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CENTRAL AND EAST EUROPEAN INDUSTRY IN AN ENLARGED EUROPEAN UNION: RESTRUCTURING, SPECIALISATION AND CATCHING-UP

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ABSTRACT. The Central and East European Accession Countries (ACs) have gone through a dramatic process of structural adjustment in which their integration into trade and production systems with the EU, fostered especially by inflows of FDI, has played a major role. Using detailed national statistics on production, employment and FDI (at 2-digit NACE level), as well as Eurostat data on manufacturing industry trade, this paper analyses the emerging patterns of ACs' industrial specialisation and identifies sectors where productivity catch-up has been most pronounced. This paper attempts to outline the emerging position of the ACs' industries (and their individual sectors) within the enlarged EU. While EU accession will not bring any additional, dramatic changes to industry (owing to the high degree of integration in this area which already exists), there are some sectors that will be affected by differentiated patterns of growth and cost structures.

JEL Classification: F14; F15; J3; L6; O14; P27.
Keywords: CEE Acceding Countries; Industrial Restructuring; Productivity; Growth, Foreign Direct Investments.

RÉSUMÉ. Les pays d'Europe centrale et orientale qui rejoignent l'Union européenne (UE) ont réalisé un ajustement structurel très significatif dans lequel l'intégration aux circuits commerciaux et de production au sein de l'UE a joué un rôle capital, particulièrement soutenue par les flux d'investissements directs étrangers (IDE). S'appuyant sur les statistiques nationales de production, emploi et IDE (nomenclature NACE à deux chiffres) ainsi que sur les données d'Eurostat pour les échanges dans l'industrie, cet article analyse les profils de spécialisation industrielle qui se dégagent et les secteurs où le rattrapage de la productivité a été le plus net. L'article décrit quelle position l'industrie des nouveaux États membres (et chaque secteur pris individuellement) sont en train de prendre au sein de l'UE. Si l'élargissement de l'UE n'apportera pas de bouleversements profonds pour l'industrie (vu le degré élevé d'intégration déjà atteint), certains secteurs pourraient néanmoins être affectés par des taux de croissance et des structures de coûts différenciés.

Classification *JEL* : F14; F15; J3; L6; O14; P27.
Mots-clefs: Nouveaux membres de l'UE ; restructuration industrielle ; productivité ; croissance ; investissement direct étranger.

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◼ INTRODUCTION

Since the beginning of the transition, the Central and East European acceding countries[2] (the ACs) have gone through a dramatic process of systemic change and structural adjustment (see, for example, Landesmann, 2000; Urban, 2000; European Commission, 2003). Since about mid-1990s, ACs' industry has been able to recover its previous position thanks to active restructuring, fostered especially by inflows of FDI. The recent productivity growth has been much higher than in the EU, implying some productivity catching-up. The ACs have also made strong inroads to EU markets in a number of widely heterogeneous industries. There is a considerable differentiation in production and employment structures and, further-more, in tendencies of trade specialisation and productivity catching-up among ACs. Using detailed national statistics on production, employment and FDI (at 2-digit NACE level), as well as Eurostat data on manufacturing industry trade, this paper will analyse emerging patterns of ACs' industrial specialisation and identify sectors where productivity catching-up has been most pronounced. We attempt to outline the emerging position of ACs' industry (and its individual sectors) within the enlarged EU.

The paper is organised as follows: it reviews the ACs' productivity performance in the manu-facturing industry over the period 1995-2002. It provides various productivity level estimates and, on this basis, analyses the developments of unit labour costs. Then, it discusses the sec-toral distribution of foreign direct investments and its effects on ACs' restructuring. It focuses on manufacturing industry trade with the EU and on the ACs' competitive position on the EU market. It discusses some of the issues related to the takeover of the "acquis communautaire" with implications for manufacturing. Finally, it provides some tentative conclusions regarding the prospects of catching-up and industrial specialisation patterns in the enlarged EU.

◼ PRODUCTIVITY CATCHING-UP AND LABOUR COSTS IN ACs' MANUFACTURING

The manufacturing sector of the ACs, compared to aggregate production in the EU, is rela-tively small. Taken together, production of all eight ACs (AC-8) made up less than 5% of the total production in the enlarged EU-25 in the year 2000. However, in view of the still grossly undervalued currencies, the "real" shares of ACs' manufacturing are higher – around 9% of the total EU-25 manufacturing, and in some industries such as wood products, nonmetallic minerals, food & beverages and manufacturing nec (mainly furniture) even more than that (see European Commission, 2003). Industries which are particularly small in relation to the EU are, for instance, machinery and equipment nec and chemicals. As far as employment is concerned, ACs account for 15% of EU-25 manufacturing jobs, with particularly high employment shares in the textiles, wood, coke and refined petroleum industries.

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2. The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic and Slovenia.

Large differences between production and employment shares point to the substantial productivity gaps between the ACs and the present EU-15 member states. A crucial issue in the context of enlargement is whether (and how) these gaps will be reduced in future. Will ACs' production shares in an enlarged EU-25 increase or, rather, will their employment shares decline? What will be the speed of these adjustments? These and other questions are briefly addressed below though more research on these topics is definitely needed.

Given the lack of comparable data for manufacturing employment in some ACs in the early 1990s, the analysis focuses on manufacturing labour productivity in the period after 1995. Between 1995 and 2002, manufacturing production in the AC-8 rose much faster (6.4% per year) than in the EU-15 (2.1% per year; see TABLE 1). This translates into a growth differential in favour of the ACs of 4.3 percentage points per year, substantially higher than the growth differential for GDP during the same period (Havlik *et al.*, 2003c). On the other hand, manufacturing employment in the ACs declined strongly (–2.1% per year) while it stayed more or less constant in the EU-15, resulting in a negative growth differential for the AC-8 *vis-à-vis* the EU-15 of –2.1 percentage points per year, again significantly higher than for total employment. As a result, ACs' productivity catching-up, already impressive at the GDP level, was even more pronounced in manufacturing: between 1995 and 2002, the cumulated productivity gain in manufacturing amounted to 79% for the AC-8 and 16.4% for the EU-15. The annual growth differential was 6.5 percentage points, by far exceeding the growth differential in terms of macro-productivity.

Table 1 -   **Labour productivity catching-up of the ACs *vis-à-vis* the EU in manufacturing, 1995-2002**

	Growth rate		ACs' growth differential			Growth rate	
	in %		Against EU-15 in pp			in %	
	Cumulated	Annual average	Cumulated	Annual average		Cumulated	Annual average
AC-8[a]					EU-15		
Production	54.0	6.4	38.6	4.3	Production	15.4	2.1
Employment	–14.0	–2.1	–11.9	–2.1	Employment	–0.9	0.0
Productivity	79.1	8.7	62.7	6.5	Productivity	16.4	2.2

Notes: Gross production and productivity in real terms.
a. Central and East European first-round acceding countries, weighted average.

Sources: WIIW Database, incorporating national statistics, WIFO and WIIW calculations using AMECO Database, UE.

FIGURE 1 shows indexes of production and employment for individual ACs which indicate an impressive *productivity recovery* in most these countries. Hungary even managed to slightly increase the number of manufacturing jobs, in the remaining ACs productivity gains were

associated with further lay-offs of workers. Hungary's outstanding productivity performance in recent years thus resembles that of Ireland; Estonia, Poland and Slovakia outperform Austria, Denmark and Finland, which have been the best performers in terms of productivity growth among the present EU member states (European Commission, 2003). In these ACs and, as will be shown below, in a few industrial branches, there has been a spectacular productivity catching-up.

