



EUREN STUDIES □2

Industry *An ambition for Europe*

*Papers prepared for the “European Day of Industry”
on the occasion of the French Presidency of the EU*

Edited by Alain Henriot

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This report has been prepared for the European Industry Day under the French Presidency of the European Union. It has been written by Euren teams and coordinated by Alain Henriot.

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Introduction

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During the last decades, the European manufacturing industry has faced several shocks. In early seventies and eighties, oil shocks have taken their toll on global economic growth and have led to rethink the production process in order to be less intensive in energy. Mid-nineties have been characterised by the information and communication technology revolution that has had among other consequences a positive impulse in productivity gains (even if it was more pronounced in the U.S. than in Europe) and a higher facility to diversify the locations of production. Associated to the deregulation of domestic markets and liberalisation of international capital flows, it has given birth to what is commonly named *globalisation*. Finally, since the beginning of the century, tougher environmental constraints and a strong rise in raw material prices have been new challenges for the European industry.

Because of all those changes, the European manufacturing industry has had to adapt to a changing world. In particular, the emergence of new competitors, like China, has redistributed cards among the industrial world. New comers have challenged traditional manufacturing specialisation of historic European countries. Therefore, European manufacturing companies have had to adapt their products and their process of production continuously, as historical comparative advantages cannot be considered anymore as a guaranty of success for the future.

As manufacturing companies were more and more under competitive pressure, the role of industry as a key driver of global economy has been questioned. True, the increasing share of services in Western economies has mechanically reduced the share in industry. In the European Union (EU), just one fifth of value-added is generated by industry, and this sector employs around 17% of the total persons employed.

However, industry remains a key sector for productivity and innovation, with spill-over effects on the rest of the economy: 80% of EU private sector research and development expenditures are spent in

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the manufacturing industry. In the last ten years², gross value-added per hour worked has increased by 33% in the manufacturing industry, compared to 18% for the whole economy. Of course, this spread in productivity gains can be partly explained by the externalisation of some activities from manufacturing companies to contractors in the services sector (e.g. accounting, cleaning or computers maintenance). But as a major driver of productivity, industry appears as a key driver of potential output. Therefore, it will be a mistake to think that Europe can continue to thrive without a strong industry.

In this context, this report focuses first on main trends and challenges for the European industry. This overview is then illustrated by more specific considerations on crucial factors for the future of the European industry, partly inspired by national experiences.

² 1995-2005, EU-25, source EU KLEMS database.

Industry in Europe: main trends and challenges

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Even though the service sector represents a growing and dominant share in the European economy, manufacturing industry remains of major importance. It remains an essential pillar for innovation and productivity growth, therefore a key element of the competitiveness of European economy.

The Lisbon agenda has identified three top priorities to strengthen economic growth and increase employment (European Commission, 2005):

- Making Europe a more attractive place to invest and work;
- Putting knowledge and innovation at the heart of European growth;
- Shaping policies to allow businesses to create more and better jobs.

It is clear that manufacturing industry plays a key role in reaching those goals. In the communication of the Commission mentioned above it is clearly indicated that *“the main role of industrial policy is to provide the right framework conditions for enterprise development and innovation in order to make the EU an attractive place for industrial investment and job creation.”*

In the context of globalisation, Europe is increasingly facing competition as a location for production, employment, investment and even research-development. Moreover, rapid changes in technology require a higher flexibility of EU manufacturing companies to offer new products and to adapt their production processes.

In the first part of this paper, we give a picture of main stylised facts of the European industry. Then, the question of challenges ahead is addressed.

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1. Industry in Europe: facts and figures

Main trends in the European industry are described, before identifying strengths and weaknesses of the European industry on world markets.

