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**COMMUNICATION FROM THE COMMISSION
TO THE COUNCIL, THE EUROPEAN PARLIAMENT,
THE ECONOMIC AND SOCIAL COMMITTEE
AND THE COMMITTEE OF THE REGIONS**

STRUCTURAL CHANGE AND ADJUSTMENT IN EUROPEAN MANUFACTURING

Introduction

In its resolution of the 21st November 1994 on reinforcing European competitiveness, the Council invited the Commission to report regularly on the competitiveness of European industry.

This Communication summarises the main findings of the 1999 Competitiveness Report[1] and aims to stimulate the debate on the adaptation of European industry to the new conditions resulting from increasing competition both within and outside the European Union.

The 1999 Competitiveness Report is the third one issued after the Council resolution. It deals with structural change in the EU economy, focusing on the presentation and analysis of sectoral data on manufacturing.

The choice of emphasis on manufacturing and the use of country-level, rather than regional, information are imposed by data availability.

Adaptability: key to competitiveness

The competitiveness of a country is essential for the welfare of its citizens. It means output growth and high rates of employment in a sustainable environment. In a fast-moving world economy, one of the keys to competitiveness is adaptability. An economy is adaptable if it can accumulate and re-deploy resources rapidly in pursuit of new opportunities, while, at the same time, fully exploiting existing competitive strengths. Adaptability is crucial not only for the growth prospects of a country but also for its resilience to economic shocks.

For an economy to be adaptable to rapid changes of technology and tastes, it should combine macro-stability with micro-mobility. This year's Competitiveness Report is about mobility, structural change and accumulation in the European manufacturing sector over the last ten years.

The 1999 Competitiveness report is divided in three parts. The *first part* considers the speed and pattern of change in the structure of European manufacturing. It looks at trends in industrial specialisation and in geographic concentration and it relates structural change to growth patterns in Europe.

The *second part* considers in more detail some of the prime forces behind structural change. These include the decisions of firms to invest in tangible and intangible assets and the reorganisation of large multinational enterprises (MNEs) into integrated European-wide organisations operating through networks.

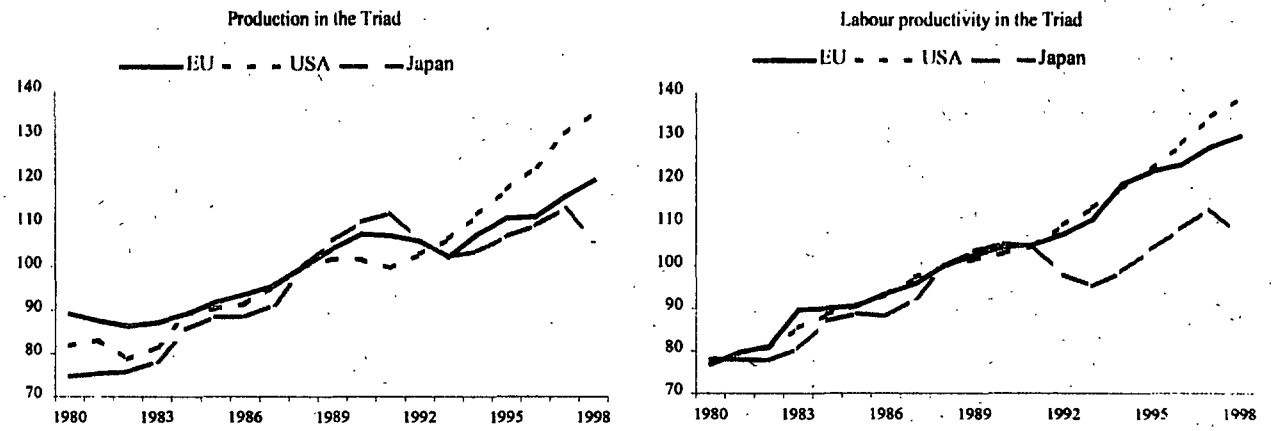
The *third part* provides some indications on the sensitivity of different industries and of different European countries to a world-wide economic shock. It looks, in particular, at the effects on European competitiveness of the recent crisis in Southeast Asia.

[1] European Commission (1999). The competitiveness of European industry: 1999 Report. Luxembourg. SEC (99) 1555.

Large potential gains from restructuring

During the period 1988-1998, manufacturing value added in constant prices grew in the EU by 1.8% p.a. and employment in manufacturing fell by 1.4% p.a. on average. Compared to the eighties, this has been a period of slow growth for both Europe and Japan. Growth has accelerated, instead, in the USA (see Figure 1).