Figure 1 -   **Manufacturing production and employment growth in ACs, 2002 (1995 = 100)**
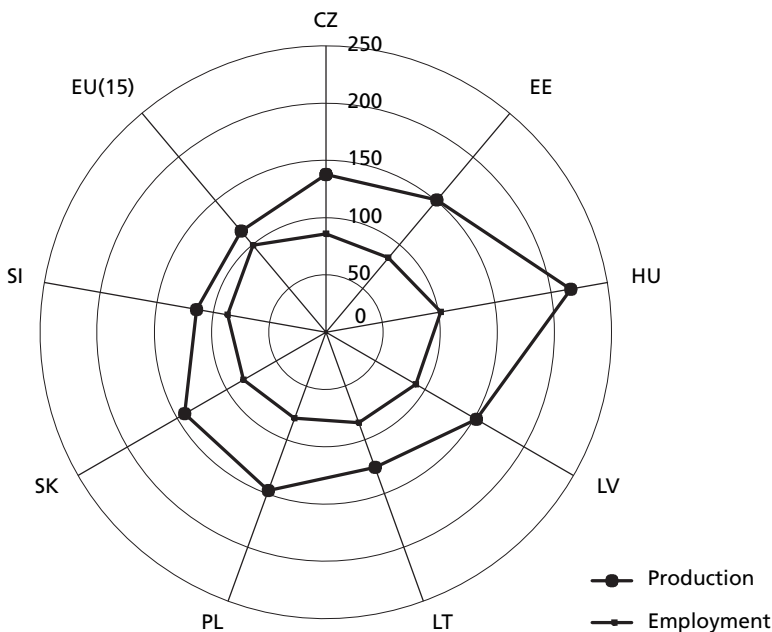
Source: Own calculations based on WIIW industrial database and AMECO database.

But in contrast to the EU where manufacturing employment has been stagnating, productivity catching-up in most ACs has been associated with considerable job losses. The new EU member states will thus require specific employment strategies (training, support of SMEs, regional policies, etc.) to stabilize employment levels in manufacturing (and to create new employment opportunities in other sectors) while simultaneously maintaining the recent pace of productivity improvements[3]. Otherwise there is a danger that the present labour market problems may further aggravate.

The well-known ACs' productivity gaps for the whole economy are similar to those in the manufacturing industry – although their proper assessment poses considerable methodologi-

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3. See Celin (2003) for a more detailed discussion of employment strategies in the ACs.

cal and statistical problems (see BOX 1; TABLE A1.1, APPENDIX 1 provides several alternative esti-
mates of manufacturing labour productivity levels compared to EU-15 average and their sec-
toral variation)[4]. Hungary's productivity leadership in manufacturing (roughly half of the EU
average productivity level) is confirmed, Slovenia's productivity (about the same as in the
Czech Republic) is surprisingly low given its relatively high per capita income. There are large
productivity gaps among individual ACs and also the sectoral variation of labour productivity
is relatively high (such comparisons are of course affected by varying capital intensity of indi-
vidual industries).

A comparison of labour productivity changes across individual industries displays a quite clear
pattern: The most obvious "productivity winner" in the 1995-2001 period was the electrical &
optical equipment industry, performing much above average in all ACs, followed by the trans-
port equipment industry and manufacturing nec (mainly furniture – see TABLE A1.2). In the
Baltic states, non-metallic mineral products and basic metals are clear productivity winners as
well. Typical "productivity losers" are the food & beverages industry, textiles & textile prod-
ucts, leather & leather products, wood & wood products, paper & printing, coke & petroleum
products and chemicals. In general, we find certain evidence that technologically more sophis-
ticated industries have strongly improved their productivity performance, while traditional sec-
tors using standard techniques and low skilled labour have been falling behind. This was
apparently not the case in Bulgaria and Romania and the experience in this respect was also
quite differentiated amongst the other more advanced ACs (Landesmann and Stehrer, 2001).

Not only productivity matters for competitiveness but also labour costs play their role in
shaping relative cost structures and hence the competitive position of different industries.
Survey results show that average monthly labour costs in ACs' manufacturing amounted to
just 14% of EU average in the year 2000 (Eurostat, 2003b). In Slovenia, the average monthly
labour costs in manufacturing (gross wages, including indirect labour costs, converted at cur-
rent exchange rates) reached just one third of EU average. In Poland, ranking second, it
reached only 22%, and at the low end, labour costs in the Baltic states hovered below 10%
of EU average (TABLE A1.3). Labour cost differences *among* individual industries are substan-
tial (but there are only small differences in (relative) indirect labour costs). Differences in
labour costs *across* industries in the ACs are generally low (except Hungary), and lower than
in the EU. Wage levels are positively correlated with the varying sectoral productivity perfor-
mance as branches with better productivity performance can afford to pay higher wages (but

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4. Productivity is defined as gross production per employee. For a cross-country comparison, data in national curren-
cies were converted with purchasing power parities (PPPs). PPPs were adopted from the ECP 1999 – see Eurostat
(2001). The first data set presented in TABLE 2 (using PPP99 for GDP) results from national productivity figures con-
verted with 1999 purchasing power parities for the whole GDP. This conversion leads to higher productivity esti-
mates for the ACs. The second data set uses as a conversion factor partial PPPs for gross fixed capital formation
(PPPCAP99) where the price levels in the ACs are relatively high (presumably due to imports of machinery and equip-
ment). This conversion thus leads to lower productivity estimates for the ACs. Given the close correspondence of
the latter productivity estimates to the theoretically superior UVR-based productivity data (see BOX 1) for the Czech
Republic, Hungary and Poland (UVRs are not available for other ACs), and assuming that a similar correspondence
between UVR and PPPCAP99 exists for other ACs as well, one can assume that productivity levels expressed at PPP-
CAP99 are probably closer to reality – at least for manufacturing industry as a whole.

productivity dispersion in the ACs is much higher than wage dispersion – see the standard deviations given in APPENDIX 1, TABLES A1.1 and A1.3). Generally, ACs' labour costs (wages) have been growing rather fast recently, in the last couple of years pushed up by currency appreciations. Notably, nominal (EUR-based) wages in all ACs (except Slovenia) rose faster than in the EU during 1995-2001 (here the annual growth of wages was less than 4% in this period). Although this can be considered a positive sign with regard to cohesion and catching-up, the rapid wage increases are putting a strain on the ACs' international cost competitiveness – unless these are compensated by a corresponding rise in productivity and other efficiency improvements[5].

BOX 1 - MANUFACTURING LABOUR PRODUCTIVITY IN INTERNATIONAL COMPARISON

International productivity level comparisons are hampered by the conversion of the national output data to a common currency. The use of market exchange rates is not appropriate for this purpose (especially for ACs, mainly due to their still grossly undervalued currencies and widely fluctuating exchange rates). Alternative proxy converters are either purchasing power parities (PPPs), or – much better – branch-specific unit value ratios (UVR) which compare prices of representative products. UVR estimates (for the year 1996) are available only for the Czech Republic, Hungary and Poland relative to Germany from a recent research project jointly conducted by the WIIW and the University of Groningen[6]. The estimated Hungarian manufacturing industry labour productivity was slightly less than 40% of the German level in 1996, the respective Czech-German productivity relation was 35%, the Polish-German productivity relation was 25%, all with fairly large sectoral differences. FIGURE 2 shows productivity comparisons with Austria for the year 2001, after extrapolation from the above quoted 1996 UVR-based benchmarks with country and branch-specific rates of productivity growth.

Hungarian manufacturing productivity reached close to half of Austrian level by the year 2001 and there was a closure of productivity gap by nearly 10 percentage points since 1996. In Poland, the closure of the gap was negligible, and there was no productivity catching-up in Czech manufacturing relative to Austria during this period. A closer look at the performance of individual branches shows that relatively smaller productivity gaps (and impressive productivity catching-up) were observed especially in manufacturing of rubber and plastics, electrical and optical equipment and transport equipment, but virtually no catching-up occurred in other branches. Hungary's labour productivity in transport equipment industry was apparently higher than in Austria. On the other hand, productivity gaps in food & beverages, leather, wood products as well as in manufacturing nec (mainly furniture) were especially large in all three ACs, and in some cases these gaps have even widened since 1996.

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5. At the same time, CPI-deflated real labour costs increased only moderately in most ACs – see TABLE 4.
6. See Monnikhof and van Ark (2002).

