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Specialisation and Concentration of Europe: The Impact of EU Enlargement

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SPECIALISATION AND CONCENTRATION OF EUROPE:

THE IMPACT OF EU ENLARGEMENT

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Abstract

This paper reviews the theoretical and empirical literature dealing with specialisation and concentration of industry which is relevant for assessing the likely consequences of EU enlargement for the present member states. It also outlines specialisation and concentration trends in the 1990s and evaluates the likely implications of accession for sensitive regions in the EU. Overall, the empirical results do not suggest that the process of economic integration in Europe is potentially harmful. Although there appears to be a trend of increasing specialisation in Europe, the process has so far been rather gradual, at least at the aggregate level.

1. Introduction[1]

The process of European integration during the past decade has been closely associated with the Single Market Programme (SMP) and the Economic and Monetary Union (EMU). The main objectives of the SMP were the elimination of non-tariff barriers to intra-EU trade of goods and services and the further liberalisation of cross-border movements of production factors. In 1999, the Economic and Monetary Union (EMU) reinforced the single market by eliminating the exchange rate risk in trade within the euro area. These policies have significantly reduced transaction costs within the European Union.

While offering different explanations of patterns of specialisation, all theoretical approaches to trade predict that trade liberalisation should lead to increasing specialisation across countries. High specialisation can reflect an efficient allocation of resources across countries, but may also involve risks. The concern is that integration and a lowering of transaction costs lead to an imbalance between a rich core and a poor periphery in the case where the periphery becomes locked into mature, declining industries or low-quality products, preventing the process of income convergence within the European Union. In addition, there is the concern that an over-specialisation of individual countries or regions in narrow product groups might render them vulnerable to sector-specific shocks.

At the beginning of the 1990s the ACs opened up and oriented their trade flows towards the European Union. This process has already changed the spatial-economic base of the ACs, albeit in a different manner (Landesmann, 2000, Havlik, 2001). According to some authors, the current economic integration situation could be seen as one with 'intermediate trade costs' (Traistaru et al., 2002). However, while this may be the case for the ACs as a group, differences in geographic proximity and industry specialisation point to different impacts of enlargement on current member states. There is the concern that enlargement will have dramatic consequences for some vulnerable regions within the EU. One prediction states that the fall in trade barriers associated with the lower transport costs (compared to other member states) between Germany and Austria and some of the more advanced ACs, makes the former two countries particularly sensitive to the ongoing process of liberalisation. Another prediction points to the question whether EU enlargement will raise problems for some of the low-income southern countries (Greece, Portugal) due to the more fierce competition from the more similar endowed ACs.

We start with the predictions derived from the most distinguished theoretical schools in location theory: traditional trade theory (TTT), new trade theory (NTT) and the new economic geography (NEG). Multinationalisation theories shed some light on the impacts of foreign direct investment and

[1] I would like to thank K. Aiginger, P. Havlik, H. Hollenstein and M. Landesmann for helpful suggestions and Dagmar

subcontracting strategies of multinational corporations (MNCs) on specialisation patterns. Each of these theories contains specific features that might explain the forces driving industrial location, although there are some forces that are common to them all. Three forces are of particular relevance in the context of enlargement: local endowments, trade costs and migration of labour. I then present evidence on specialisation and concentration patterns in EU Member states in the 1990s. The concluding section evaluates the likely implications of accession for sensitive regions in the EU.

2. Theoretical background

Location Theory[2]

Most trade models predict that economic integration leads to higher specialisation of countries. The paradigms differ, however, in terms of the determinants of the specialisation process and, as a consequence, in terms of the locations where they predict production to concentrate. The central assumptions behind *traditional trade theories* (TTT) are perfect competition, homogenous products and non-increasing returns to scale. These models predict that economic integration will lead to a higher degree of specialisation according to comparative advantages, resulting from differences in productivity or endowments between countries and regions. High-income countries, which are characterised by a large stock of physical capital, a well educated labour force and a high potential to innovate, are predicted to specialise in capital-intensive, technology-, skill- and research-intensive industries with high incidence of product and process innovations. In industries where product differentiation is important, these countries specialise in products of the upper quality segment.

TTT can explain a substantial proportion of inter-industry trade. However, it fails to explain why different production structures are found in regions and countries with have similar factor endowments and production technologies. The bulk of the trade between developed countries takes the form of intra-industry trade, that is, an exchange of differentiated goods that fall into the same product category.

The *new trade theory* (NTT) stresses scale economies, product differentiation and imperfect (monopolistic) competition. The main conclusion is that increasing returns to scale give an incentive

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Guttmann for the research assistance.

[2] The review of the location models in this section aims to highlight some of the main mechanisms at work and not to survey the literature. For a comprehensive survey on location theory see Wolfmayr-Schnitzer (1999). Ottaviano and Puga (1998) and Fujita and Thisse (2002) provide overviews on the new economic geography, while Neary (2001) provides a critical assessment.

to specialise and trade even in the absence of differences in endowments and technologies between countries. According to one class of NTT models, regional concentration may result from scale economies external to the firm, due to specialised supply,[3] pooled labour markets, and knowledge spillovers:[4] the larger the size of the local industry, the lower the costs. Scale economies become effective at the industry level and build the basis for regional concentration of industries. In a second category of NTT models trade becomes a way of extending the market and of allowing the exploitation of scale economies internal to the firm. In the presence of transport costs, firms with internal increasing returns to scale will tend to concentrate their production in large regions or more generally in regions with good market access ('the core') moving away from remote regions ('the periphery'). Firms will seek to locate in the larger market, in order to save transport costs and have lower marginal costs of supplying consumers. According to NTT, a demand bias in favour of a particular good creates a large home market for this good, and the interaction of economies of scale and trade costs typically leads to net exports ('home market effect'). This prediction is in contrast to the one made by traditional trade theory. Thus cross-country differences in expenditure structure may determine production structure and industry location, and based on NTT one would expect industries to be more concentrated the more concentrated the demand for the goods produced by this industry. Economies with good market access will tend to specialise in industries where the home market effect is strong.

Another major conclusion of new trade theory is that both inter-industry trade, reflecting comparative advantages,[5] and intra-industry trade, reflecting scale economies and demand preferences, may occur. The relative importance of intra-industry trade in comparison to inter-industry trade depends on the degree of similarity in demand and production characteristics: If two countries are very similar in their factor intensities and technologies, then there will be little inter-industry trade, and intra-industry trade will dominate. If, in contrast, countries are very different in their factor intensities and technologies, trade will be based essentially on comparative advantages. Where intra-industry trade dominates, income distribution effects will be small and the gains from trade are based on economies of scale and increased choice.

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[3] For example, modern firms have an incentive to locate where specialised human capital is available. On the other hand, specialists in any industry have an incentive to move to areas where there is not only one potential employer, but lots of them. Thus, there is a reciprocal advantage for local concentration.

[4] Personal contact and the associated knowledge spillovers are an important determinant for the locational decisions of many firms. It is easier to gather information about competitors, about sector-specific news, to make deals, to negotiate contracts etc. Although new technologies have allowed some activities to relocate, proximity remains important for the vast majority of economic transactions. This is demonstrated by econometric estimates of gravity models for trade, investment, equity and technology flows (see Venables, 2001).

[5] As in the TTT, the pattern of inter-industry trade is determined by underlying differences in factors and technology between countries.

