel
182	Manufacture of other wearing apparel and accessories
183	Dressing and dyeing of fur; manufacture of articles of fur
203	Manufacture of builders' carpentry and joinery
204	Manufacture of wooden containers
205	Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials
231	Manufacture of coke oven products
262	Manufacture of non-refractory ceramic goods other than for construction purposes; manufacture of refractory ceramic products
281	Manufacture of structural metal products
282	Manufacture of tanks, reservoirs and containers of metal; manufacture of central heating radiators and boilers
283	Manufacture of steam generators, except central heating hot water boilers
313	Manufacture of insulated wire and cable
314	Manufacture of accumulators, primary cells and primary batteries
315	Manufacture of lighting equipment and electric lamps
316	Manufacture of electrical equipment n.e.c.
323	Manufacture of television and radio receivers, sound or video recording or reproducing apparatus and associated goods
352	Manufacture of railway, tramway locomotives, rolling stock
355	Manufacture of other transport equipment n.e.c.
361	Manufacture of furniture

Small gainers:

	HUNGARY
155	Manufacture of dairy products
175	Manufacture of other textiles
212	Manufacture of articles of paper and paperboard
222	Printing and service activities related to printing
244	Manufacture of pharmaceuticals, medicinal chemicals and botanical products

245	Manufacture of soap, detergents, cleaning, polishing
291	Manufacture of machinery for the production and use of mechanical power, except aircraft, vehicle and cycle engines
300	Manufacture of office machinery and computers
332	Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment
334	Manufacture of optical instruments,photographic equipement
353	Manufacture of aircraft and spacecraft
CZECH REPUBLIC	
158	Manufacture of other food products
175	Manufacture of other textiles
233	Processing of nuclear fuel
245	Manufacture of soap, detergents, cleaning, polishing
247	Manufacture of man-made fibres
291	Manufacture of machinery for the production and use of mechanical power, except aircraft, vehicle and cycle engines
300	Manufacture of office machinery and computers
322	Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy
323	Manufacture of television and radio receivers, sound or video recording or reproducing apparatus and associated goods
POLAND	
156	Manufacture of grain mill products, starches and starch products
157	Manufacture of prepared animal feeds
171	Preparation and spinning of textile fibres
175	Manufacture of other textiles
211	Manufacture of pulp, paper and paperboard
212	Manufacture of articles of paper and paperboard
221	Publishing
222	Printing and service activities related to printing
243	Manufacture of paints, varnishes and similar coatings, printing ink and mastics
245	Manufacture of soap, detergents, cleaning, polishing
247	Manufacture of man-made fibres
251	Manufacture of rubber products
252	Manufacture of plastic products
263	Manufacture of ceramic tiles and flags
268	Manufacture of other non-metallic mineral products
286	Manufacture of cutlery, tools and general hardware
297	Manufacture of domestic appliances n.e.c.
312	Manufacture of electricity distribution and control apparatus
331	Manufacture of medical and surgical equipment and orthopaedic appliances
333	Manufacture of industrial process control equipment
341	Manufacture of motor vehicles
343	Manufacture of parts, accessories for motor vehicles