Figure 2 - **Manufacturing labour productivity (UVR-based)**
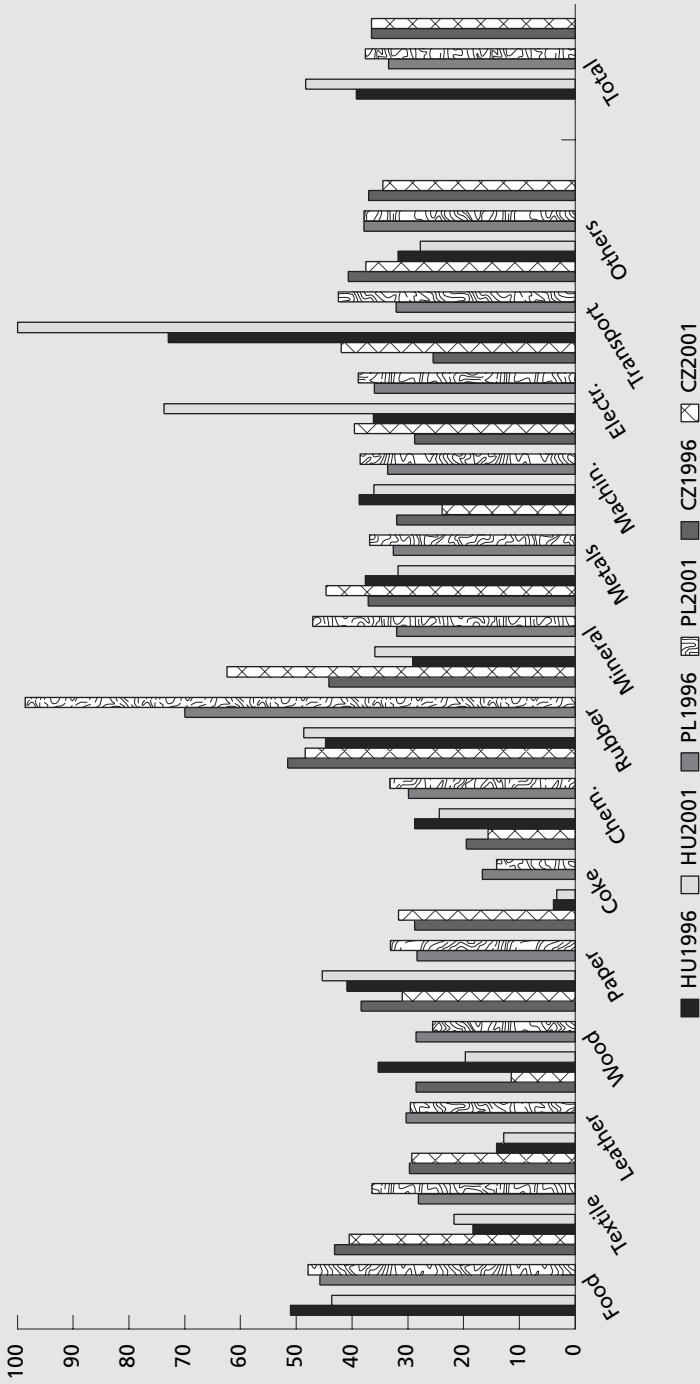
Austria = 100

Source: WIIW database, own estimates based on Monnikhof and van Ark (2002).

With respect to labour costs one can observe the following pattern: First, the gaps are much more even across sectors than was the case with productivity. Second, and this is a very important point for the comparative cost dynamics, the growth (or closure) rates for wage rates (gaps) were much more similar across sectors than it was the case for the (differential) productivity increases. Last but not least, labour cost gaps (relative to the EU) are much bigger than gaps in productivity implying low unit labour costs in the ACs (see below).

The relative movements of labour costs and productivity determine the evolution of unit labour costs (ULCs). Over the period 1995-2001, manufacturing ULCs (see BOX 2 for definition) increased in nearly all ACs. The only exception is Hungary, where ULCs in manufacturing declined during this period and cost competitiveness improved (TABLE A1.4). When analysing the factors (components) behind the changes of ULCs, the recent experience shows that wage increases (in national currency units, NCU) were the major factor driving ULC

BOX 2 - DECOMPOSITION OF UNIT LABOUR COSTS (ULCS)

Unit labour costs (*ULC*) are defined as labour costs per unit of gross manufacturing output (*OUT*). Labour costs are average gross wages plus indirect wage costs per person (*W*) multiplied by the number of persons employed (*EMP*):

$$ULC = (W * EMP)/OUT$$

Labour productivity (*LP*) is defined as output per employed person:

$$LP = OUT/EMP$$

Changes in labour productivity (*dLP*) can be approximated as:

$$dLP = dOUT - dEMP$$

Thus, unit labour costs may be rewritten:

$$ULC = W/(OUT/EMP) = W/LP$$

Accordingly, any change in unit labour costs (*dULC*) can be decomposed in the following way:

$$dULC = dW - dLP = dW - dOUT + dEMP$$

*ULC*s will rise (cost competitiveness decline) when the labour cost increase is higher than the increase in productivity and vice versa. Productivity changes are determined by the relative growth of output and employment: For instance, *LP* will increase if output growth is faster than employment growth. At given labour costs, this will lower *ULC* and increase the cost competitiveness of a respective industry.

For cross-country comparisons, labour costs in national currency are converted in euros (at current exchange rates) and thus variations of the exchange rate will have an impact on manufacturing *ULC* as well. (Currency appreciation will push up wages in all industries in euros and thus *ULC* as well, currency depreciation will lower wages in EUR and thus reduce *ULC* of the respective country).

changes in most ACs, at least until about 1998. Only occasionally were wage increases "neutralized" by strong currency depreciations – for instance in Hungary and in Slovakia (1995-1998). In the last couple of years, wage increases in local currency were modest in most ACs, but currency *appreciation* has pushed up wage costs in euro. The effect of productivity gains as a counterbalance to rising wage costs has gained in importance over the years (with the exception of 2001 when the world-wide recession hit also the manufacturing sector in the ACs). The analysis of factors behind ULC changes thus points to considerable cost pressures that come from currency appreciation rather than from nominal wage increases; these cost pressures had been only partly compensated by corresponding productivity gains.

Sectoral differences of ULC changes are determined mainly by varying dynamics of labour productivity (as already mentioned, changes in wage rates differ much less across industries; the exchange rate movements are, of course, the same for all industries in one country). Therefore, we may expect that the industries we have identified above as "productivity winners" will show either a lower increase or a faster decline of ULCs than total manufacturing, i.e. a better than average cost competitive performance. "Productivity loser" branches, on the other hand, will probably show either a stronger increase *or* a smaller decline of ULCs than manufacturing average, pointing to a weaker competitive cost performance. This is confirmed in TABLE A1.4 where relative ULC changes in individual industries (relative to total manufacturing over the period 1995-2001) indicate a better than average competitive performance for "productivity winners" identified above. These are usually the technologically more sophisticated industries such as electrical & optical equipment, the transport equipment industry, but also manufacturing nec (furniture). Industries signalling a weaker competitive performance in most ACs are mainly the "productivity losers": the food & beverages industry, textiles, leather & leather products, wood products, paper & printing, coke & petroleum products and chemicals[7].

Cross-country comparisons of ULCs levels are hampered by the same problems as the above discussed productivity comparisons. TABLE A1.5 provides ULC estimates for ACs' manufacturing industry relative to Austria[8]. Even an upper boundary of ULCs indicates *considerable competitive (cost) advantage* of ACs' manufacturing. The lowest ULCs were in Hungary and in the Slovak Republic, due to their comparatively high labour productivity. The Baltic states show a combination of both relatively low wages and low productivity, while the Czech Republic and Poland are characterised by both relatively high wages and high productivity. Sectoral ULCs' variations are considerable again (and estimates are less reliable); in some branches (leather products in the Czech Republic, Hungary and Slovenia, wood products in Slovenia, etc.) there is no comparative cost advantage any more.

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7. Needless to say, we use here only labour productivity. Different rates of capital accumulation could account for some of the difference (see also section 3 below).
8. Because of delayed data for many EU countries and problems of consistency especially at the level of individual industries, we use here Austria as a reference country. PPPCAP99-based productivity estimates which are closer to reality are used here for reasons discussed above.

In the first years of acceding, the increasing pressures to sustain stable exchange rates with the euro in preparation to EMU membership might lead to a deterioration in cost competitiveness of the ACs. The degrees to which productivity developments and wage moderation might compensate these tendencies will differ across different ACs, just as we saw that productivity trajectories have already been different and the productivity-wage dynamic has also proceeded in different ways across economies and in different time periods. Nonetheless, we expect those acceding countries which attempt to join the EMU rather quickly to face a hard task to avoid a deterioration in competitiveness in the short run.