The various models of intra-industry trade distinguish between horizontal and vertical product differentiation.[6] Models of horizontal product differentiation predict that similarities of demand and per capita incomes between countries are favouring horizontal specialisation. The greater the market sizes of the countries (the greater the potential to reap scale economies), the greater the amount of intra-industry trade. Models of vertical product differentiation, on the other hand, predict that vertical intra-industry trade increases with the differences in factor endowments (capital intensity, human capital, technology), in per capita incomes and demand structures.[7]

Models of new *economic geography* (NEG) emphasise forward and backward linkages, spillovers and scale economies as centripetal forces. Higher wages and higher costs of commuting and congestion, or more generally costs induced by agglomeration, act as centrifugal forces. While most trade models predict that specialisation will increase with reductions in trade costs, the new economic geography predicts an u-shaped relationship: when trade costs are high, production is located close to demand and geographical concentration is low. At and intermediate level of trade costs, forward and backward linkages cause agglomeration. Finally, when trade costs are low, higher wages and congestion costs in the core tend to disperse production activity. The new economic geography models thus predict a core-periphery pattern, where in a first stage of economic integration lower trade costs might first favour the core regions, and in a later stage where trade costs are further reduced, the periphery wins. Furthermore,.[8]

In NEG models agglomeration forces are always weaker, if labour is immobile. If workers do not move, wage differences persist and act as a dispersion force by increasing production costs for firms producing in locations with relatively many other firms. `This dispersion force can moderate agglomeration and sustain non-extreme equilibria in which all regions have industry, even if in

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[6] Horizontal differentiation refers to different varieties of a product that are of similar quality (e.g. different colour and design of shoes of similar quality). Vertical differentiation refers to different varieties that are of different qualities (e.g. leather shoes, plastic shoes).

[7] See Falvey, 1981, Falvey and Kierzkowski, 1985, Greenaway and Millner, 1986, Flam and Helpman, 1987.

[8] NEG also provides an explanation for the increasing differences in production structures across different core countries as well as across different countries in the periphy. According to these models, even a priori very similar regions can end up with very different production structures and income levels. Agglomeration is determined by “accident” (see Krugman, 1991): if one firm moves, this raises the share of goods produced locally in the receiving region and the rise in local labour demand and wages tend to attract more of the mobile workers. This enlarges the market further and causes positive demand effects and backward linkages as a greater number of consumers makes the receiving region even more attractive for firms and causes a concentration of economic activity. The result of this process of 'cumulative causation' is that all firms belonging to the sectors with increasing returns to scale end up locating within a single region (the 'core'), while the other region (the 'periphery') specialises in the traditional sector. The point is that this result is not determined by differences in endowments, but instead by history. Whichever of the two regions gets a slight advantage will build on it due to the process of cumulative causation. But even if labour is not mobile, agglomeration may happen because of direct input-output linkages: Venables (1996) shows that vertical linkages between upstream and downstream industries give rise to cost and demand linkages, which play a role equivalent to that of labour migration in endogenously determining the size of the market in different regions. Cost and demand linkages of vertically integrated firms constitute the driving force for the agglomeration of activities, whereas the location of immobile factors of production and the location of final demand act as dispersion forces.

different proportions. Thus the lack of interregional mobility both postpones agglomeration in a process of regional integration and weakens it when it happens' (Puga, 2001, p. 17).

From the theories presented above there follow a number of predictions for specialisation and concentration patterns in an enlarged Europe (see also Wolfmayr-Schnitzer, 1999):

- While offering different explanations of patterns of specialisation, all the theoretical approaches predict increasing specialisation as a result of trade liberalisation and enlargement. The paradigms differ, however, in the terms of what is seen to determine the specialisation process and, as a consequence, in terms of the locations where production is predicted to concentrate.

- Traditional trade theory predicts a clear-cut difference in specialisation of high-, middle- and low income countries based on the differences in their endowments of human capital, physical capital and technology.

- New trade theory predicts agglomeration in large markets due to either external economies of scale - based on specialised supply, pooled labour markets, and knowledge spillovers - or internal economies of scale.

- According to the new trade theory the share of horizontal intra-industry trade in total trade is positively related to the similarities of demand and production characteristics, while the share of vertical intra-industry trade is positively related to differences in factor endowments, per capita incomes and demand structures.

- New economic geography emphasises centripetal (forward and backward linkages, spillovers and scale economies) and centrifugal forces (commuting, congestion, local competition). It predicts an u-shaped relationship between trade costs and specialisation (agglomeration), favouring in the first stage of liberalisation the core, while further liberalisation may benefit the periphery. The attractiveness of the periphery depends crucially on comparative advantages (lower wages).

- According to new economic geography even *a priori* very similar countries can end up with very different production structures and income levels due to `coincidence´ combined with a process of cumulative causation (driven by the centripetal forces). In NEG models, agglomeration is driven by direct input-output linkages, while labour mobility further strengthens the agglomeration forces.

Multinationalisation theories

The theories presented so far ignore the existence of multinational corporations (MNCs). It is clear, however, that foreign direct investment (FDI) and subcontracting strategies of the MNCs are important channels of economic integration. According to Zysman and Schwartz (1998), the principal MNCs operating in Europe will drive the regional patterns of production, investment and venture in the acceding countries. The critical issue is whether Central and East European producers are concidered as economic complements or as rivals to the international production networks (IPNs) created by the major MNCs.

The theoretical literature distinguishes between two polar cases of multinational activity: horizontal and vertical. Horizontal MNCs are firms which produce roughly the same product or service in multiple locations, while vertical MNCs geographically fragment the production process by taking advantage of cross-country price differences for production factors. Horizontal patterns of multinational activity are determined by the size of local markets, proximity to other markets, transport costs and scale economies, while vertical fragmentation relates to the comparative advantages of countries, as reflected in factor prices.

Models of FDI and subcontracting offer several predictions on the effects of deeper integration on the behaviour of multinational firms and the consequences for specialisation:

- For horizontal multinationals, market proximity becomes less important as trade costs decline. Consequently, the decisions on plant size and location will be based primarily on the level of production costs and the importance of economies of scale. This should lead to more specialisation within the enlarged Europe.

- Vertical FDI is predicted to increase since lower trade costs induce more intra-firm trade to exploit cross-country differences in factor prices. Countries well endowed with skilled labour export skill-intensive intermediates and headquarter services, while labour-intensive prodution is located in labour abundant countries.

- Effects dampening agglomeration tendencies occur at intermediate stages of trade costs. If horizontal MNCs establish plants in both large and small countries, demand and the returns to capital in the smaller countries increase. This reduces factor price differences between the countries and dampens the tendency towards agglomeration. On the other hand, at intermediate trade costs vertical MNCs establish the production of labour-intensive intermediates in low-wage peripheral regions (Markusen and Venables, 1998).

3. Empirical evidence following the SMP and trade integration

Patterns of specialisation and concentration in EU countries

A number of researchers have studied the specialisation and concentration trends in the EU, with particular attention to the effects of the single market programme (SMP). Helg et al. (1995) Amiti (1999), OECD (1999), Aiginger et al. (1999), Midelfart-Knarvik et al. (2000) and Storper et al. (2002) all show that most EU countries are becoming more specialised in terms of production activity. There is, however, a (weak) tendency for export specialisation to decrease (see Aiginger et al. 1999). Since export specialisation still exceeds production specialisation very substantially, there still appears to be a large amount of manufacturing activity which is sheltered from import competition - either due to trade costs or to demand bias in favour of locally-produced goods (see Brülhart, 2001a).

All studies reveal that the process of specialisation is gradual, which is not conforming with the rather stark discontinuous agglomeration story implied by the new economic geography models. Furthermore, intra-industry trade shares show a secular rise throughout the post-war years in all EU countries. By the end of the 1990s, in most cases IIT dominates. This observation suggests a rising importance of increasing returns and imperfect competition. However, Mora (2001) shows that the share of vertical intra-industry trade in total intra-industry trade within the EU is rising (1985: 55.2%, 1996: 57.2%). She found that most of these vertical IIT can be explained by comparative advantages based on differences in technological, physical and human capital.