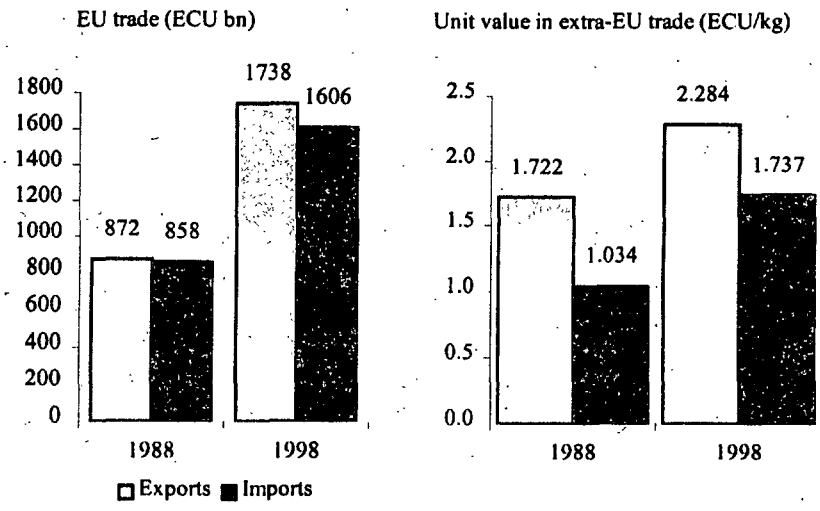
Figure 1: Growth of manufacturing production and productivity in the Triad (1988=100)



Note: Production in real terms.
Source: WIFO (*Österreichisches Institut für Wirtschaftsforschung*) calculations using Main Economic Indicators (OECD) and SBS (Eurostat).

Output and employment performance were weak despite the fact that European manufacturing maintained its market share in the world markets and enjoyed a quality premium in its exports. The trade surplus remained large over most of the period (see Figure 2).

Figure 2: Trade surplus and quality premium in EU trade



Note: Unit values in the right panel are for EU12.
Source: WIFO calculations using COMEXT (Eurostat).

Slow output growth was accompanied with sharp falls in employment in most large EU countries as well as in Finland and in Sweden. Only Ireland and Denmark registered substantial growth in both output and employment in the manufacturing sector (see Table 1).

Table 1: Annual growth, by Member State

	1998/1988	1997/1988		
	Value added	Value added	Productivity	Employment
EU	2.9	3.2	4.3	-1.1
Ireland	7.9	9.9	5.7	4.2
Austria	6.7	7.0	8.8	-1.8
Portugal	6.7	7.2	7.6	-0.4
Belgium	4.7	5.3	n.a.	n.a.
Greece	4.4	5.6	7.3	-1.7
Netherlands	3.9	4.2	4.2	0.0
Denmark	3.9	4.2	2.5	1.7
Spain	3.6	3.1	3.9	-0.8
Germany	3.0	3.2	5.2	-2.0
France	2.4	2.8	3.7	-0.9
Italy	2.5	2.7	3.3	-0.6
United Kingdom	2.3	2.4	4.4	-2.0
Finland	1.8	1.5	1.9	-0.4
Sweden	-0.2	0.3	0.9	-0.6

Notes: Value added in nominal terms.
Source: WIFO calculations using SBS (Eurostat).

In part, the poor performance in the last decade may be due to cyclical factors. The case of Finland is different in that this country suffered a devastating loss of export markets in the beginning of the nineties but seems to have, since, turned around the tide. For the most part, however, previous competitiveness reports have attributed the unsatisfactory outcome of the nineties to structural weaknesses that have prevented EU firms from taking full advantage of new market opportunities. In general, small, open economies appear to have performed better.

Growth in output and employment also varied between different sectors of the economy. Those typified by large investments in intangibles, such as advertising and research intensive industries, grew faster than average. They also shed relatively fewer jobs. Capital and labour intensive industries have done worse on both accounts.

The overall industrial specialisation of EU manufacturing does not appear, however, to be the main factor explaining slow growth. The variation in growth across countries is more pronounced than that across industries. This suggests that *it is the general environment of doing business in each country that needs to be the focus of policy.*

Further, the fact that growth rates vary substantially for the same industry in different countries suggests that *there may still be much scope for restructuring and reallocation of resources within Europe.*

Little change in Member States' degree of specialisation[2]