■ FOREIGN DIRECT INVESTMENT AND ACS' MANUFACTURING

Foreign direct investment (FDI) plays an important role in restructuring and competitiveness. In bringing resources such as additional capital, technology and managerial know-how, as well as access to markets, FDI helps to raise productivity and expand exports (Hunya, 2002). In countries without a strong national innovation system and exports coming mainly from national enterprises (as used to be the case in ACs), the question is how to cope with the pace of technical change and make inroads into markets held by more advanced countries (that is, to catch-up). When the evolution of dynamic comparative advantage is supported by FDI there is a problem of sustainability and upgrading, especially as wages rise and cheaper competitors appear (risk of relocation). Furthermore, the question of spillovers between foreign-owned and domestic sectors is an important one in order to avoid that isolated pockets of advancement develop with the help of FDI while the rest of the economy falls behind (Damijan *et al.*, 2003).

FDI has been one of the driving forces of restructuring in ACs (TABLE 2). These countries have inherited from the past a largely obsolete capital stock that often turned out to be non-viable in the conditions of a market economy[9]. And, contrary to a frequently held opinion, there is some evidence that they may lag behind advanced market economies also in terms of the quality of their workforce[10]. The modernization of existing assets and the training of human resources require extensive efforts and large financial resources that are generally scarce. That is why foreign investment, especially FDI, has been seen to play a prominent role in upgrading both human and physical capital stocks. However, the evidence for direct links between FDI penetration and growth, restructuring and/or productivity spillovers in transition economies is mixed, partly also due to the scarcity of reliable FDI data. FDI stocks are relatively high in domestically-oriented industries such as food & beverages (important in all countries except Slovenia), as well as in predominantly export-oriented industries such as electrical & optical equipment and transport equipment. In the Baltic states, FDI in textiles & textile products as well as in wood & wood products play a major role.

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9. Due to valuation and other conceptual and statistical problems there are no reliable data on ACs' capital stocks.
10. Despite achievements in formal education, the skills – especially at the level of managerial and other skilled employment – required in a market economy are deficient; see EBRD (2000).

Table 2 - **Foreign direct investment stocks in manufacturing industry, end-2001**

In % of total manufacturing FDI

NACE Code	Activities	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Slovak Republic	Slovenia
			2000	2000		2000			
DA	Food products; beverages and tobacco	11.8	22.5	24.2	28.7	40.1	25.2	13.9	5.2
DB	Textiles and textile products	3.4	13.8	3.8	12.3	16.2	1.1	1.2	2.6
DC	Leather and leather products	0.1	–	0.6	0.5	0.0	0.1	0.8	–
DD	Wood and wood products	1.5	16.4	1.1	16.1	4.9	5.9	1.0	0.4
DE	Pulp, paper & paper products, publishing & printing	7.2	–	4.2	4.9	3.8	7.2	5.5	16.9
DF	Coke, refined petroleum products & nuclear fuel	2.3	1.0	8.2	0.0	6.4	–	7.5	–
DG	Chemicals, chemical products and man-made fibres	6.2	8.7	5.5	9.5	–	6.0	6.9	16.4
DH	Rubber and plastic products	6.2	1.1	4.7	3.2	4.0	2.8	1.7	10.9
DI	Other non-metallic mineral products	14.1	–	6.2	6.3	5.6	14.0	5.0	6.6
DJ	Basic metals and fabricated metal products	9.1	3.9	6.1	7.9	1.7	2.0	41.2	8.2
DK	Machinery and equipment n.e.c.	4.2	3.3	5.3	6.3	1.1	1.2	4.1	12.3
DL	Electrical and optical equipment	13.9	2.9	19.5	1.8	7.9	7.7	4.8	10.3
DM	Transport equipment	19.0	6.9	9.6	0.4	7.2	24.7	5.7	9.7
DN	Manufacturing n.e.c.	1.0	–	1.0	2.3	1.2	2.2	0.7	0.4
	Other non-classified industries	–	19.5	–	–	–	–	–	–
D	Manufacturing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
D	Manufacturing FDI stocks, EUR mn	11 539.7	612.8	4 079.3	428.7	721.8	24 828.9	2 327.6	1 317.2
	FDI stocks total, EUR mn	30 717.2	2 843.0	11 079.7	2 520.6	2 509.2	60 311.1	5 313.0	3 637.1
	Share of manufacturing in total FDI stock, in %	*37.6*	*21.6*	*36.8*	*17.0*	*28.8*	*41.2*	*43.8*	*36.2*
	Share of manufacturing FDI stock in GDP, in %	*18.2*	*11.0*	*8.1*	*5.1*	*5.9*	*12.2*	*10.2*	*6.3*

Remarks:
Czech Republic: equity capital, reinvested earnings, loans.
Estonia: equity capital, reinvested earnings, loans.
Hungary: nominal capital based on corporation-tax declarations.
Latvia: equity capital, reinvested earnings, loans.
Lithuania: equity capital, reinvested earnings, loans.
Poland: equity capital, reinvested earnings gross; projects over USD 1 million capital based on PAIZ data.
Slovak Republic: equity capital, reinvested earnings – in the corporate sector.
Slovenia: equity capital, reinvested earnings, loans.

Sources: WIIW-WIFO FDI database, national statistics.

FDI penetration of the manufacturing industry (FDI stock per employee) is particularly high in the Czech Republic and Poland (FIGURE 3), it displays a broadly similar pattern of an uneven distribution across branches. Havlik (2003a) brings some robust statistical evidence for positive impacts of FDI penetration on productivity and ULC improvements at the branch level. Hunya (2002) shows that enterprises with foreign investment participation have on average twice as high labour productivity as domestically owned enterprises; the former are also more export-oriented. Last but not least, Damijan *et al*. (2003) investigate on a panel data set for more than 8000 firms in ACs various channels of technology transfer through FDI and its impact on productivity growth. They find that only in some ACs (Estonia, Hungary and Slovenia) foreign affiliates grow much faster in terms of total factor productivity than local firms. Moreover, though it is mainly FDI that is accountable for productivity spillover for local firms, the link between FDI, innovation and absorption capacity of local firms in ACs is so far rather weak.

The FDI-led process of a rapid expansion of new production and export capacities has been underway in the majority of ACs. Multinational (and other Western) companies exploit ACs' cost advantages and increase production and exports from these new locations even when aggregate external demand is low. In a period of global economic slowdown and a general squeeze on profit margins, Western companies are even more sensitive to costs and may tend to accelerate the relocation of production to lower cost ACs. Growing production, rising exports and market shares of ACs in the recent period are thus a medium-term development reflecting transition-related changes in the international division of labour. Due to their comparative advantages and the existing differences in labour costs, the ACs are likely to gain after acceding further production and export market shares in Europe (see also UN-ECE, 2003).

One of the important implications of acceding is of course the likelihood of a further strengthening of cross-border production networks between acceding countries and incumbent (especially neighbouring) EU states. The reduction of entry barriers and the "level playing field" implicit in the implementation of the *acquis*, the lowering of border transaction costs and the improvement in transport (and other logistic) infrastructure would all go in the direction of widening and deepening production integration between new and old members.