Geographic concentration trends in Europe are less clear-cut. Some studies point to increasing concentration (Brülhart, 1995, Amiti, 1999, Haaland et al., 1999, Midelfart-Knarvik et al., 2000), while others find that concentration is declining (Dalum et al., 1998, Molle, 1996, Hallet, 2001, Aiginger et al. 1999, Aiginger and Davies, 2001, Aiginger and Paffermayr, 2003). Davies, Rondi and Sembenelli (1998) find no change in concentration.[9]

A closer look at the patterns of concentration and specialisation at country and industry level reveals considerable volatility in the production structures of individual countries and markedly different specialisation patterns across country groups. Brülhart (2001b) finds increasing geographical concentraion after 1986 in those industries which were most affected by the liberalisation measures of

[9] As has been emphasised by Aiginger et al. (1999), the opposing trends of slightly increasing specialisation and at the same time decreasing concentration are not a paradox. Since small countries had a higher growth in the 1990s, the concentration of those industries where large countries have the highest shares tended to decline, leading to a decrease in aggregate geographical concentration.

the SMP.[10] He interprets this as evidence of an unexhausted potential for industrial clustering within the EU. In both extreme years, 1972 and 1996, the strongest specialisation appears in traditional, low-tech industries. Labour-intensive and resource-intensive industries appear most geographically concentrated, while technology-intensive are least geographically concentrated. Employment in footwear, pottery and shipbuilding is much more clustered than employment in the manufacture of plastic products, electrical apparatus and even motor vehicles.

Brülhart´s findings correspond to those of Amiti (1999), who finds that footwear, carpets and jewellery industries were among the most concentrated in Europe in 1989, while plastics and iron and steel industries were the least agglomerated. These results also mirror Krugman's (1991) findings for the United States. The evidence thus suggests that geographical concentration patterns reflect primarily comparative advantages, rahter than being the outcome of agglomeration forces operating in increasing-returns industries as predicted by the “new” models.

Furthermore, Brülhart (2001a) concludes that industry concentration is less and less guided by a country´s geographical centrality or peripherality. Market access appears to be loosing importance in industrial location decisions. While increasing-returns and technology-intensive industries tended to concentrate in central countries, the degree of concentration has been reduced towards the end of the sample period. Brülhart´s results are in line with the studies of Aiginger et al. (1999) and Midelfart-Knarvik et al. (2000), who found decreasing concentration in high-tech industries over the 1990s. Concentration of production in central regions declined to the benefit of fast growing small countries which hosted successful multinational firms or attracted foreign direct investment.

According to Aiginger et al. (1999), Brülhart (2001b) and Midelfart-Knarvik et al. (2000) identify exogenous factor endowments (as emphasised by the traditional trade theories) and industry-specific, location-independent agglomeration economies (which are at the heart of economic geography models) as key determinants of geographical concentration in Europe. Aiginger et al. (1999) that high wage industries (agro-chemicals, steam generators, machine tools, office computers, production of recorded media) are significantly more concentrated than other industries, and their concentration did not decrease in the 1990s. Among the low wage industries, geographical concentration in most textile branches increased. Concentration in industries with high product differentiation, which started from high levels of concentration, tended to decline.

Midelfart-Knarvik et al. (2000) show that the location of R&D-intensive industries has become increasingly responsive to countries' endowments of high-skilled workers, while the location of non-manual labour-intensive industries remains sensitive to the proportion of countries' labour forces with

[10] These are sectors that were particularly affected by the liberalisation measures: textiles, clothing, leather and footwear, chemicals, coal, iron and steel, motor vehicles and furniture.

secondary and higher education. On the other hand, changes in comparative advantages (with respect to low and medium-skilled labour) appear not to play a major role in determining the changes in production structure. Finally, the location of industries with strong forward and backward linkages has become increasingly sensitive to the centrality/peripherality of countries.

According to the models of vertical intra-industry trade, specialisation over the quality spectrum within industries is explained by differences in local endowments. The results from Mora (2001) suggest that comparative advantage is an important driver of the pattern of trade within industries in Europe. According to her findings, differences in human and physical capital between countries, are important determinants of specialisation of countries over the quality spectrum within industries in intra-EU trade. She finds support for the influence of technological capital in advanced manufacturing industries, rubber and plastic products and in the majority of traditional manufacturing branches. In manufacturing industries with demand growth and medium technological content, as well as in some traditional branches like metal products and paper and printing products, an abundant endowment of human capital is associated with an increase in the quality of exports (see also Jansen and Landesmann, 1999).

Overall, there seems to be a revival of endowment-based explanations of industrial location in Europe. However Aiginger et al. (1999) who analysed the convergence of endowments in the EU between 1980 and 1996, conclude that factor endowments became more similar due to a catch-up of countries like Spain, Ireland, Finland and Denmark by accumulating R&D capital, and to some extent also Portugal and Greece, owing to their investments in physical capital.[11] Midelfart-Knarvik et al. (2000), after reviewing the empirical evidence on the determinants of trade costs and the effects of these costs on trade flows, conclude that not only endowments, but also geography matters in determining trade and industrial location.

Patterns of specialisation and concentration in the ACs

Most of the earlier analyses have concluded that the acceding and candidate countries in Central and Eastern Europe are specialised in labour-intensive industries as well as in resource- and energy-intensive industries. In comparison to the EU-15 , the ACs have a comparative disadvantage in capital- , technology- and skill-intensive industries. Hence, it is likely that the effects of EU enlargement may differ accross countries and industries.

[11] According to Midelfart-Knarvik and Overman (2002), EU policy is at least partly responsible for the convergence in R&D capital in the EU: EU support helped countries to attract R&D intensive industries, but at the expense of medium-skilled industries.

The results from Landesmann (1995) and Landesmann (2000) based on trade statistics suggest that these countries tended to specialise in labour- and resource-intensive industries, following an inter-industry trade pattern. Intra-industry trade associated with the intensification of outward processing trade (OPT) has also increased (Landesmann 1995, Dobrinsky, 1995). Petrakos (1996, 1999) argues that the processes of internationalisation and structural change in the ACs tended to favour metropolitan and western regions, as well as regions with a strong industrial base and that the process of transition will increase disparities at the European level.

Traistaru et al. (2002) and Landesmann and Stehrer (2002) provide the first comprehensive studies on the impact of economic integration on regional specialisation and geographic concentration of industrial activity in ACs. Traistaru et al. (2002) find evidence of regional relocation of industries, leading to higher average specialisation in Bulgaria and Romania, and lower average specialisation in Estonia, while the average specialisation in Hungary and Slovenia has not changed significantly.

Landesmann and Stehrer (2002) present a differentiated picture, with some countries (Hungary, the Czech and Slovak Republics, and Estonia) catching up relatively fast in technologically more sophisticated branches and also improving their positions in intra-branch product quality. One set of countries (Poland, Bulgaria, Romania and the other Baltic states) got (so far) `locked in´ in a rather traditional pattern of trade and industrial specialisation (in low-skill, labour intensive branches), while other ACs show a more dynamic pattern of integration into the European division of labour. Foreign direct investment (FDI) and the existence and utilisation of educational attainment prove to be important factors determining the positions of individual countries. According to Fazekas (2002), differentiation across regions shows a similar picture as differentiation across countries.