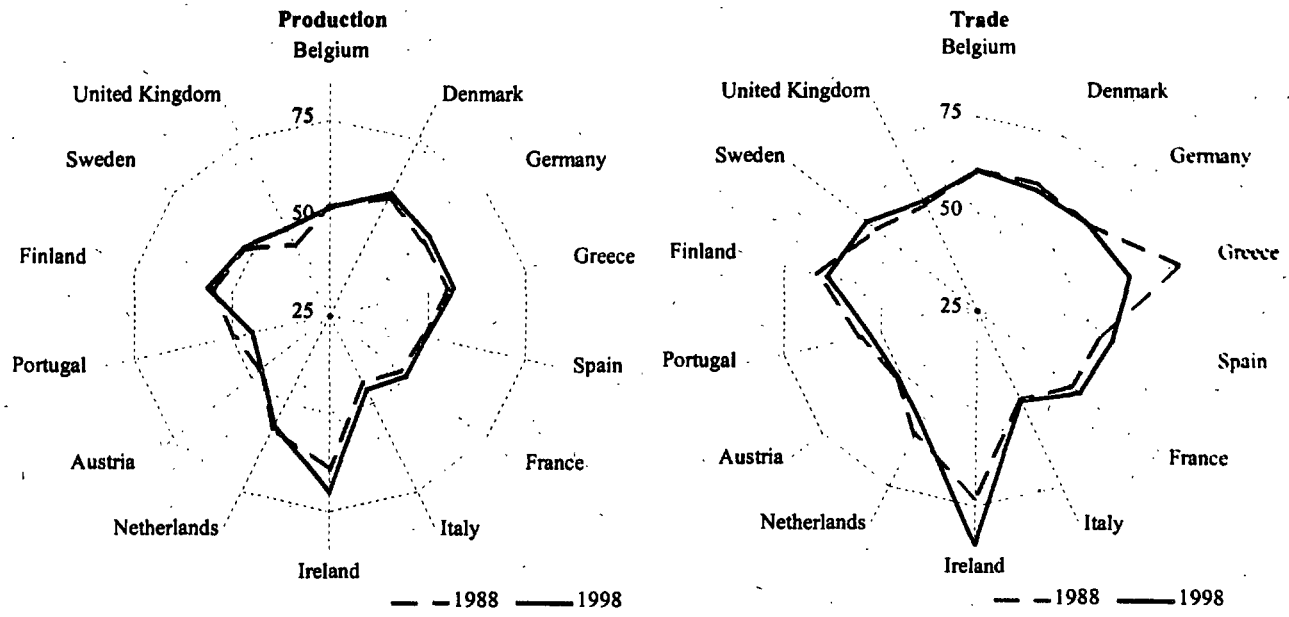
High specialisation in few industrial sectors can be a blessing or a curse for a single country. For smaller countries, in particular, it allows a better exploitation of scale economies and of externalities of know-how. The effects, however, of an adverse economic shock may be devastating for a highly specialised country, especially if the mobility and adaptability in the economic system is low.

2 The production structure of a country is "highly specialised" if a small number of industries accounts for a large share of its production. This will be called "production specialisation". Specialisation can also be measured for exports, or for exports and imports together – "export specialisation" and "trade specialisation" respectively. Needless to say, patterns of specialisation (as well as those of concentration, discussed below) do not necessarily follow the lines of any standard industrial classification scheme, such as NACE used here. Specialisation processes sometimes develop at more disaggregated levels – sub-industries or even firms and they may be regions within countries.

Over the period under consideration, on average Member States' *degree of specialisation in production has risen only marginally*. The rise is for the most part attributable to increasing specialisation of larger countries in some industries, for example, cars in Germany, machinery in Italy and food in the United Kingdom. Smaller countries did successfully exploit niches but did not experience, in general, a rising specialisation in production.

Further, there are indications that *the degree of specialisation in exports has tended to fall*, albeit slowly. The tendency of de-specialisation in exports is more prominent among smaller EU Member States, with the notable exception of Ireland. De-specialisation in exports should have reduced the exposure of smaller countries to external industry-specific demand shocks (see Figure 3).

Figure 3: Production and trade specialisation: 1988 to 1998 (share of the largest five sectors)



Source: WIFO calculations using SBS and COMEXT (Eurostat).

There is no conclusive explanation of the opposite trends between production specialisation and export specialisation. One possible cause would be that MNE headquarter services are more likely to be included in value added statistics rather than in export statistics. Changes in the mix of intra- and inter-industry trade could also explain this phenomenon.

Geographical concentration[3] of industries declined

High geographical concentration of production or of exports means that a few countries supply a large part of the quantity sold in a given market.

Previous analyses have shown that the EU economy as a whole is less geographically concentrated than that of the USA. This has often led to the prediction that an integrated Europe could become more concentrated. Peripheral and small countries could suffer in the process.