◼ ENLARGEMENT AND TRADE COMPETITIVENESS OF ACS

Trade integration between the EU and the ACs progressed with remarkable speed after sweeping liberalizations at the beginning of the 1990s. Stimulated by Association Agreements, the EU has become the most important trading partner for all ACs, accounting now for 50-55% (Lithuania) to 75% (Hungary) of their total exports. From this point of view, most ACs are thus already now more integrated into the EU than many "old" EU member states. Import shares are as a rule lower, largely because energy and raw materials are imported from outside the EU (mainly from the CIS). Most ACs are having negative trade

Figure 3 - **Manufacturing industry FDI stocks per employee in €, year 2001**
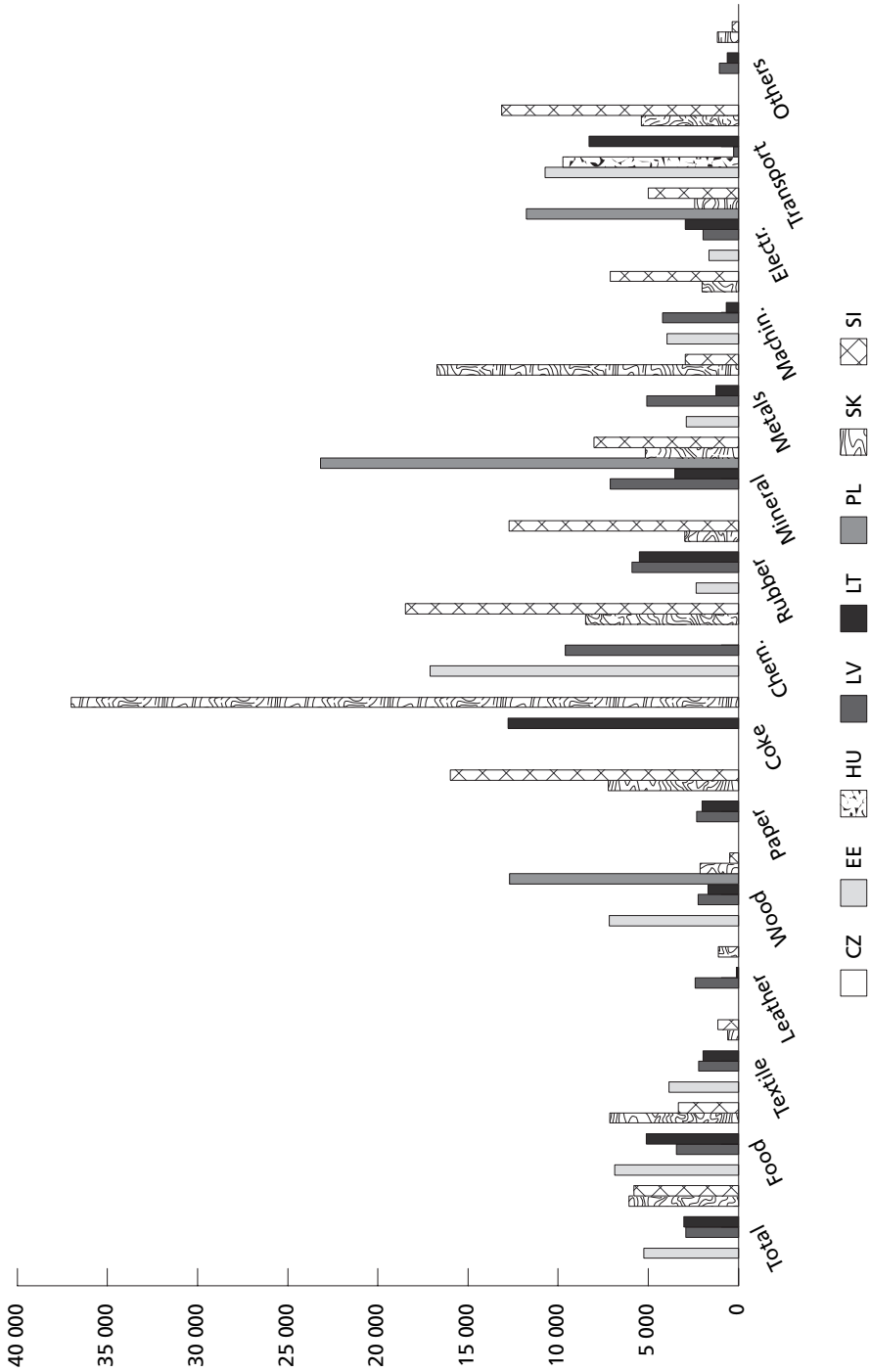
Note: See table 2 for definitions of FDI coverage.

Sources: WIIW-WIFO FDI database, national statistics.

Table 3 -   **Correlation of market share gains/losses between 1995 and 2001**
             in the enlarged EU-25

	Czech Rep.	Estonia	Hungary	Latvia	Lithuania	Poland
Market share gain/loss in EU-25 imports	**0.70**	**0.10**	**0.79**	**0.01**	**0.07**	**0.47**
Correlations of market share gain/loss						
EU15(intra)	–0.689*	–0.265*	–0.413*	–0.050	–0.056	–0.563*
EU25(intra)	–0.738*	–0.450*	–0.492*	–0.115	–0.128	–0.758*
Greece	0.095	–0.142	0.051	0.007	–0.019	–0.023
Ireland	–0.245*	–0.023	–0.026	0.017	0.020	–0.195
Portugal	–0.022	–0.141	0.025	–0.081	–0.287*	–0.038
Spain	–0.236*	–0.111	–0.104	0.002	–0.036	–0.144
Austria	–0.136	–0.104	–0.230*	0.037	0.156	–0.286*
Germany	–0.168	–0.069	–0.212*	0.064	0.096	–0.179
Italy	0.037	0.178	–0.003	0.033	–0.040	0.075
France	–0.152	–0.089	–0.202*	–0.001	–0.040	–0.281*
Denmark	0.007	–0.287*	0.099	–0.075	–0.198	–0.115
Sweden	–0.077	–0.510*	–0.135	–0.414*	–0.143	0.012
Finland	–0.008	0.073	0.113	–0.244*	–0.042	0.105
Netherlands	–0.076	–0.081	0.168	0.024	–0.042	0.059
Belgium & Luxemburg	–0.118	0.037	–0.105	–0.012	0.147	–0.109
United Kingdom	0.014	0.015	–0.025	0.052	–0.139	–0.097

	Greece	Portugal	Spain	Ireland	Austria	France
Market share gain/loss in EU–25 imports	**–0.07**	**0.15**	**0.53**	**1.12**	**0.12**	**–0.85**
Correlations of market share gain/loss						
EU15(intra)	–0.125	0.195	0.181	0.168	0.164	0.313*
EU25(intra)	0.019	0.201*	0.250*	0.209*	0.279*	0.287*
Greece	–	0.069	–0.157	0.053	0.004	–0.047
Ireland	0.053	–0.025	–0.171	–	–0.086	–0.005
Portugal	0.069	–	–0.086	–0.025	0.080	–0.050
Spain	–0.157	–0.086		–0.171	0.020	–0.184
Austria	0.004	0.080	0.020	–0.086	–	0.102
Germany	–0.060	–0.135	–0.157	0.006	0.320*	–0.002
Italy	0.035	0.273*	0.100	–0.092	–0.076	–0.147
France	–0.047	–0.050	–0.184	–0.005	0.102	–
Denmark	0.028	–0.005	0.073	0.025	0.003	0.124
Sweden	–0.064	–0.034	0.127	–0.047	–0.262*	–0.026
Finland	0.024	–0.030	–0.047	0.017	–0.525	–0.204
Netherlands	–0.090	–0.038	–0.137	–0.024	–0.085	–0.180
Belgium & Luxemburg	0.001	–0.033	0.039	–0.088	–0.195	–0.209*
United Kingdom	0.105	–0.018	0.279*	0.012	0.018	–0.357

Note: * = significant at 5 % level.

Source: Own calculations based on Eurostat Comext database (correlations of market shares in 95 3-digit NACE subsections of manufacturing).