1.1. Main trends in the European industry

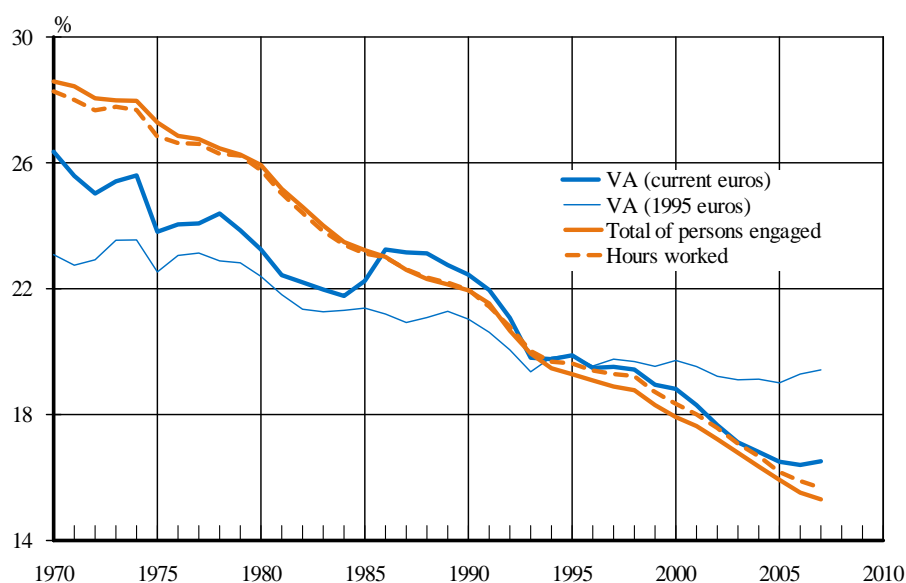
1.1.1. Is Europe suffering from a disindustrialisation?

It is often mentioned that Europe is facing a risk of disindustrialisation, notably because of a relocation of industrial activities in low wages emerging countries. We are wondering here if hard figures confirm those fears.

Actually, during the last decades, three main trends characterised the European industry⁴.

Graph 1

EU-15 Share of manufacturing industries in the total economy



Sources: EU Klems, Eurostat, author's calculations

First, the share of manufacturing industry in the total economy in terms of value added expressed in current euros is declining. While the share of manufacturing industry in total value added reached 25% in early 1970's, it dropped to 16.5% in 2007.

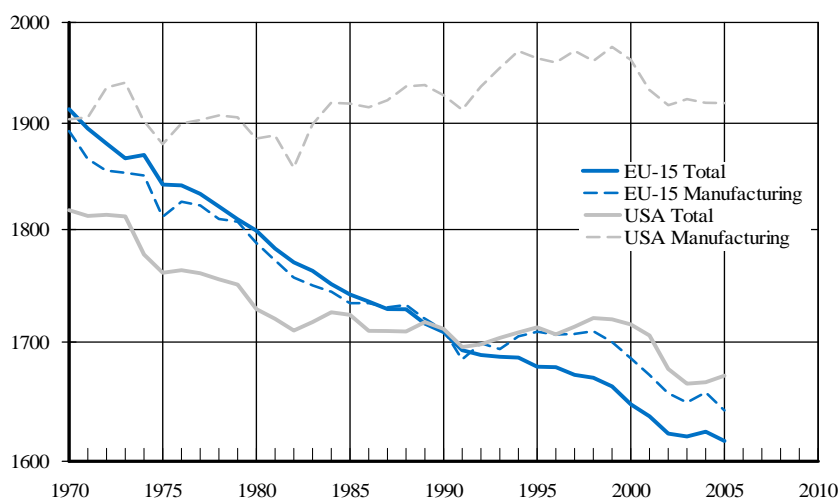
⁴ In this part, we focus on figures regarding EU-15. A wider definition of Europe, EU-27 for example, raises the question of long-term comparison.

However, a more favourable view is given when the weight of industry is measured in constant prices or in other words in volume terms⁵. If it reached 23.5% in early 1970's, it was just one-fifth (19.5%) in 2007, and this share was almost constant in the last ten years. This means that the relative price of manufactured goods declined markedly during this period.

A third element that characterised the European manufacturing industry over the last years is the reduction of the share of manufacturing industry in total employment. It was nearly halved in the last thirty years, from 28% in 1970 to 15% in 2007. One explanation could be the increasing number of part time jobs in the service sector, but the decline of the share of manufacturing industry is also observed in terms of hours worked, so that this argument is not valid for Europe. On the contrary, this argument is probably valid in the U.S. where a large discrepancy appeared over the years between the average working time in the manufacturing industry and in the total economy. Moreover, it can be noticed that the number of hours worked per person in the manufacturing industry is much higher in the U.S. than in Europe.