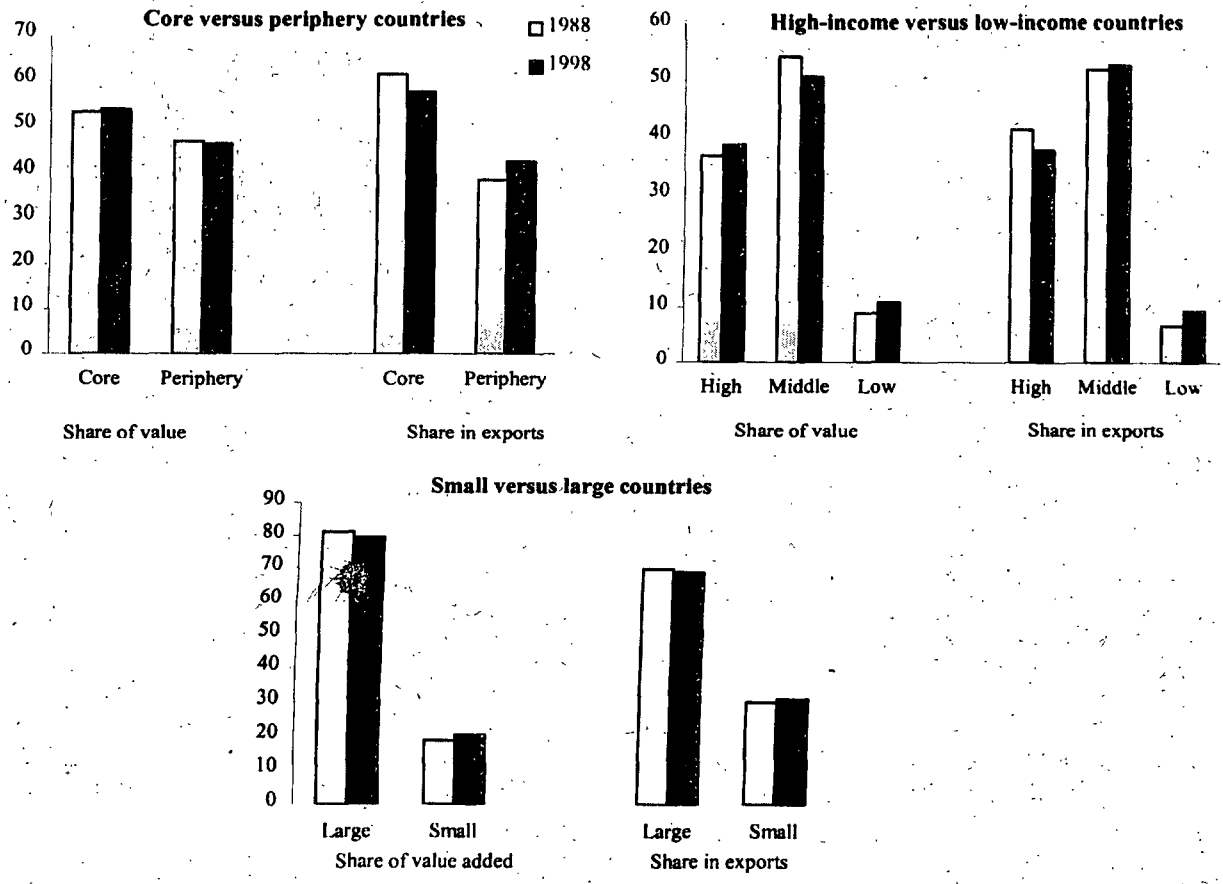
3 Geographical concentration is defined as the extent to which EU activity in a given industry is concentrated in just a few Member States. It should be stressed that the report uses aggregate data, not firm data. The term "concentration" is therefore used to indicate the distribution of an industry across the Member States and should not be confused with the notion of "seller concentration" used in industrial economics and in competition policy, which denotes the importance of the largest firms in a market.

Contrary to such predictions, geographical concentration of both production and exports fell in Europe during the nineties for the great majority of industries. This was primarily due to the fact that *smaller EU Member States have grown faster on average than larger ones*. A number of industries expanded their basis beyond the borders of the more industrially developed EU countries.

On average, the share of the three largest countries in total EU value added fell by more than one percentage point. In exports, the fall was closer to four percentage points. Moreover, the geographical concentration of research and skill intensive industries declined faster than on average. The smaller EU countries gained shares also in these industries.

Thus, contrary to expressed fears, closer integration in Europe does not seem to have led to a "core-periphery" model at Member State level (see Figure 4).

Figure 4: Geographic concentration of production and exports



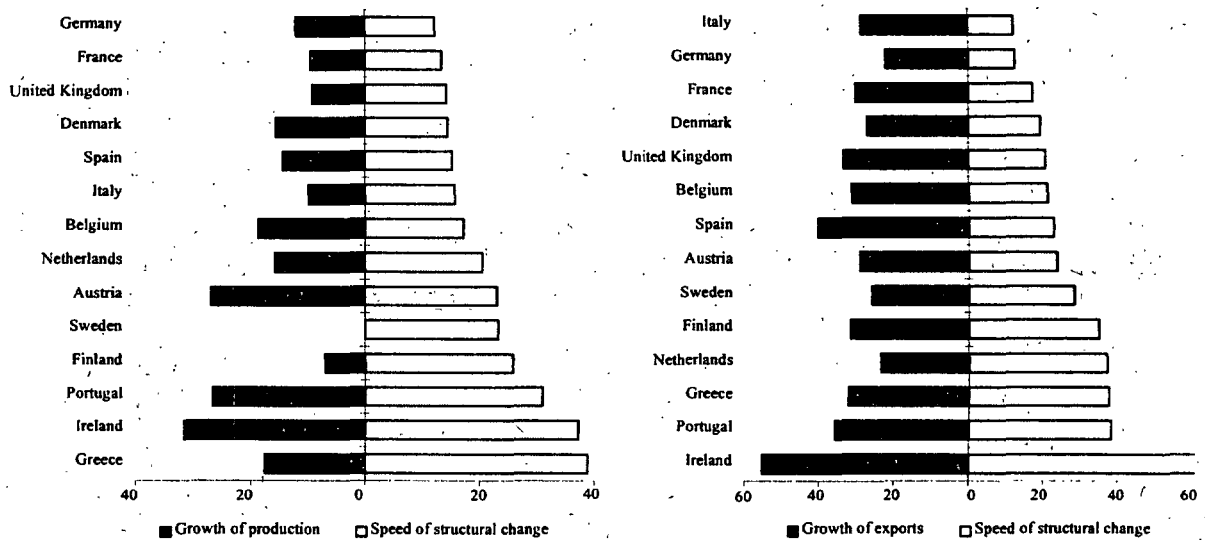
Note: The core is defined as composed by Belgium (with Luxembourg), Denmark, Germany, France and the Netherlands. "High-income" countries are Belgium (with Luxembourg), Denmark, Germany and Austria; "middle-income" countries are France, Italy, the Netherlands, Finland, Sweden and the United Kingdom; "low-income" countries are Greece, Spain, Ireland, and Portugal.
Source: WIFO calculations using SBS (Eurostat).