Slovak Rep.	Slovenia	AC-8	Bulgaria	Romania	AC-10	EU-25(intra)	EU-15(intra)
0.20	−0.02	2.31	0.04	0.25	2.59	2.59	−5.01
−0.553*	−0.031	−0.767*	−0.055	−0.229*	−0.797*	0.797*	–
−0.578*	−0.041	−0.950*	−0.104	−0.322*	−1.000*	–	0.797*
0.136	0.039	0.041	−0.222*	−0.166	−0.019	0.019	−0.125
−0.004	−0.013	−0.196	−0.067	−0.067	−0.209*	0.209*	0.168
−0.164	0.138	−0.073	−0.380*	−0.400*	−0.201*	0.201*	0.195
−0.379*	−0.065	−0.260*	−0.024	−0.005	−0.250*	0.250*	0.181
−0.103	−0.138	−0.288*	−0.121	0.011	−0.279*	0.279*	0.164
−0.085	−0.128	−0.229*	0.049	0.016	−0.211*	0.211*	0.081
−0.190	0.032	0.055	−0.198	−0.245*	−0.025	0.025	−0.055
−0.033	0.022	−0.270*	0.046	−0.121	−0.287*	0.287*	0.313*
0.083	0.187	−0.054	0.050	−0.027	−0.056	0.056	−0.003
−0.118	0.268*	−0.170	0.058	−0.107	−0.187	0.187	0.142
0.060	0.046	0.062	−0.050	−0.089	0.032	−0.032	−0.015
0.048	0.080	0.059	0.074	−0.089	0.036	−0.036	0.056
−0.011	−0.247	−0.152	0.283*	0.483*	0.003	−0.003	0.148
−0.148	0.074	−0.061	−0.149	−0.058	−0.083	0.083	−0.004

Germany	Italy	Netherlands	Sweden	Finland	U. Kingdom	Belg&Lux	Denmark
−0.87	−1.10	−0.02	−0.51	−0.10	−0.23	−0.42	−0.35
0.081	−0.055	0.056	0.142	−0.015	−0.004	0.148	−0.003
0.211*	0.025	−0.036	0.187	−0.032	0.083	−0.003	0.056
−0.060	0.035	−0.090	−0.064	0.024	0.105	0.001	0.028
0.006	−0.092	−0.024	−0.047	0.017	0.012	−0.088	0.025
−0.135	0.273*	−0.038	−0.034	−0.030	−0.018	−0.033	−0.005
−0.157	0.100	−0.137	0.127	−0.047	0.279*	0.039	0.073
0.320*	−0.076	−0.085	−0.262*	−0.525*	0.018	−0.195	0.003
–	−0.338*	−0.206*	−0.005	−0.301*	−0.146	−0.263*	−0.270*
−0.338*	–	−0.320*	−0.066	0.180	0.077	−0.237*	−0.020
−0.002	−0.147	−0.180	−0.026	−0.204*	−0.357*	−0.209*	0.124
−0.270*	−0.020	0.068	0.060	−0.233*	−0.098	−0.078	–
−0.005	−0.066	0.020	–	0.189	−0.165	−0.029	0.060
−0.301*	0.180	−0.005	0.189		0.068	0.281*	−0.233*
−0.206*	−0.320*	–	0.020	−0.005	−0.120	0.043	0.068
−0.263*	−0.237*	0.043	−0.029	0.281*	0.055		−0.078
−0.146	0.077	−0.120	−0.165	0.068		0.055	−0.098

balances with the EU, only Hungary (since 1997), the Czech Republic and Slovakia (both since 1999) record trade surpluses with the EU. Preliminary data from national statistics indicate a further improvement of trade balances and additional ACs' market share gains in the EU in 2003 (see Havlik *et al.*, 2003c; UN-ECE, 2003).

ACs' manufacturing trade with the EU (more than 90% of their total trade with the EU) represents not only its largest but also the most dynamic part[11]. ACs' market share in extra-EU imports grew from 9.5% in 1995 to 13.2% in 2001 (5% of total EU imports). About 13% of all extra-EU manufacturing exports went to the ACs in 2001 (as compared with 9.5% in 1995 – see Havlik, 2003b). Trade balances with the EU have been traditionally negative in manufacturing, but the ACs' trade deficit dropped to €10.9 billion in 2001 (from a peak of EUR 18.4 billion in 1997). Poland registered the largest trade deficit in the region (€8 billion) in 2001, followed with a large distance by Slovenia and the Czech Republic. In the other ACs trade deficits were smaller, while Hungary and the Slovak Republic managed to achieve surpluses in manufacturing trade with the EU (since 1999). Due to different growth rates of exports and imports between 1995 and 2001, trade balances improved in the Czech Republic, Hungary, Slovakia and Estonia.

Over the period 1995-2001, the ACs have made strong inroads into the EU market in a number of widely heterogeneous industries[12]. In some of these industries, the ACs already became major suppliers to the EU-15 market. The aggregate market share gain of ACs in total (both extra and intra) EU manufacturing imports occurred mainly at the expense of intra-EU trade, as well as EU imports from Japan. USA, South Korea and especially China recorded market share gains in the EU as well (Havlik, 2003b). During this period, ACs' market share in an enlarged EU-25 grew by 2.3 pp (to 6.1%), largely at the expense of reduced market shares of France, Germany, Sweden, Belgium/Luxembourg and Denmark (TABLE 3)[13]. Judged by the correlation between the respective export market share gains and losses across all 3-digit NACE subsections of manufacturing, the ACs seem to compete mainly with exports of Spain, Portugal, Ireland, Austria, Germany and France. AC-8 *market share gains* in EU-25 were correlated with *market shares losses* of industries in intra-EU trade (including exports of Austria, France, Germany and Spain). However, only a limited number of correlation coefficients shown in TABLE 3 are statistically significant. Based on this evidence, the Czech Republic competes on the European market with Ireland and Spain;

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11. In order to analyse ACs' manufacturing trade we use the Eurostat Comext database, which collects all trade with the EU countries as reporting countries.

12. There is ample evidence for growing intra-industry trade in line with the "new" trade theory which suggests that trade among industrialized countries is largely motivated by product differentiation and economies of scale. Intra-industry trade has been most pronounced in the Czech Republic, Slovenia and Hungary, whereas it has been the lowest in Lithuania and Latvia (see also Greenaway *et al.*, 1994; Freudenberg and Lemoine, 1999; Aturupane *et al.*, 1999).

13. In order to analyse the competitive position of ACs in an enlarged EU-25, we have created a trade matrix that comprises intra-EU trade plus the trade of EU member states with ACs. Eurostat Comext Database covers ACs only as trade partners of the present EU member states. Trade among ACs is not included.

Hungary with Austria, Germany and France; Poland with Austria and France; Estonia with Denmark and Sweden[14].

■ TAKEOVER OF THE *ACQUIS* AND IMPLICATIONS FOR ACs' MANUFACTURING

While EU acceding will not bring about any additional dramatic changes for industry (owing to the already existing high degree of integration in this area) in either "old" or "new" EU member states, there will be some sectors (e.g. steel in several ACs) and areas (SMEs and border regions in both "old" and "new" member states) that might be adversely affected. For the ACs' manufacturing sector as a whole, and from a strictly business point of view, complying with the *acquis communautaire* will require considerable additional investments, increases in direct and indirect charges for public services, and it is likely to "crowd out" other investments (WIIW, 2001). For most sectors the additional costs will be dominated by adherence to the Union's environmental regulations, both through the upgrading of production facilities and through increased charges for waste management. Other kinds of horizontal legislation that are likely to affect future investment requirements of individual firms are occupational health and safety requirements, and employment legislation. In addition, industry will be affected by single market standards covering individual product specifications. Many industries in the ACs have already gone through restructuring and modernization programmes and are well prepared for these legal requirements. However, this applies mostly to industries which display high FDI penetration (see above) whereas the domestically owned companies are in a much worse shape. The recent Eurochambres Survey shows that only half of companies in the ACs have started preparations for the Single Market and less than 10% of respondents claim to be fully informed on the current EU legislation (Eurochambres, 2003). The level of compliance with existing EU legislation is generally low. More concerted institutional and administrative efforts are urgently needed in order to improve the readiness of companies in ACs for the EU market.

The sectors most affected by the acquis include the chemical and pharmaceutical sector, basic metals and fabricated metal products, food industries, and the transport equipment sector – all of which are important for the ACs. The overall most costly requirements come from the environmental acquis, although the occupational health and safety requirements and the single market legislation will also heavily affect certain sectors and industries. Among those exposed to acquis requirements, sectors with EU-oriented production, high levels of FDI, consistent investment growth rates and an enterprise structure dominated by large companies are generally best prepared for the obligations of EU membership. Apart from

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14. Positive correlation indicates market share gains (losses) in the same industries whereas negative correlation suggests that market share gains (losses) were associated with losses (gains) of other competitors on the EU market. Note that Bulgaria and Romania compete mostly with the Southern cohesion countries Greece and Portugal as well as with Italy – see TABLE 3.

the initial adjustment costs, the industries should benefit from the common standards intro-duced through the acquis. Products will only be subject to one conformity assessment proce-dure even when they are exported, as opposed to different procedures for the national and international markets. This will in many cases reduce production costs considerably.