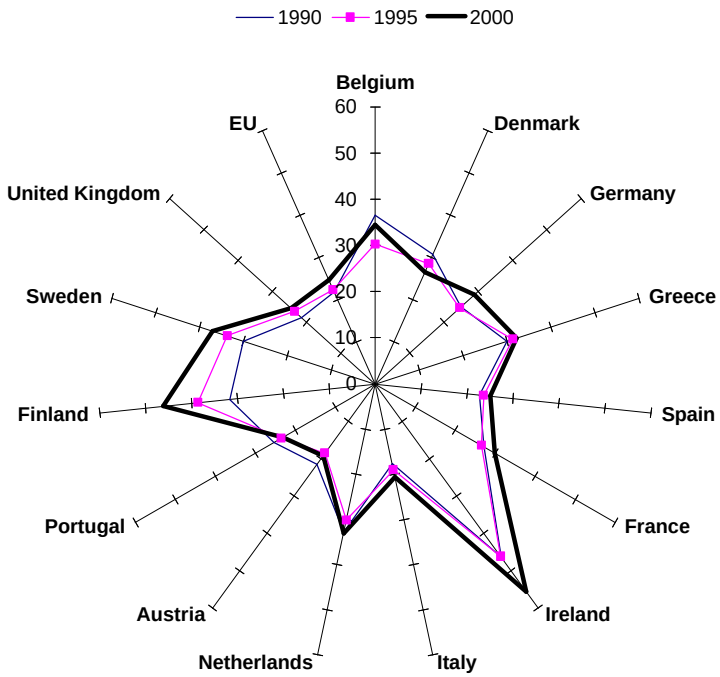
4 Specialisation trends in the EU in the 1990s

This section presents statistical information on the degree of geographical concentration of indusries, and on country specialisation in manufacturing production in EU-15. Specialisation is defined as the extent to which a given country specialises its activities in a small number of industries. Country specialisation can be measured for production, employment, exports, or for exports and imports together. Geographic concentration is defined as the extent to which activity in a given industry is

concentrated in just a few countries. Again, this interpretation can be applied to various variables (production, employment, exports, trade)[12].

The period analysed is 1990 to 2001. In the middle of the period, Europe faced a severe recession with devaluations in some member countries. Major country-specific shocks during the period include the unification of Germany, the political turmoil in the Balkan region, the economic crises in Finland and Sweden, the loss of the Russian market, the crises in Southeast Asia, and the transition of the Central and Eastern European countries. Each of these shocks affected member countries and industries rather asymmetrically (European Commission, 1999).

Figure 1: *Manufacturing production specialisation in EU(15): Share of largest 5 industries (CR5); calculated from 3-digit NACE subsections of manufacturing*



Source: Calculations using Eurostat SBS.

The starting point of our analysis is a comparison of the concentration ratios in manufacturing production at the two and three digit NACE levels. First of all, manufacturing production specialisation in the EU is rather low, with the largest three sectors accounting for approximately 40% of the total EU manufacturing output. This is considerably lower than in the US (see Midelfard-

[12] Existing literature proposes several indicators to measure specialisation and concentration. For the advantages and

Knarvik et al. 2000). The reason is that European member states are bigger than their US counterparts. The likely effect of using greater geographical units is to decrease the value of measures both of specialisation and concentration. Secondly, production specialisation did not change in the 1990s, at least if we measure specialisation at the two-digit level for the total EU. This seems to conflict with findings of other studies which show a (slightly) rising trend of specialisation in the last decade. There is, however, a considerable degree of restructuring in individual countries at the more disaggregated three-digit level. Specialisation increased in Germany, France, Ireland, Finland, Sweden and United Kingdom, while it decreased in the other countries (Figure 1). The weighted average production share of the largest five industries (out of 99 in total) increased from 21.8 % in 1990 to 24.7 % in 2000.

Production specialisation is driven by motor vehicles, chemicals and telecommunications

Production specialisation trends in the EU are strongest in Germany, France, Ireland, Finland, Sweden and United Kingdom. The driving forces in the specialisation of production in France, Germany and the United Kingdom are roughly the same: transport equipment and electrical and optical equipment increased their shares, whereas food products and beverages, textiles and basic metals lost shares. The transport equipment sector presently accounts for 18.8 % of production in France, which is slightly more than in Germany (18.6 %). All three countries have rather similar industrial structures, characterised, on average, by high returns to scale, high technology and a relatively highly educated workforce. Obviously, these characteristics drive the specialisation patterns in these countries towards industries which depend on the supply of highly educated workers on the one hand and on market potential on the other hand.

Finland, Ireland and Sweden are the three countries for which the composition of industry has changed the most in favour of high technology and increasing returns to scale industries. Specialisation patterns are, however, different. Ireland strengthened its position as the most specialised country during the 1990s. The top three sectors produce 76 % of its industrial output, the largest being the electrical and optical equipment sector. The strongest increase took place in the chemical sector (basic chemicals and pharmaceuticals); the food sector, which was a former stronghold, lost ten percentage points. The share of employees with higher education increased dramatically, the country has now the highest share of research-intensive industries in manufacturing, while the share of labour-intensive industries is the lowest in Europe. Finland is a country with a high capital-labour ratio. It started with a moderate position in production specialisation, but has now reached the second highest rank. This also reflects the rising share of the electrical and optical equipment sector, specifically telecommunications equipment. Pulp and paper has thus been replaced as the previously largest sector. Finland shows the second largest decrease in the food sector (-4.6 %). In Sweden, too both the electrical and optical

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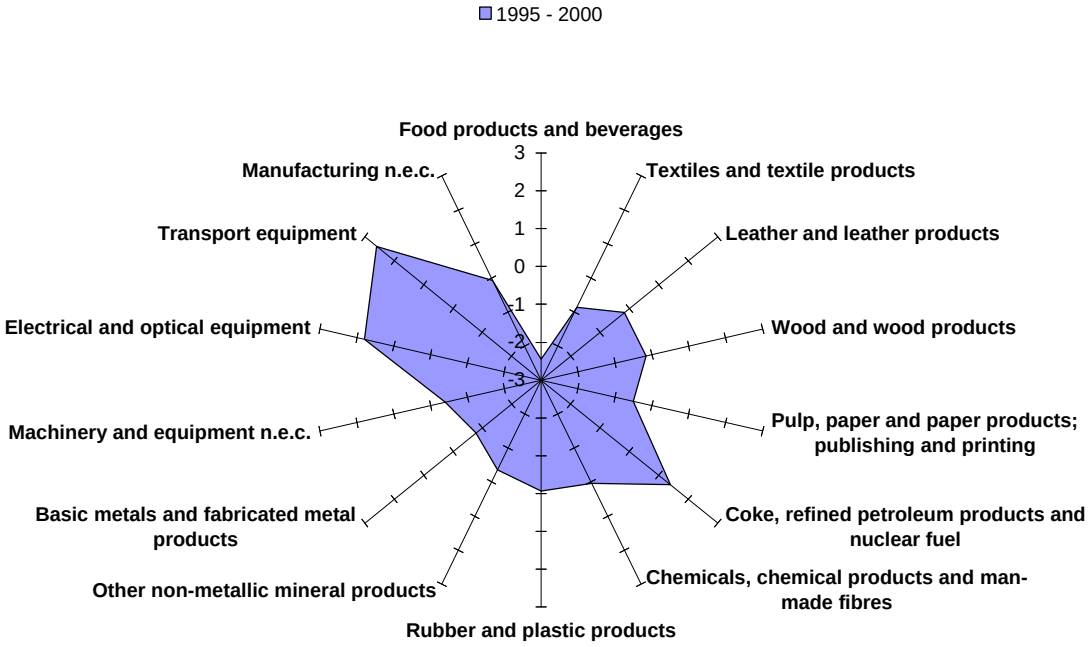
shortcomings of each of them, see Aiginger et al. (1999).

equipment sector and the transport equipment sector gained shares, again at the expense of food products, pulp and paper and basic metals. At the more detailed industry level, the strongest increases occurred in the telecommunication equipment industry and in the motor vehicle industry.

Specialisation trends in the two largest EU member states, as well as in the northern countries, are having considerable effects on the structural decomposition of EU manufacturing. The transport equipment sector and the electrical and optical equipment sectors show the largest increases of production shares between 1995 and 2000, mainly at the expense of food products, textiles and basic metals (Figure 2). The electrical and optical equipment sector has increased its share in total manufacturing production in all EU countries, with the only exception being Italy. The strongest increases occurred in the technology-intensive manufacturing of telecommunication equipment and electronic components respectively.