Speed of change is important for growth

Structural change is not an end in itself. It is of interest to policy makers in so far as it reveals something about the adaptability and, hence, the competitiveness of the European economic system.

The evidence from industry for the last ten years suggests that *there is a relationship between the "mobility" or "speed of structural change" in Member States and the growth of their production and exports* (see Figure 5).

Figure 5: Speed of structural change and growth of production and exports

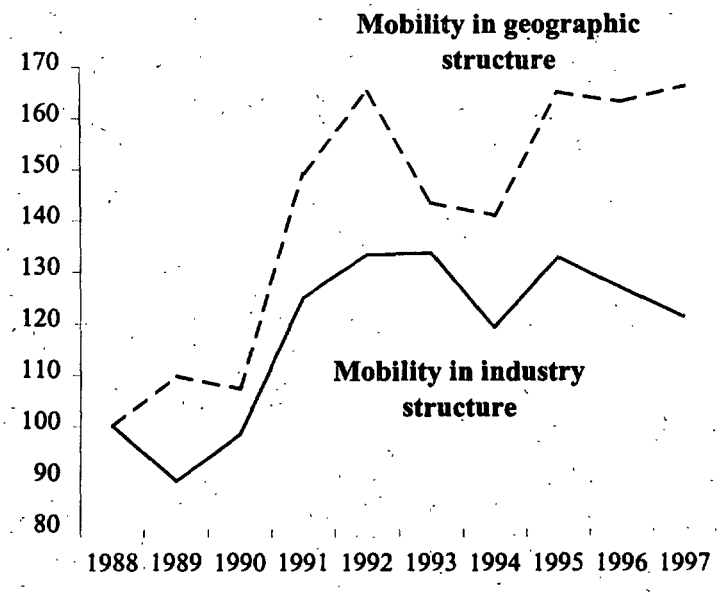


Note: The "speed of structural change" index measures the net effect of structural transformation over a ten-year period. It is computed for each country and separately for value added and exports (total, i.e. extra- and intra-EU) by summing the absolute changes in the sector (i.e. two-digit industry) shares between 1988 and 1998. This index is zero when no industry changes its share and it increases the more industries change their relative positions. This information does not have the same scale as the growth in value added and exports reported on the left-hand side of each figure.
Source: WIFO calculations using SBS and COMEXT (Eurostat).

Looking at the EU as a whole, *mobility is found to have increased since the early nineties*, as economic integration accelerated in line with the Single Market Programme. It declined somewhat over the recession years of 1993-94 (see Figure 6).

On balance, the evidence of the first part of the report suggests that, over the last ten years, the industrial structure of Europe has been changing, albeit relatively slowly. This change has been in line with the objectives of cohesion in Europe: it has not created unfavourable asymmetries between countries and it has tended to favour smaller countries in the periphery of the EU.

Figure 6: Speed of structural change



Note: "Mobility" stands for the absolute change of value added shares (sectors, total EU) over the past three years. For instance, 1988 is the difference between 1988 and 1985 (which is taken as reference and set to 100), 1989 is the difference between 1989 and 1986, etc.
Source: WIFO calculations using SBS (Eurostat).

Structural change in a period of decelerating investment

The observed industrial change becomes all the more important if one considers that it took place in a decade of weak investment activity in Europe.

In the nineties, the annual growth rate of investment fell sharply to 0.8% p.a. (from 2.5% in the eighties). *As a percentage of GDP, gross investment in the EU was close to its post-war minimum* (see Figure 7). The deceleration was only partly due to the overall fall in government investment in Europe. Growth of investment in the private sector also fell sharply. The deceleration concerned mainly, but not exclusively, the manufacturing sector.