Graph 2

Hours worked by person engaged



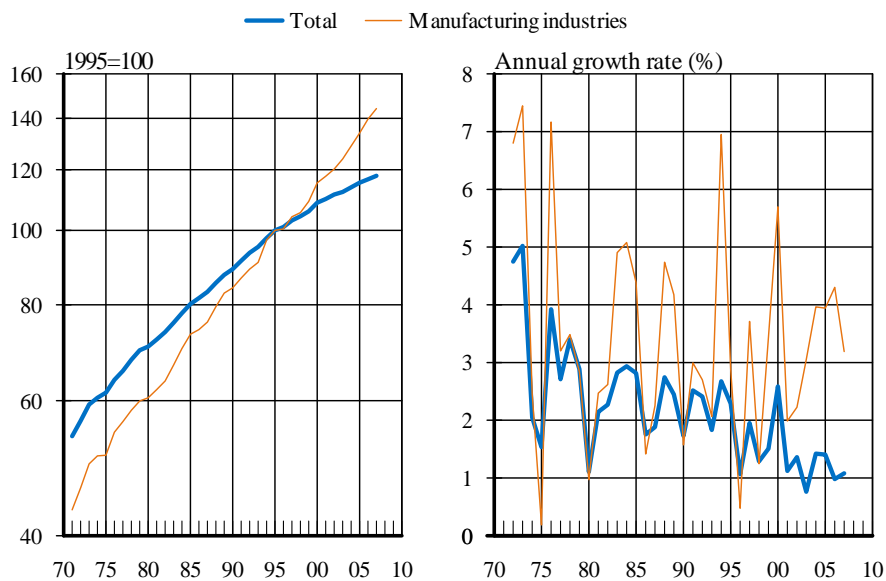
Sources: EU Klems, Eurostat, author's calculations

⁵ By construction, the relative share of manufacturing industry in the total economy is the same in current value or in constant price the base year, here 1995. Therefore, the analysis must not be focused on the level itself of the share of manufacturing industry in the total economy, but on its trend over the time period.

Of course, the downward trend in the share of manufacturing industry in total employment is partly explained by the externalisation of activities by manufacturing companies, like cleaning or accountancy. This translated into a contraction of employment in manufacturing companies compensated by an increase in the services sector. But the decline of the number of employees in the manufacturing industry reflects also productivity gains. On average, productivity gains have been much stronger in manufacturing industries than in the rest of the economy. For EU-15, the long-term average (1970-2007) of the annual growth rate of productivity (value-added in volume terms per hour worked) reached 3.4% in the manufacturing industries compared to 2.3% for the total economy. Productivity growth has been globally maintained over the years, and has even accelerated since 2000, while on the opposite it has slowed down markedly in the rest of the economy (3.5% between 2000 and 2007 in manufacturing activities against 1.3% for the total economy).

Graph 3

EU-15 Value-added per hour worked (in volume terms)



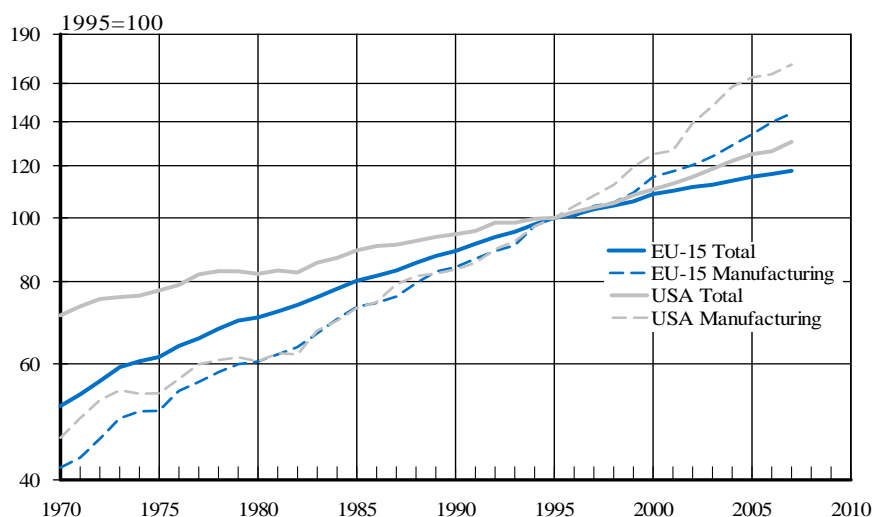
Source: EU Klems, Eurostat, author's calculations

This gap can be explained by two elements. Firstly, the externalisation of some activities by manufacturing companies is a source of discrepancy in productivity gains between manufacturing industries and the services sector. Secondly, the acceleration in productivity gains in the manufacturing industries is also the consequence of a more intensive use of information and telecommunications

technologies. However, those changes were less favourable than in the U.S., where the acceleration was much more pronounced in the mid-1990's, while productivity growth in manufacturing industries grew almost at the same rate in the U.S. and in Europe in the 1970's and in the 1980's.