Trends in employment, however, paint a somewhat different picture. In most cases, sectors with a rising share in production show a falling share in employment, and vice versa. Exceptions are textiles, leather, rubber, other non-metallic mineral products and machinery and equipment n.e.c. Apart from rubber and plastic products, all these sectors lost shares in total EU manufacturing production and employment. As these are sectors which are mainly composed of labour-intensive and mainstream industries, specialisation in the EU seems to be directed towards more sophisticated production in technology-intensive and capital-intensive industries. That is, the EU is climbing up the value chain. Moreover, the emerging specialisation patterns are likely to be efficiency-enhancing. This is particularly true for the transport and the electrical and optical equipment sectors, which gained considerable shares in EU manufacturing production, and at the same time lost shares in manufacturing employment. In contrast, the ACs incurred employment losses in most sectors of manufacturing (and in manufacturing industry as a whole), except for wood and paper products, rubber and plastics, electrical and optical equipment and furniture.

Figure 2: *Structural change in manufacturing production (sectors) in EU(15), absolute change in production shares between 1995 and 2000*



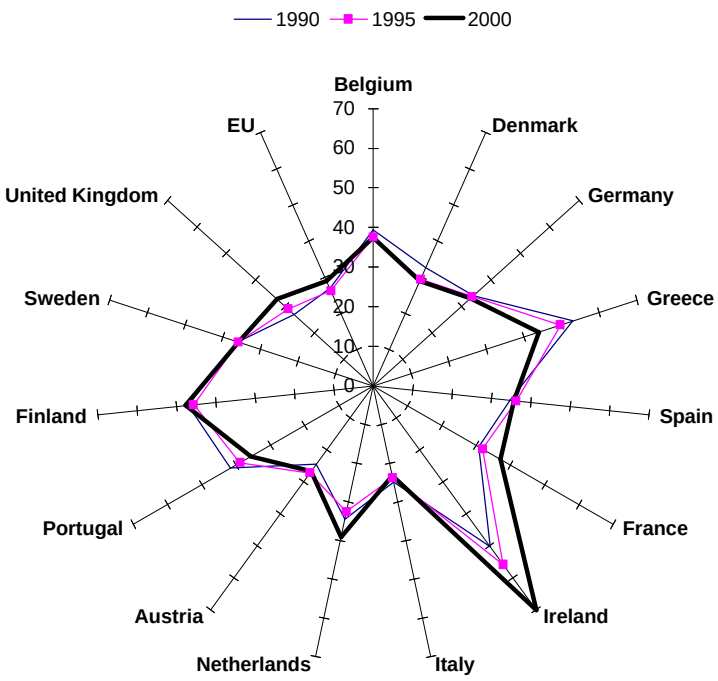
Source: Calculations using SBS

Export specialisation is driven by technology-intensive industries

Export specialisation, as measured by the share of the largest five 3-digit industries in total manufacturing (CR5), increases in five EU countries (France, Ireland, the Netherlands, Finland and the United Kingdom), remains stable in seven countries (Belgium, Denmark, Germany, Spain, Italy, Austria and Sweden), and decreases in just two countries (Greece and Portugal – see Figure 3). Overall, there is an increasing trend in the second half of the 1990s which is mainly due to the increasing shares of six technology-driven industries in total EU exports: pharmaceuticals, telecommunications equipment, aircraft and spacecraft, office machinery and computers, electronic components, and motor vehicles. Like the production data, this suggests a qualitative change towards a more sophisticated production structure of the EU manufacturing sectors.

At the country level, export specialisation is driven by the rising shares of basic chemicals and pharmaceuticals in Ireland, of aircraft and spacecraft, motor vehicles and pharmaceuticals in France, of telecommunications equipment and pharmaceuticals in the United Kingdom, of office machinery and computers and electronic components in the Netherlands, and of telecommunications equipment in Finland.

Figure 3: *Export specialisation in the EU: Share of largest 5 industries (CR5), calculated from 3-digit NACE subsections of manufacturing*



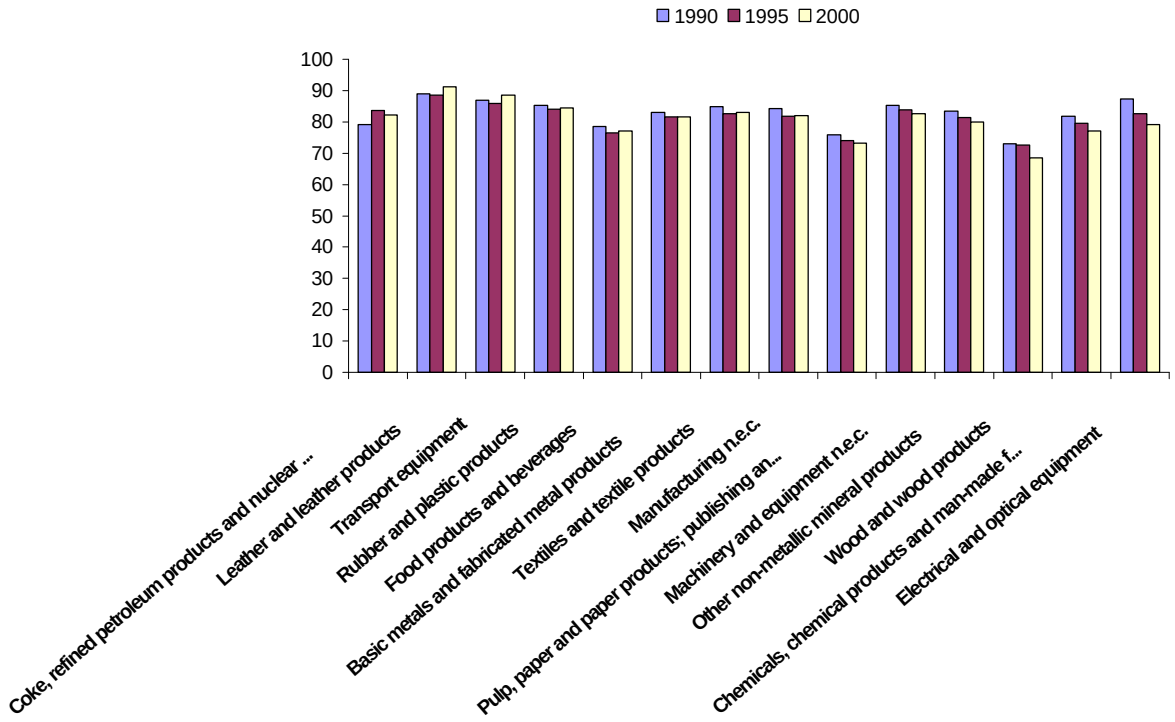
Source: Calculations using Eurostat COMEXT.

5 Concentration trends in the 1990s

Studies on the geographic concentration of industries in the EU show a more mixed pattern than studies on the specialisation of countries. We find a strong tendency for production and export concentration to decrease in the 1990s. Overall, production concentration, as measured by CR3, increased only in three out of 14 sectors: Coke and refined petroleum products, leather products and transport equipment. Leather products and transport equipment are also the two most concentrated sectors (Figure 4). In these two sectors the leading five countries together produce about 90 % of the total EU output. Italy expanded its share in the leather sector from 46 % in 1990 to more than 57 % in 2000. In the transport equipment sector both Germany and France increased their already high output shares. Wood products represent the least concentrated sector, here about 50 % are produced in three

countries. This sector shows the largest decrease in concentration in the second half of the 1990s. Over the whole period the strongest decreases occurred in electrical & optical equipment and in chemicals.[13]

Figure 4: *Geographic concentration of production (sectors) in EU (15) Share of largest three producer countries (CR3)*



Source: Calculations using Eurostat SBS.