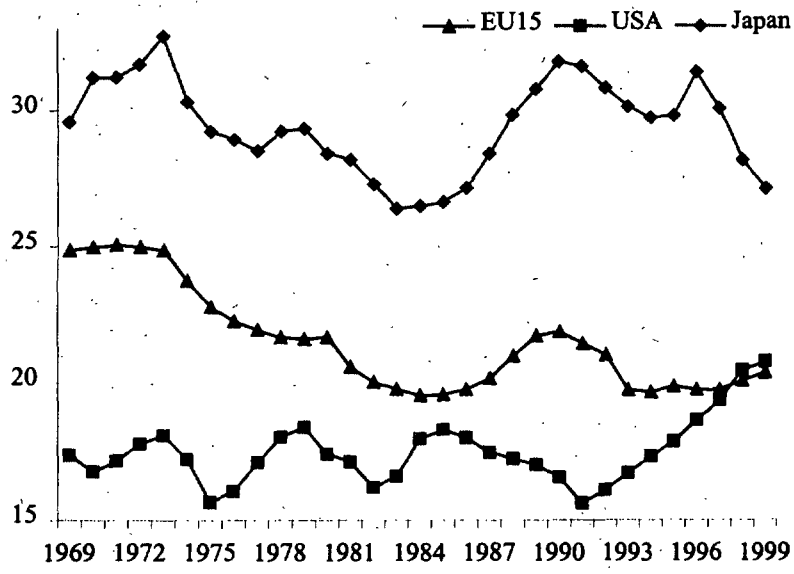
In contrast, recovery and restructuring in the USA were accompanied by a strong acceleration in investment growth (to 5.4% from 2.4% in the eighties). The acceleration was mainly due to private investment in the manufacturing sector.

Within the EU, France, Italy, Finland and Sweden experienced a fall in gross investment in the nineties. Investment activity in Germany and Belgium grew at or below the EU average. The highest rates of growth were recorded in Denmark, Ireland, Luxembourg and Portugal.

Investment growth and employment creation have been positively related in the long run (see Table 2). This relation seems to have become stronger over time.

Low investment is likely to have slowed down structural change, particularly in the recession years of 1993-1994. With the exception of Spain, the "speed of adjustment" of the manufacturing sector in all large European countries (and in Japan) was lower than in the USA. This was in contrast to the eighties when Germany and Japan had the fastest "speed of adjustment" among all large industrialised countries.

Figure 7: Gross fixed capital formation at 1990 prices: total economy (percentage of GDP)



Source: European Commission.

Table 2: Trends in GDP, investment and employment (average annual rate of change)

	GDP			GFCF			Employment		
	1970-80	1980-90	1990-98	1970-80	1980-90	1990-98	1970-80	1980-90	1990-98
Belgium	3.4	1.9	1.7	2.3	2.3	0.9	0.2	0.2	0.2
Denmark	2.2	2.0	2.7	-0.8	1.6	4.4	0.7	0.7	0.3
Germany	2.7	2.2	2.0	1.2	1.6	0.9	0.1	0.6	-0.5
Greece	4.6	0.7	1.9	2.8	-0.4	3.3	0.7	1.0	0.5
Spain	3.5	3.0	2.1	1.6	5.2	1.4	-0.6	0.9	0.6
France	3.3	2.4	1.6	2.5	2.3	-0.3	0.5	0.3	0.2
Ireland	4.7	3.6	7.7	5.7	0.5	5.6	0.9	-0.2	2.9
Italy	3.6	2.2	1.2	1.7	1.6	-0.4	0.6	0.4	-0.6
Luxembourg	2.6	4.5	5.0	2.6	3.7	5.9	1.2	1.7	3.0
Netherlands	3.0	2.2	2.6	0.2	1.9	2.6	0.7	1.1	1.7
Austria	3.6	2.3	2.1	3.7	2.5	3.1	0.3	1.1	1.1
Portugal	4.7	3.2	2.4	4.1	3.0	4.4	0.4	1.2	0.4
Finland	3.4	3.1	1.5	2.1	3.4	-2.5	0.9	0.6	-1.3
Sweden	2.0	2.0	1.0	0.6	3.3	-2.2	0.9	0.5	-1.4
United Kingdom	1.9	2.7	2.0	0.5	4.3	2.0	0.3	0.8	0.0
EU-11	3.2	2.4	1.8	1.7	2.2	0.6	0.3	0.6	0.0
EU-15	2.9	2.4	1.8	1.5	2.5	0.8	0.3	0.6	0.0
USA	3.2	2.9	2.7	3.6	2.4	5.4	2.4	1.8	1.3
Japan	4.5	4.0	1.1	3.5	5.2	-0.4	0.8	1.2	0.5

Note: EU11 = Euro zone.
Source: European Commission.