Graph 4

Value-added per hour worked (in volume terms)

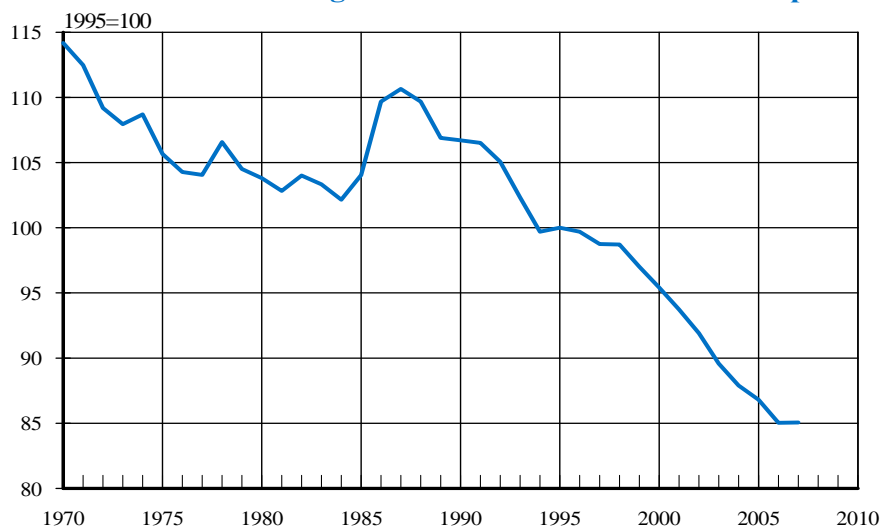


Source: EU Klems, Eurostat, author's calculations

In turn, those productivity gains explain the reduction of the relative prices in manufacturing products, compared to the rest of the economy.

Graph 5

EU-15 Manufacturing industries: value added relative price



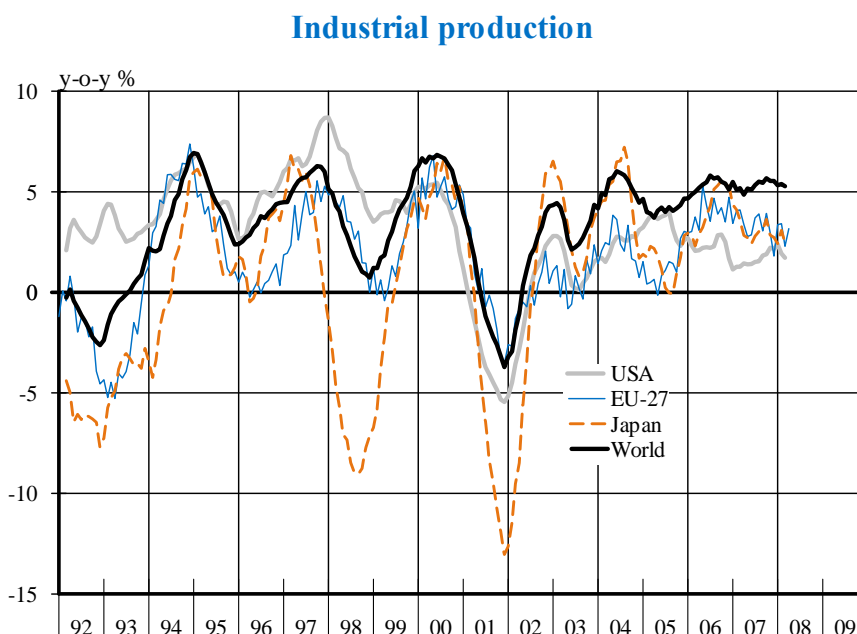
Source: EU Klems, Eurostat, author's calculations

1.1.2. The European manufacturing industry and its competitors

As mentioned above, the share of manufacturing industry in the total economy was almost stable in the last ten years when it is measured in constant prices. In other words, the value added generated by the manufacturing industry grew at the same rate than GDP. Between 1970 and 2007, total economy value added for EU-15 increased on average by 2.5% annually, including a 2% growth for manufacturing industry. On the most recent period (1995-2007), total economy annual growth rate was a bit lower (2.3%), and almost stable in the manufacturing industry (2.1%).

How the European performance can be compared to other countries? Naturally, one of the most striking stylised facts of the last decade is the emergence of new competitors producing and exporting manufactured goods. Therefore, European manufacturing production⁶ has grown at a lower rate than world industrial production since the beginning of the 1990's. However, the gap between Europe on the one hand and Japan or the U.S. on the other hand has been offset in recent years. If in the 1990's, U.S. manufacturing production grew faster than European production, it has not been the case anymore since the beginning of the 2000's.