At the more disaggregated three-digit level, production concentration (CR3) decreased in two thirds of 95 EU-15 industries, in twenty industries by more than 5 percentage points. Some of these are large industries such as basic chemicals (-6.7pp) and manufacturing of television of radio transmitters (-8.9pp). Manufacturing of industrial process control equipment is the industry with the strongest decrease (-13.0pp). On the other side, concentration increased only in five industries by more than 5 points. The largest increase occurred in aircraft and spacecraft (+8.9pp). The overall trend for geographic concentration to decrease holds even stronger for exports. Concentration, as measured by CR3, increased only in 6 out of 95 industries between 1990 and 2001. On average, the share of the largest three countries decreased by 10.6 points in the typical industry. However, a closer look at the

[13] ACs' nominal production shares in manufacturing of an enlarged EU(25) are about 5%, with higher production shares in food products, textiles, wood (including furniture) and non-metallic mineral products (employment shares are much higher – see Section 4.4 below).

data reveals that the bulk of the decrease occurred in the first subperiod. In the second half of the 1990s, export concentration remained rather stable in most of the industries.

Technology-driven industries are on average the most concentrated industries, with a typical CR3 of 69,1% in the year 2000. This is in line with modern theory which stresses spillovers and pooled labour markets in dynamic industries. Labour intensive (64,1%), marketing-driven (63,5%), mainstream (62,5%) and capital-intensive industries (62,1%) are to a lesser extent geographically concentrated. Between 1995 and 2000 concentration declined strongest in the labour-intensive (CR5 declined by 3.0pp) and in the mainstream (-2.8pp) industries, mainly due to rising shares of some peripheral countries at the expense of Germany, France and Italy. Germany has lost shares in some labour intensive industries to the benefit of Spain (builder´s carpentry, structural metal products), Finland (sawmilling and planing of wood) and the United Kingdom (cutting, shaping and finishing of stone), and in mainstream industries to the benefit of Sweden (tubes, accumulators), Spain (articles of concrete, plaster, cement) and Portugal (accumulators). Italy lost shares in the manufacturing of electric motors to the benefit of Spain and the United Kingdom, and France lost shares in the manufacturing of accumulators.

The deconcentrating trend is weaker in the capital-intensive (-1.6pp), technology-driven (-1.0pp) and marketing-driven (-0.6pp) industries. Among the capital-intensive industries, manufacturing of coke and refined petroleum, basic chemicals and cement, lime and plaster show the largest decreases. The main losses in these industries occurred in Germany, while Irleand (chemicals), Spain (coke, cement), Italy (cement) and the United Kingdom (coke) have made gains. Germany (and partly France) are the main loosers in the technology-driven industries which became less concentrated. Winners were Sweden (television and radio transmitters, industrial process control equipment), Ireland (medical and surgical equipment), Spain (television and radio transmitters) and the United Kingdom (industrial process control equipment). On the other hand, Germany and France won shares in the manufacturing of electronic valves and tubes and in the motor vehicles industry, while France increased its share in the aircrafts industry. All three industries are now more concentrated.

Overall, the evidence does not support the view that the internal market should lead to increased geographical concentration of either production or exporting activity. In most industries, geographical concentration declined during the 1990s. New economic geography models suggest that economic integration might first favour the core regions and in a later stage, perhaps, the periphery. The presented evidence for EU-15 shows no signs of a strenghtening of the core at the expense of the periphery. On the contrary, in the majority of cases geographical concentration has decreased as the core countries – Germany, and to some extent France and Italy - have lost production shares to the peripery, mainly Ireland, Finland, Sweden, the United Kingdom and Spain. Nevertheless, we should take into account that the study period is short. Germany as the big loser witnessed a period of rather slow growth compared to the winning Member States at the periphery. This has certainly reduced the

strength of the home market effect and reduced the centripetal forces in industries which heavily rest on the market potential of an economy. This might be one reason why Germany even lost ground in research- and capital intensive industries.

Haaland et al. (1999) show that geographical distribution of expenditure is an important determinant of industrial location, with growing importance during the integration process in Europe. Furthermore, absolute industry concentration affects absolute expenditure concentration and vice versa, which supports the view of the new economic geography that predicts cumulative causation in localisation. Hence, it is not clear that the process of spatial spreading of industries in Europe gets reversed if Germany turns back to a normal growth path in the future. Another interpretation of the increasing dispersion of production activity, also stemming from the new economic geography, is that the further reduction of trade costs within EU-15 has made peripheral countries more attractive when higher wages and congestion costs drive production activity away from the core.

The periphery, however, is not a homogenous area. We observe quite different specialisation patterns in the northern EU countries (Finland, Sweden) compared to Irleand and the other cohesion countries. Spain is the most advanced of the three southern cohesion countries, more similar to France and Great Britain, than to Greece and Portugal (see Midelfart-Knarvik et al. 2000). The country now has a medium share of production in technology intensive industries but low levels of labour force skills. Nevertheless, the share of non-manual employees and the share of employees with higher education is higher than in Greece and Portugal. The motor vehicles industry is increasingly important in Spain, and there are successful high-tech clusters in pharmaceuticals, audio and video apparatus and medical equipment industries. A wide heterogeneity is observed in the ACs as well (see below).

6. Factors determining the future industrial landscape in Europe

The post-war experience in the EU is probably not a good guide for predictions concerning income convergence and specialisation patterns following enlargement. Today, markets in Europe are much more integrated (due to SMP and EMU). There are reduced restrictions on FDI, new forms of firm cooperation, and improvements in transport and communication which facilitate dispersion. Last but not least, some of the ACs outstrip the EU South in terms of human skills, and are much closer to the EU core than are the southern regions of the EU.

Location theories suggest that the impact of EU enlargement be larger on two groups of countries within the EU-15: first countries with industrial structures that are closer to those of the acceding countries; secondly, countries which are geographically closer to the acceding States. According to

Traistaru et al (2002), both factor endowments and geographic proximity to core European regions determine the location of manufacturing in the acceding countries. Hence, three determinants of industrial location may play a key role in the future industrial landscape of European manufacturing after enlargement: Local endowments, transaction costs and labour mobility.

Local Endowments

There is ample evidence for differences in factor endowments between the ACs and the EU (see European Commission 1994, Dobrinski and Landesmann 1996, Landesmann 1995, 1996, Boeri and Brücker, 2001). Most analysis concludes that the ACs are specialised in labour-intensive industries, as well as in resource and energy-intensive sectors. The ACs have comparative disadvantages in R&D and human capital-intensive industries compared to the EU. Boeri and Brücker (2001) show that the stocks of physical capital as well as human capital endowments in the ACs are significantly below the EU average. The quality of education falls short of average standards in the EU-15. However, human capital endowments are high relative to those of countries with comparable income levels in the EU (see Landesmann and Stehrer, 2002). Nevertheless, the large gap in per capita incomes cannot be solely attributed to differences in factor endowments. Total factor productivity is substantially lower in the ACs than in the EU. This can be traced back to technological differences, the institutional framework and endowments with public infrastructure.

Boeri and Brücker (2001) calculate that, on the basis of the convergence rates observed in the EU in the post-war period, the half-life of the AC-EU income gap would amount to more than 30 years. This conclusion is, however, questionable: Firstly, as the authors admit, the variance of the income levels and endowments (in the broadest sense) across individual ACs is very large. Secondly, endowments are influenced by policy measures (Midelfart-Knarvik and Overman, 2002). And finally, as emphasised by Venables (2001), endowments are subject to change: Interactions between trade and education, or between trade and immigration, as well as technological and pecuniary externalities can influence comparative advantages.

Trade Costs

EU accession implies a move from an almost free-trade area towards a customs union and into the internal market. This means that all remaining bilateral formal trade barriers (import tariffs, export subsidies) will be abolished. For some ACs (Poland, Slovenia, Bulgaria and Romania), the adoption of EU Common Tarrifs will imply tariff reductions on extra-EU trade. Furthermore, the accession to the internal market reduces non-trade barriers (NTBs) and may thus increase trade for at least three reasons (see Lejour et al., 2001): First, a number of administrative barriers to trade will be eliminated or at least reduced to levels comparable to those between current EU members. This will reduce, or even abolish, costs of passing through customs (less time delay, less formalities etc.) at the frontier.