The business environment of individual Member States has an important influence on investment

There is no single set of factors that can explain investment patterns in European manufacturing during 1985-1995. Both macro-economic factors and the life cycle of products and industries seem to have played an important role.

Investment rates in European industries varied just as much across industries (in the same country) as they varied across countries (for the same industry). Thus, macro-economic policies and national regulatory frameworks may have been as important as industry-specific technological changes and changes in consumer preferences.

Two points are nevertheless worth noting in this respect. First, there is little evidence of a European-wide investment cycle. Variables, such as domestic demand and labour costs, continue to be important determinants of investment at the national level. Thus, despite the process of economic integration, there is still a significant "*home-country effect*" influencing investment.

Second, this "home country effect" does not seem to be exclusively due to differences in the business cycle of Member States. Differences in investment rates of Member States have persisted over a long period, throughout the business cycle and across sectors. This suggests that *there are important differences in the structural characteristics, as well as in cultural and institutional background of Member States, affecting the investment decisions of firms.*

Member States' heterogeneity persists also in intangible investment

Member State's characteristics seem to matter also for the decisions of firms to invest in intangible and in human capital.

Despite the importance of these types of capital for the competitiveness of the economy, our relevant data sources and our understanding of the investment decisions in this field are inadequate.

Based on a broad industry taxonomy by factor inputs, one can gain a glimpse of the heterogeneity that exists in EU (see Table 3).

Table 3: Value added shares in total manufacturing in 1997, %

	Mainstream manufacturing	Labour-intensive	Capital-intensive	Marketing-driven	Technology-driven
Belgium	22.12	15.63	22.24	21.08	18.93
Denmark	29.50	14.68	12.08	28.60	15.13
Germany	28.06	14.13	15.46	16.22	26.13
Greece	19.61	17.71	19.26	35.36	8.06
Spain	21.17	20.78	16.47	26.73	14.84
France	21.94	13.57	14.69	22.10	27.69
Ireland	12.06	6.25	12.56	31.48	37.66
Italy	28.88	19.84	15.90	17.65	17.73
Netherlands	21.50	11.75	19.23	31.20	16.32
Austria	26.39	18.83	16.29	24.61	13.88
Portugal	21.92	23.65	13.94	29.77	10.72
Finland	22.82	14.98	28.59	17.54	16.07
Sweden	21.95	12.07	21.25	16.16	28.57
United Kingdom	22.85	13.21	14.33	25.52	24.08
EU	25.41	15.31	15.55	21.28	22.46
USA	21.26	12.22	13.51	23.17	29.84
Japan	24.86	16.00	16.01	21.00	22.13

Source: WIFO calculations based on SBS (Eurostat).

Different structural patterns reflect differences in the utilisation of technology and in the skill intensity of production methods, both of which affect labour productivity and export unit values.

The empirical evidence suggests that *investment in intangibles is important for competitiveness irrespective of the industrial specialisation of the country.* It is particularly relevant for the competitiveness of high-R&D and high-skill intensive industries.

Labour productivity, in particular, is found to be determined, in order of importance, by the skill-intensity of labour, by the invested physical capital, by the research expenditures and by the advertising outlays.

Multinationals are reorganising into European-wide networks

Industry level data reflect only part of the whole restructuring process and mobility in Europe. A large part of this process takes place within industries, at the micro level. It involves, among other things, the entry and exit of firms, changes in ownership and control of enterprises through mergers and acquisitions, as well as the internal reorganisation of large MNEs.

The strategies and structure of MNEs have changed over time. The establishment of stand-alone affiliates based on a specific territory, operating autonomously and duplicating activities represent old strategies. At present, *an increasing number of MNEs are becoming integrated Europe-wide organisations.* They build, and operate through, production and subcontracting networks that span the whole of Europe (see Table 4).

Table 4: Evolution of the strategies and structures of MNEs

Form	Types of intra-firm linkages	Degree of integration	Environment
Stand-alone	Ownership, technology	Weak	Host country accessible to FDI; significant trade barriers; costly communications and transportation
Simple integration	Ownership, technology, markets, finance, other inputs	Partially strong	Bilaterally open trade and FDI; non-equity arrangements
Complex international production	All functions	Potentially strong overall	Open trade and FDI; IT; convergence in tastes; increased competition

Source: World Investment Report 1993 (United Nations).

The progress in information and communication technologies (ICT) has made access to networks easier for all firms. Nevertheless, it remains true that *larger firms have more possibilities to build and participate in such networks throughout Europe.*

The creation of these integrated enterprise networks has far-reaching effects on European restructuring and integration.

First, the networking of firms is essential for the cross-border transfer of know-how and of proprietary advantages. Second, firms that belong to such a network have an increased ability to reallocate resources internally in response to adverse economic shocks. This increases the adaptability of the whole economic system. At the same time, it limits the margins within which purely domestic policies can be conducted.