The takeover of the environmental *acquis communautaire* will be costly (the investments required are estimated to range between €80 to €100 billion in the ACs – see Commission of the European Communities, 2001 and 2003), and the ability of domestically owned enter-prises to cope with increased competition is low. Small companies and companies operating only on the domestic market are generally less prepared for the Single Market (Eurochambres, 2003). The present dichotomy between modern, foreign-dominated indus-tries (and companies) and domestically owned enterprises (see Hunya, 2002) could even increase. Promotion of SMEs, networking and cross-border cooperation, as well as improved institutional and administrative capacities, will be crucial for overcoming potential problems arising in the enlarged European market. In the present EU member states, acquis compli-ance of the ACs will open new opportunities for investment and cost-optimizing strategies, and will further strengthen the creation of more complex production networks that draw on complementary production factors, thus making it possible to enhance the competitiveness of European companies in the global context.

■ CONCLUSIONS

In terms of the growth dynamic after acceding, there are reasons to be cautious that the "growth dividend" from Enlargement will be reaped immediately as a number of factors might act as a burden on the ACs with regard to short-term prospects: The pressure to move rather speedily towards EMU membership might take its toll on short term cost competitive-ness, the takeover and implementation of the "acquis" will almost certainly be front-loaded in costs of adjustments while the benefits will only gradually accrue, and both the financial support coming from the EU as well as the absorption capacity to make effective use of Structural Funds facilities will only gradually evolve.

The ACs are not a homogenous group of countries and we observe there a range of catch-ing-up experiences, evolutions of growth and trade patterns and there are significant differ-ences in their respective positions (and likely future positions) in the European division of labour. This is not unlike the experiences we observed with the cohesion countries in the past. Over time, the more advanced of the ACs have definitely shifted their specialisation away from the low-skill, labour-intensive branches and towards the technologically more demanding and skill requiring branches (Landesmann and Stehrer, 2001). The strong evi-dence of industrial structures of the advanced ACs converging towards the EU average and strong tendencies towards increased intra-industry trade and within industry upgrading are in line with this. There is also important evidence of the role which certain natural resource-based industries (in particular wood-based industries, but also food processing) might play in

the ACs. The acceding is going to encourage further FDI and, more generally, cross-border production integration. One should, however, not forget that these factors also contribute to regional differentiation which is already strongly in evidence in the developments so far: regions bordering the EU incumbents are doing in both these two respects (i.e. FDI attraction and building up of infrastructure) far better than more peripheral regions in the ACs. Compensating policies using national and Structural Funds resources will thus face a great challenge to avoid growing regional imbalances.

We do perceive an evolution of "core-periphery" structures across the ACs and the wider set of current and future candidate countries (Gligorov *et al.*, 2003). There is a real challenge here of dealing with Economic Cohesion in economic development across the ACs, but even more so in relation to the remaining candidate countries and those which have not yet been admitted to candidate status. The evidence whether the acceding process itself is going to widen the differential to the late-comers through a number of mechanisms (trade and FDI diversion, divergence in institutional structures and behaviour, macro-economic policy stabilisation, etc.) or whether the "late-comers" and "left-outs" are going to benefit from positive spillovers from the acceding process is still outstanding.

P. H.

APPENDIX 1

Statistical data

Table A1.1 -   **Labour productivity levels in the manufacturing industry, year 2001**

	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Slovak Republic	Slovenia
		2000			2000			
Manufacturing total at PPP99 for GDP, EU 2000 = 100	58.6	29.8	71.3	24.5	28.9	48.5	62.1	47.5
Manufacturing total at PPPCAP99, EU 2000 = 100	40.6	17.4	47.9	14.9	16.5	36.2	36.5	40.4
Manufacturing total at ER, EU 2000 = 100	23.4	12.9	30.2	10.5	11.2	22.1	20.8	31.1
Manufacturing total = 100								
DA Food products; beverages and tobacco	132.4	129.1	88.2	126.4[a]	113.6[a]	118.4	105.5	159.7
DB Textiles and textile products	48.0	64.8	25.5	54.1	68.7	36.9	24.9	48.5
DC Leather and leather products	30.3	67.5	20.4	39.3	96.8	44.0	30.6	44.6
DD Wood and wood products	106.3	113.4	40.9	101.1	69.7	78.0	52.9	54.4
DE Pulp, paper & paper products; publishing & printing	116.0	141.7	96.2	105.3	98.3	128.1	135.2	103.1
DF Coke, refined petroleum products & nuclear fuel	1 103.4	–	244.6	–	691.8	614.3	598.7	30.8
DG Chemicals, chemical products and man-made fibres	166.3	163.6	130.0	95.7	273.5	157.9	128.8	211.4
DH Rubber and plastic products	104.2	107.1	84.6	160.1	147.1	105.9	111.0	90.2
DI Other non-metallic mineral products	90.2	128.7	68.4	129.2	67.9	87.4	72.4	87.9
DJ Basic metals and fabricated metal products	88.2	89.4	76.7	78.9[b]	67.8	98.7	106.3	79.4
DK Machinery and equipment nec	75.7	79.0	57.7	73.9	44.8	67.2	63.6	114.0
DL Electrical and optical equipment	80.1	80.1	163.3	113.1[c]	109.4	113.5	69.4	80.0
DM Manufacture of transport equipment	159.4	112.9	279.5	71.0	85.2	135.3	295.6	237.3
DN Manufacturing nec	71.6	66.8[d]	37.1	78.1	60.8	69.4	76.6	86.0
Standard deviation	261.6	30.4	76.1	42.9	161.7	137.7	143.8	59.1

Notes: a. Without ISIC 16: Tobacco products.
      b. Without ISIC 27: Basic metals.
      c. Without ISIC 30: Office, accounting and computing machinery and ISIC 33: Medical, precision and optical instruments, watches and clocks.
      d. DF+DN. – PPP99 for GDP and PPPCAP99 are purchasing power parities from Eurostat (2001) – see footnote 4.

Sources: WIIW estimates based on national statistics, OECD, EUROSTAT and UNIDO.

Table A1.2 - **Relative productivity gains, winner and loser branches, 1995-2001**

Average annual change in % for total manufacturing (D) and relative annual gains DA to DN, in percentage points[a]

		Czech Republic	Estonia[b]	Hungary	Latvia	Lithuania[b]	Poland	Slovak Republic	Slovenia
D	Manufacturing total	7.2	10.6	12.7	7.5	6.4	9.6	8.2	3.6
DA	Food products; beverages and tobacco	-3.9	-7.2	-8.8	-4.8	-4.3	-3.6	-4.1	-0.6
DB	Textiles and textile products	-4.9	2.8	-6.5	0.5	-2.3	-1.4	-8.6	0.2
DC	Leather and leather products	-16.1	3.7	-9.1	-2.1	9.8	-2.6	0.3	-6.0
DD	Wood and wood products	-1.8	15.4	-8.0	-2.0	0.1	-1.7	-2.9	-8.6
DE	Pulp, paper & paper products; publishing & printing	-1.7	0.8	-0.8	-0.6	-5.2	-1.2	3.6	-7.0
DF	Coke, refined petroleum products & nuclear fuel	-2.6	–	-7.9	–	-12.2	-4.7	-4.0	–
DG	Chemicals, chemical products and man–made fibres	0.4	4.8	-9.5	-4.2	11.2	-0.8	-2.2	2.3
DH	Rubber and plastic products	1.4	-2.6	-7.4	10.2	0.0	-0.2	-2.9	-2.0
DI	Other non–metallic mineral products	-0.4	4.6	-5.0	11.2	1.3	1.0	-2.4	1.6
DJ	Basic metals and fabricated metal products	-6.8	4.1	-6.1	3.3	-3.2	-1.7	-6.7	-2.1
DK	Machinery and equipment nec	5.4	3.7	-6.9	-5.3	-2.7	0.7	-0.2	-1.5
DL	Electrical and optical equipment	13.3	7.0	18.7	18.1	24.0	4.4	2.7	3.3
DM	Transport equipment	2.8	5.6	6.7	-0.2	13.3	6.3	18.8	6.5
DN	Manufacturing nec	1.2	1.2	-5.3	1.0	-4.2	-0.6	0.8	3.1

Notes: a. Calculations of relative gains: DA (1995-2001) – D (1995-2001) = relative gain DA.
b. 1995-2000.