Second, the internal market reduces technical barriers by means of mutual recognition of different technical regulations, minimum requirements and harmonisation of rules. Third, risk and uncertainty will be mitigated by the accession to the EU.[14]

The abolition of formal and administrative trade barriers will considerably reduce transaction costs between the acceding countries and the EU. However, transport costs will certainly not disappear completely, and geographical proximity to the large markets in the EU will continue to play a significant role. Empirical evidence shows that countries like Germany, Austria, Finland and Italy are responsible for two thirds of the EU trade with the ACs, whereas the Czech Republic, Hungary and Poland are responsible for two thirds of the ACs' trade with the EU (WIIW, 2002). Trade intensity of German regions located on the border with the Czech Republic and Poland doubles that of other regions (Boeri and Brücker, 2001).

Transport costs can also be an important obstacle to vertical fragmentation, i.e. carrying out different stages of production in different locations. Thus, the proximity to other stages of the production process and final markets is likely to matter, particularly for bulky commodities. The relative importance of intra-industry trade flows and of outward processing trade seems to be stronger among regions with territorial contiguity, indicating also that the international division of labour is influenced not only by production cost differentials but also by transport costs (Caetano et al. 2002).

Of course, the patterns of production and trade depend on the interactions of transport intensities and location, as well as factor intensities and endowments. However, all else equal, the prevalence of transport costs will certainly create problems for remote areas in the ACs. It is also predictable that the future impact of EU enlargement will be stronger in the current EU-AC border areas. On the one hand, fragmentation will affect middle-income countries in the EU if, for example, processing of primary or labour-intensive products is relocated to low-wage regions near the borders. On the other hand, it is possible that regions situated closer to Eastern urban centres are better positioned to enjoy potential economies of scale and hence to register significant production growth (Palme, 1999).

Labour mobility and migration

Migration rates in Europe are low in comparison with the US. Present migration rates are low also by historical standards.[15] Temporary restrictions to labour mobility from Portugal and Spain after their accession to the EU appear to have had relatively small effects on migration flows (Boeri and Brücker, 2001). However, drawing on past experience to predict the implications of EU enlargement may be

[14] One type of risk is the possibility that somewhere in the link from producer to consumer some agent defaults. This is especially important for goods moving from East to West as export credit guarantees are less well developed in the ACs.

[15] In the 1960s migration rates in Europe were much higher than in the 1990s. Puga (2001) discusses several possible reasons for the low mobility in Europe.

misleading. In the past, income differentials between the new (Southern) members and the rest of the Union were not as large as those between the present EU-15 and the majority of the acceding Central and Eastern countries. Furthermore, while in the past undesirable effects of migration were concentrated on blue-collar workers in manufacturing and on unskilled labour in services, the impact of migration might be more dispersed in the future. Formal education levels of migrants from the ACs are high, and over time they may become more able to increasingly compete with high-skilled workers in modern industries in the present EU.

Also proximity matters for migration flows: Around 80 % of the current migrants from the ACs reside in Austria and Germany. A higher propensity to migrate to these two countries will likely have effects on the strength of agglomeration forces there. The reason is that migrants move into prosperous branches and regions and that output and investment adjust according to the increase in the labour supply (Boeri and Brücker, 2001).

Sensitive regions in EU-15

The likely impact of the accession countries' further integration on trade and structural changes in the current EU member states depends on several factors: Comparative advantages, trade costs and factor mobility are considered as particularly relevant in this context. There are two visions in the literature: Analysis based on trade flows suggests that in the short run, the new member countries appear to have comparative advantages in capital- and labour-intensive industries, and thus compete primarily with the Southern EU-15 members. In the long run, the relatively high stock of human capital in the ACs could give them a comparative advantage in human capital intensive industries. In the latter case, they would compete mainly with the Northern EU-15 countries.

Studies which looked at the effects of the Europe Agreements on individual member states came to the general conclusion that the effects on EU members would be smaller than the effects on the ACs.[16] Within the Southern countries, the Greek were most optimistic, due to the likely possibility of increasing both exports to and FDI in Bulgaria and Romania, though some sectors (chemicals, transport equipment and natural-resource-intensive sectors) might lose (Dimelis and Gatsios, 1995). Spain has the advantage of a large market, although it might lose some market share in exports and suffer some FDI diversion (Martin and Gual, 1994). Portugal, on the other hand, would be the biggest loser at both the trade and FDI levels (Corado, 1994).

[16] The enforcement of the Europe Agreements happened 1994 for Poland and Hungary, 1995 for Bulgaria, Romania, the Czech Republic and Slovakia, and 1998 for the Baltic States and Slovenia.

The studies of Brown et al. (1997) and Baldwin et al. (1997) based on general equilibrium models conclude that the EU as a whole gains from enlargement, although the South gains much less than the North. In particular, Germany would gain the most, whereas Portugal would be the only country losing due to its heavy reliance on textiles, the sector most likely affected by enlargement. On the other hand, studies based on NEG models which incorporate comparative advantages with new economic geography features show gains for the East, while the expected effects on EU-15 depend strongly on the scenario considered (see Forslid et al. 1999, Baldwin et al. 2000, Midelfart-Knarvik et al. 2000). Forslid et al. (1999) found that the neighbouring countries in Central Europe (Austria, Denmark, Germany, and Switzerland) are more severely hit than other European regions, and that the overall effect for these countries is negative due to significant production cuts in labour-intensive sectors.

Greece and Portugal

Among the EU-15 members, Greece and Portugal are considered the most vulnerable to the more intensive competition resulting from deeper integration of the ACs. The effects on these countries are likely to be strongest in low-wage industries and in industries with little product differentiation and limited spillovers.

The two countries have rather similar industrial structures. In output and employment terms, the three most important sectors are food, textiles and electrical and optical equipment (production) and basic metals (employment) in Portugal, while food, coke and refined petroleum and basic metals are most important in Greece. Industry is, on average, characterised by low technology and low returns to scale; the capital-labour ratios are moderate but increasing. Greece and Portugal are also the two countries with the lowest shares of non-manual workers and employees with higher education in total manufacturing employment. The final demand bias (the final consumer orientation of the industry) is the highest in the EU (see Midelfart-Knarvik et al. 2000). Both countries have heavily regulated product markets, and their positions seem relatively weak in relation to technology and innovation, with both countries ranking low in research indicators (see European Commission, 2001).

There are four areas where the economic impact of enlargement on the incumbent cohesion countries could potentially be significant (see Ardy et al. 2003): besides structural funding and the fiscal implications these are competition, foreign direct investment (FDI), and the enlargement of economic and monetary union (EMU). Most studies agree that trade liberalisation and the resulting elimination of trade barriers has already led to higher competition between the ACs and the EU as a whole, particularly in industries characterised by labour intensive production. Portugal and Greece may have lost market shares in the EU to Bulgaria and Romania. Both are countries which show rather similar patterns of trade and industrial specialisation in low-skill, labour-intensive as well as natural resource-intensive branches. It is very likely that those countries mirror the development of Greece and Portugal from the mid-1980s, when there was a rapid increase in specialisation in some slow growth and

unskilled labour intensive industries. This creates certainly a challenge for the two Southern countries, particularly for Greece, which shows much less efforts in industrial restructuring compared to Portugal (or ACs) in recent years.

A related concern is that enlargement leads to a re-orientation of inward FDI away from Portugal and Greece (and probably Spain) towards the ACs. The evidence so far, however, does not seem to support the fears about a substantial diversion of FDI away from the incumbent towards ACs (see UNCTAD 2001, Buch et al. 2001 and 2003). On the other hand, problems might arise when vertical intra-industry trade (based on comparative advantages) occurs, as a result of the reorganisation of production processes in Europe (see Wildgren 2001). Since the ACs are similar to Southern Member states in terms of income and demand, concentration of production (which follows concentration of demand) may create competitiveness problems.