Summarising, the second part of this report argues that the weak investment activity of the nineties has, in all probability, made restructuring in EU more difficult. Investment decisions in both tangible and intangible assets are still influenced significantly by country specific structures and characteristics. It is easier for larger MNEs to reorganise their operation to take full advantage of the

Single Market. Policy needs to focus, therefore, on local impediments to investment and on the difficulties of SMEs to build and participate in European-wide networks.

Industrial structure is important in facing world-wide shocks

Adaptability is essential for the resilience of the European economic system to shocks. The redeployment of resources can mitigate the effects of adverse economic conditions in a specific industry or country.

The recent crisis in Southeast Asia is a good example of how a macro shock abroad may asymmetrically hit industries and countries within Europe, necessitating a rapid structural adjustment.

The aggregate impact of the crisis on European manufacturing during 1996-1998 is estimated to have been between half and one percent of aggregate production. As the impact was not concentrated particularly in sectors of high labour intensity, the loss of employment in manufacturing is likely to have been of the same order. In the longer run, the effects of the crisis could still prove more significant.

The overall analysis indicates that *the effect of the crisis on EU manufacturing production was rather asymmetric across industries.* Luxury goods industries stand out as having been hit hardest. Engineering industries also appear to have been highly exposed to the crisis. Basic metals industries have both lost exports and faced tougher import competition at home.

EU countries were also hit asymmetrically, depending on their industrial specialisation (see Table 5).

Table 5: EU manufacturing trade with Southeast Asia (actual and adjusted change in exports and imports) [a]

	Exports % change 1996-1998		Imports % change 1996-1998	
	Actual	Adjusted [b]	Actual	Adjusted [b]
France	3.5	-1.5	37.9	33.8
Belgium-Luxembourg	-13.5	-20.1	33.6	28.1
Netherlands	-19.8	-14.7	55.1	37.7
Germany	-20.1	-19.8	14.6	33.6
Italy	-38.8	-26.8	43.9	36.0
United. Kingdom	-0.3	-14.4	37.0	34.1
Ireland	21.7	3.8	75.4	43.3
Denmark	-7.4	-16.9	36.7	32.1
Greece	-26.7	-24.9	15.6	56.3
Portugal	-26.5	-6.0	16.0	27.3
Spain	-40.2	-20.4	59.6	37.4
Sweden	-23.5	-15.6	11.8	28.8
Finland	-27.7	-15.6	19.0	29.3
Austria	-22.1	-19.7	9.8	32.1

[a] Calculated on trade values.
[b] Using actual sector shares in total extra-EU imports and exports in 1996 for each Member State but assuming average EU growth rates.
Source: NEI (Nederlands Economisch Instituut) using COMEXT (Eurostat).

Export specialisation was an important contributing factor to aggregated falls in the value of manufacturing exports to Southeast Asia for Germany, Italy, Spain, Sweden, Austria, Belgium-Luxembourg and Portugal.

It is less evident whether Member States' import specialisation prior to the crisis had an important effect on the growth rate of imports from Southeast Asia. In Italy and Spain, an even stronger negative effect came through a poor performance of individual industries relative to the EU as a whole.

In conclusion

Adaptability and rapid structural change are essential for the competitiveness of the European economy and its resilience to world-wide economic fluctuations. The 1999 Competitiveness Report argues that:

- In a period of low growth and low investment rates, the European manufacturing system nevertheless appears to have taken advantage of European integration, shifting resources between industries and countries.

- This restructuring seems to have taken place in line with the broad objective of closer cohesion. Data at Member State level does not indicate any strengthening of a "core-periphery" model. On the contrary, smaller countries in the periphery of the EU have tended to benefit most.

- A recovery in investment activity in both tangible and intangible assets will be needed to facilitate the desired structural changes.

- Along with industry-specific factors, there is still a large "home-country effect" influencing investment in both tangible and intangible assets. Emphasis on these local conditions and local impediments is essential for building a favourable environment for higher investment in Europe.

- Cross border networking of enterprises is also essential for restructuring and competitiveness. Large MNEs are already reorganising their internal operations to take advantage of positive network effects in the Single Market. Attention is needed on the networking of smaller firms.

The main challenge for policy makers that stems from the above conclusions is how to release the potential for further adjustment of industrial structures.

Future analysis should seek to identify those factors which play a key role in the adjustment process and the best avenues for influencing them. The implementation of the Economic and Monetary Union, the emergence of electronic commerce and, more generally, the information society are examples of recent developments which encourage structural adjustment. The country-specific structural factors, the importance of which was emphasised in the 1999 Competitiveness Report, can constitute a suitable area for the application of benchmarking techniques.

Beyond enterprise policy, the Commission will continue to exploit the results of its competitiveness analysis within the wider framework of the Cardiff process, the Broad Economic Policy Guidelines and the European Employment Strategy, particularly in relation to structural reform issues.

Limited availability of statistical information, in particular as concerns services, reduced the scope of the analysis. There is a need to look further into the possibilities of improving the statistical tools for the purposes of competitiveness analysis.

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