Sources: WIIW estimates based on national statistics, own calculations.

Table A1.3 - **Labour costs in the manufacturing industry (monthly averages), year 2001**

Growth rates 1995-2001, in %

	Czech Republic	Estonia[a]	Hungary	Latvia[a]	Lithuania[a]	Poland	Slovak Republic	Slovenia
		2000			2000			
Manufacturing total, at ER, EU 2000 = 100	17.7	9.3	20.5	8.0	7.2	22.2	13.6	34.0
Manufacturing total, at PPP99 for GDP, EU 2000 = 100	40.1	19.9	42.8	16.5	16.1	39.5	37.0	52.7
Average growth rate (EUR based) 1995-2001	10.3	13.3[c]	7.9	11.8	20.9[b]	15.4	9.0	3.3
Average growth rate (national currency based) 1995-2001	10.2	14.5[c]	16.5	8.2	13.1[b]	18.5	11.2	9.5
Average growth rate 1995-2001 (real, CPI deflated)	3.5	4.4[c]	2.1	1.9	5.0[b]	6.3	2.9	1.1
D Manufacturing total (2001) = 100								
DA Food products; beverages and tobacco	96.3	100.3	97.5	104.1[d]	97.1[d]	93.9	91.6	109.9
DB Textiles and textile products	69.8	80.8	59.7	90.5	88.3	63.1	65.9	74.8
DC Leather and leather products	64.2	79.8	59.3	68.2	80.7	64.9	68.5	78.0
DD Wood and wood products	77.9	100.2	63.0	87.2	65.8	72.3	74.6	83.6
DE Pulp, paper & paper products; publishing & printing	115.4	164.7	109.4	142.5	136.3	127.8	118.3	118.3
DF Coke, refined petroleum products & nuclear fuel	154.7	103.0[e]	231.4	–	–	202.2	165.5	108.7
DG Chemicals, chemical products and man-made fibres	123.8	–	159.9	123.0	172.3	149.6	117.9	159.6
DH Rubber and plastic products	102.2	99.3	102.6	79.7	96.5	97.2	114.7	101.4
DI Other non-metallic mineral products	106.0	134.9	105.3	100.7	102.7	104.1	107.6	100.0
DJ Basic metals and fabricated metal products	105.0	115.8	89.5	92.6[f]	96.1	106.8	119.9	98.9
DK Machinery and equipment nec	105.4	104.2	100.2	94.6	105.4	107.7	99.4	97.2
DL Electrical and optical equipment	99.6	113.2	106.6	100.4[g]	132.0	119.6	92.3	101.4
DM Transport equipment	121.2	121.2	129.3	106.6	150.0	121.2	127.3	110.2
DN Manufacturing nec	83.7	91.9	66.0	87.3	85.8	77.0	85.0	85.0
Standard deviation	22.8	21.9	44.2	18.1	29.2	35.6	25.8	20.2

Notes: a. Calculated with gross wages. – b. 1996-2001. – c. 1995-2000. – d. Without ISIC 16: Tobacco products. – e. DF+DG. – f. Without ISIC 27: Basic metals. – g. Without ISIC 30: Office, accounting and computing machinery and ISIC 33: Medical, precision and optical instruments, watches and clocks.

Sources: WIIW estimates based on national statistics and Eurostat (2003b).

Table A1.4 - Relative changes in unit labour costs, 1995-2001

Average annual change in % for total manufacturing (D) and relative gains DA to DN, in percentage point[a]

D		Czech Republic	Estonia[b]	Hungary	Latvia	Lithuania[c]	Poland	Slovak Republic	Slovenia
D	**Manufacturing total**	**3.9**	**2.5**	**-1.2**	**3.9**	**14.1**	**2.6**	**0.8**	**1.9**
DA	Food products; beverages and tobacco	3.0	2.8	6.2	1.8	2.0	3.3	2.9	-1.6
DB	Textiles and textile products	3.1	-2.3	2.5	0.2	2.1	-1.4	7.3	-1.5
DC	Leather and leather products	11.4	-4.7	6.2	1.6	-10.7	0.3	-0.9	6.0
DD	Wood and wood products	-2.2	-10.0	3.3	3.5	0.8	-0.6	0.0	7.8
DE	Pulp, paper & paper products; publishing & printing	1.1	4.5	-2.1	3.4	1.3	1.7	-2.6	7.4
DF	Coke, refined petroleum products & nuclear fuel	1.2	–	7.7	–	–	3.4	3.2	–
DG	Chemicals, chemical products and man–made fibres	-0.4	–	8.7	6.3	-10.6	2.5	2.2	-1.4
DH	Rubber and plastic products	-1.4	0.0	5.8	-11.7	2.9	-1.9	2.7	0.3
DI	Other non–metallic mineral products	0.3	1.2	3.4	-6.0	-0.9	-0.8	2.5	-2.0
DJ	Basic metals and fabricated metal products	4.5	-2.5	2.7	-1.6	2.5	0.0	5.3	1.9
DK	Machinery and equipment nec	-5.8	-1.8	4.7	5.8	4.0	-0.1	-0.1	1.4
DL	Electrical and optical equipment	-11.1	-3.1	-11.9	-13.8	-5.9	-2.7	-2.9	-3.5
DM	Transport equipment	-0.3	-4.9	-5.4	2.5	-8.0	-4.5	-12.0	-5.2
DN	Manufacturing nec	-2.7	na	3.5	–	3.0	-0.8	-0.3	-3.7

Notes: a. See BOX 2 for the definition of unit labour costs. Calculation of relative gains: DA (1995-2001) minus D (1995-2001) = relative change DA.
Positive values indicate weaker, negative values better competitive (cost) performance than total manufacturing (D). – b. 1995-2000. – c. 1996-2001.

Sources: WIIW estimates based on national statistics.

Table A1.5 -   International comparison of ULCs in manufacturing industry, year 2001

Productivity data at PPPCAP99, Austria 2001 = 100

D		Czech Republic	Estonia[a]	Hungary	Latvia[a]	Lithuania[a]	Poland	Slovak Republic	Slovenia
			2000			2000			
	Manufacturing total	**38.5**	**65.6**	**37.5**	**66.2**	**53.6**	**53.8**	**32.6**	**73.9**
DA	Food products; beverages and tobacco	32.7	61.1	48.2	65.3	57.7	49.6	32.8	59.1
DB	Textiles and textile products	42.8	62.2	68.1	84.2	53.4	71.2	66.6	88.2
DC	Leather and leather products	102.3	95.0	136.8	140.7	58.5	99.3	89.8	161.6
DD	Wood and wood products	32.3	63.6	64.9	62.5	61.0	55.9	52.4	127.3
DE	Pulp, paper & paper products; publishing & printing	37.6	74.5	42.2	87.5	66.9	53.0	28.2	83.7
DF	Coke, refined petroleum products & nuclear fuel	29.2	–	193.0	–	–	96.3	49.1	–
DG	Chemicals, chemical products and man-made fibres	35.3	–	57.3	108.1	42.5	63.3	37.0	69.3
DH	Rubber and plastic products	30.9	50.4	36.8	27.3	29.8	40.0	28.0	67.2
DI	Other non-metallic mineral products	34.0	51.7	43.3	38.8	64.3	48.0	36.0	62.9
DJ	Basic metals and fabricated metal products	39.5	71.4	37.5	65.2	60.9	49.9	31.5	79.0
DK	Machinery and equipment nec	45.1	72.5	55.8	71.0	106.3	73.8	43.3	54.0
DL	Electrical and optical equipment	43.9	84.4	22.4	53.4	57.1	51.8	39.3	85.6
DM	Transport equipment	41.0	98.0	24.5	138.1	138.2	68.2	20.2	48.5
DN	Manufacturing nec	35.1	–	53.3	58.3	62.6	47.6	29.6	58.2

Notes: PPPCAP99 are purchasing power parities for gross capital formation from Eurostat (2001). – a. Labour costs approximated with gross wages.

Sources: WIIW estimates based on national statistics and Eurostat.

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