Last but not least, there is the perception that the economic benefits of the enlargement of EMU are likely to accrue to the wealthier Member States, particularly the core countries, which are richly endowed with human capital, institutions, finance, networks, and a local high-income market. These characteristics are seen as essential ingredients for the technological development and the dynamic performance of the economy. It is, however, not clear that the incumbent cohesion countries are likely to feel the increased competition resulting from enlargement most strongly. Besides local endowments there are other determinants of economic geography which provide a challenge for low and middle income regions in Western Europe and regions near the current EU-AC borders.

Germany and Austria

Within the EU-15, Germany, Austria, Finland and Italy together account for some two thirds of the trade with the acceding Central and East European countries. Among them, Germany and Austria show the highest degree of proximity and trade-integration with the ACs. According to Heijdra et al. (2002), these are the two countries which will be most affected by East-West market integration, whereas for the other EU member states economic integration seems less important than the fiscal implications of enlargement.

Theory-based arguments suggest that border regions might have an advantage in attracting resources due to their specific location in the centre of the integration area. Integration has a positive impact on their access to foreign demand, their market potential and the development of cross-border backward and forward linkages. Countering forces are low transport costs and a low mobility of labour and firms. Hence, depending on specific circumstances, border regions might benefit, lose or not be affected by integration. Empirical findings show that national borders are indeed important barriers for interregional economic relationships as traditional trade theory assumes. The findings of Hanson (1998) suggest that an increase in the market potential positively affects regional wages and

employment. However, numerous case studies on border regions point to a rather diverse development of these areas after trade liberalisation. Niebuhr and Stiller (2002) conclude that neither theoretical nor empirical studies provide comprehensive and consistent results on the impact of integration on border regions.

Palme (1999) finds that the opening of the markets in Central and Eastern Europe has benefited Austrian manufacturing. Even the problems of adjustment in labour- and energy-intensive manufacturing industries may have been overcome by free trade agreements before the accession. Moreover, Mayerhofer and Palme (2002a) suggest that most industries in Austria show characteristics advantageous for integration. Favoured industries prevail in the core areas of Austrian manufacturing: chemicals, machinery and equipment, electronics and motor vehicles. These are branches characterised by high skills, quality competition, internal (motor vehicles, chemicals) and external (electronics, chemicals, motor vehicles) economies of scale and (in some fields) high technology orientation (electronics). They find advantageuos characteristics also in the food industry, and parts of the paper industry and electrical industry. On the other hand, labour-intensive industries like textiles and apparel, plastics, glass and cheramic, wood and metal products are seen in a disadvantaged position because they operate on markets driven by price competition. In a second study on the effects of enlargement on Austrian regions the authors conclude that no major disruptions from any deep going structural change need to be expected at the regional level (Mayerhofer and Palme 2002b).

The same results regarding the industrial competitiveness apply more or less to the German manufacturing as a whole. However, the industrial composition at German border regions seems to be less favourable. According to Scharr and Untied (2001), industry is even at the more advanced Bavarian borders characterized by labour-intensive, wage-sensitive production. R&D activities are here below the German average. Furthermore, there is a high share of small enterprises at the ACs' borders of the New German Länder.

7. Conclusions

Most trade models predict that economic integration leads to higher specialisation of countries. The major prediction from the TTTs for the process of European integration is that enlargement will result in production re-location and increasing specialisation according to comparative advantages. According to the new trade theory, big countries gain a comparatively larger share in industries where product differentiation and internal or external economies of scale are important. A reduction in trade costs reduces concentration as the home bias – originally larger in large countries - is removed. Models of economic geography emphasise forward and backward linkages, spillovers and scale

economies as centripetal forces, while costs of commuting and congestion, or more generally costs induced by agglomeration, act as centrifugal forces. At high transaction costs production follows demand which prevents the tendencies of concentration. At medium transaction costs forward and backward linkages cause agglomeration, while at low transaction costs higher wages and congestion costs in the core tend to disperse production activity.

High income countries are predicted to specialise in capital-intensive, technology-, skill- and research-intensive industries with high levels of product and process innovations, driven by forces on the demand side and the supply side. In industries where product differentiation is important, high income countries specialise in products on the upper quality segment. Countries with similar incomes, endowments and technologies engage in intra-industry trade. What distinguishes new economic geography models in this respect is the fact that even similar regions or countries can develop very different specialisation patterns. NEG predicts increasing differences in production structures across different core countries as well as across different peripheral countries in Europe.

Specialisation is increasing in almost all member states in both production and exports. The data reveal an accelerating trend in the second half of the 1990s. The accelerating trend of specialisation is particularly obvious in Germany, France, Ireland, Finland and Sweden. Three sectors play a key role: Transport equipment in Germany and France, electrical and optical equipment in Ireland, Finland and Sweden, and the chemical sector in Ireland. Ireland and Finland are the two countries with noticeable structural change in the second half of the 1990s.

Geographic concentration decreases in eleven out of fourteen sectors, it increases only in coke and refined petroleum products, in leather products and transport equipment. The trend for deconcentration is even stronger for exports. The share of the largest three exporting countries decreased by about 1 percentage point p.a. between 1990 and 2001. The share of total manufacturing value added in the periphery remains rather stable, which is mainly due to the rising market shares in the faster growing electrical and optical equipment sector in the northern countries. On the other hand, there is some indication of different specialisation patterns in the North vis-à-vis the South. Research-intensive industries increased their shares in the northern countries, while capital-intensive industries are gaining market shares in the southern countries. Both observations seem to be at odds with predictions made by theories based on increasing returns to scale, and are more likely driven by comparative advantages.

Most earlier analyses conclude that the ACs are specialised in labour-intensive industries, as well as in resource- and energy-intensive sectors. On the other hand, they reveal comparative disadvantages in capital-, technology- and skill-intensive industries as compared to the EU. Thus, costs and benefits of the enlargement may be different at the sectoral level. According to Bachtler et al. (1999), EU firms specialised on the production of labour-intensive goods (i.e. textiles, footwear and leather products)

and of capital-intensive goods with low sophistication levels (i.e. primary chemicals, printing, plastics and rubber products) may experience difficulties due to more fierce competition with firms from the ACs. Lejour et al. (2001) conclude that the enlargement will negatively affect the textiles industry in the southern EU countries. To some extent, our analysis confirms that view: the process of specialisation in Greece and Portugal stopped in the second half of the 1990s, at least in exports, mainly due to losses in the apparel industry. Furthermore, the rising shares of capital-intensive industries with low sophistication levels combined with the declining importance of research-intensive industries in the southern countries in the second half of the 1990s may create problems in the future. At least in some southern regions, restructuring in production and exports seems to be directed towards industries in which the ACs have a matching comparative advantage due to lower labour costs.

Overall, the results so far do not suggest that the process of economic integration in Europe is potentially harmful. Although there appears to be a trend of increasing specialisation even in the ACs, the process has so far been rather gradual. There might be several reasons: Firstly, economic development in the ACs is still at an early stage. While trade between the EU and the ACs has boomed in the course of transition and integration, trade volumes are by far not exhausted. Even though trade flows between the EU and the ACs reflect differences in endowments and technological know-how, the overall production and trade volumes of the ACs are too small to reveal aggregate effects on prices, employment and production in EU countries. Secondly, the rather low effects at the aggregate level do not rule out that specific regions and sectors are affected. Although transaction costs associated with trade barriers are falling, transport costs are relevant. Geographic proximity plays a role for trade and location decisions. Three quarters of EU trade with the ACs is carried out by countries immediately bordering them, i.e. Austria, Germany, Greece, Italy and Finland. Furthermore, regional trade data from Austria and Germany indicate that, within these countries, exporters to and importers from the ACs are concentrated in the border regions. Thirdly, and probably most important, the rather low mobility of labour in Europe together with existing restrictions will hinder the forces towards agglomeration to fully take effect any time soon.

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