Graph 6

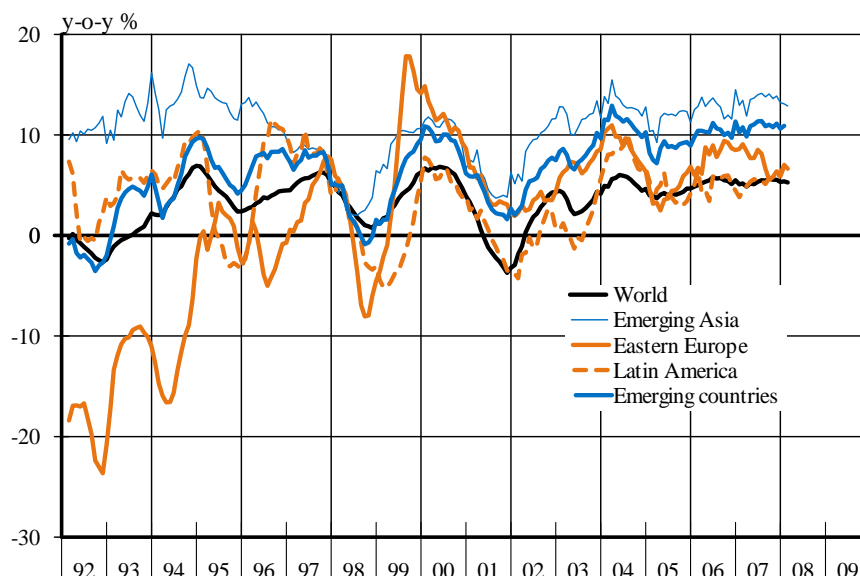


Source: Global insight

⁶ Here, we refer to EU-27.

Graph 7

Industrial production



Source: Global insight

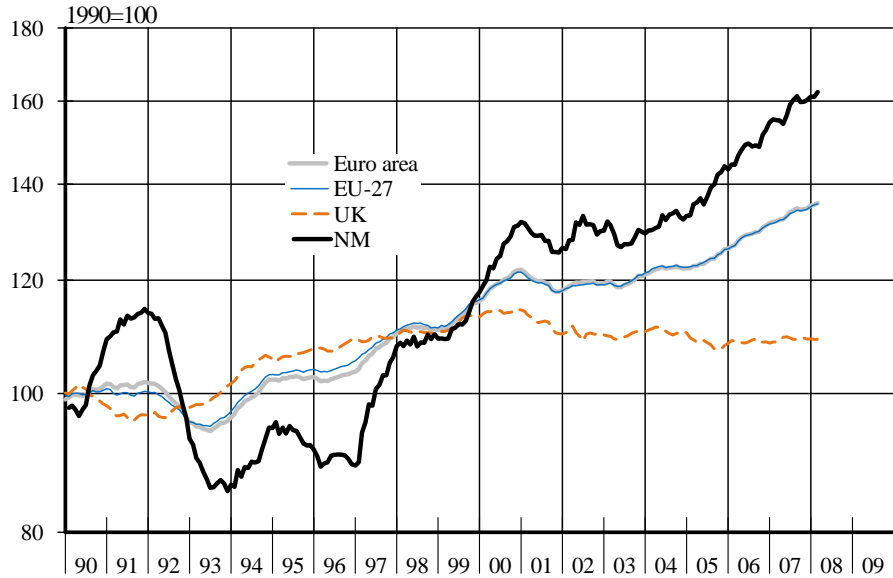
Across the European Union (EU), some differences can be noticed considering the trend growth of manufacturing production since the beginning of the 1990's. Manufacturing production has slightly decreased in the U.K. since 2000. On the opposite, after an initial downward adjustment, the integration of new member states (NM) in the EU has been characterised by a strong acceleration of manufacturing production. Manufacturing production in the Euro area grew over the last two decades at the same rate than EU-27 manufacturing production, but at a lower rate than new Member States (NM). This can be interpreted by a catching-up process of new Member States, whose on average GDP per capita reached only in 1990 47.1 % of the Euro area. It also means that the localisation of manufacturing activities has gradually moved eastward with the enlargement process, attracted by expanding markets and attractive labour costs.

Across Euro area countries, the growth trends of manufacturing production have also differed in recent years. After lagging behind other countries all along the 1990's, a sharp recovery of German manufacturing production occurred in the 2000's. On the opposite, Italian manufacturing production has almost stagnated in recent years, while France underperformed relative to the Euro area average. This gap can be partly explained by discrepancies in the development of unit labour costs. Some studies have also mentioned the fact that the

adoption of the Euro as a single currency might have led to a concentration of some activities in the geographic centre of the European Monetary Union, in order to benefit from economies of scale. Germany would have therefore taken advantage of its geographic position (de Nardis, de Santis and Vicarelli, 2008).

Graph 8

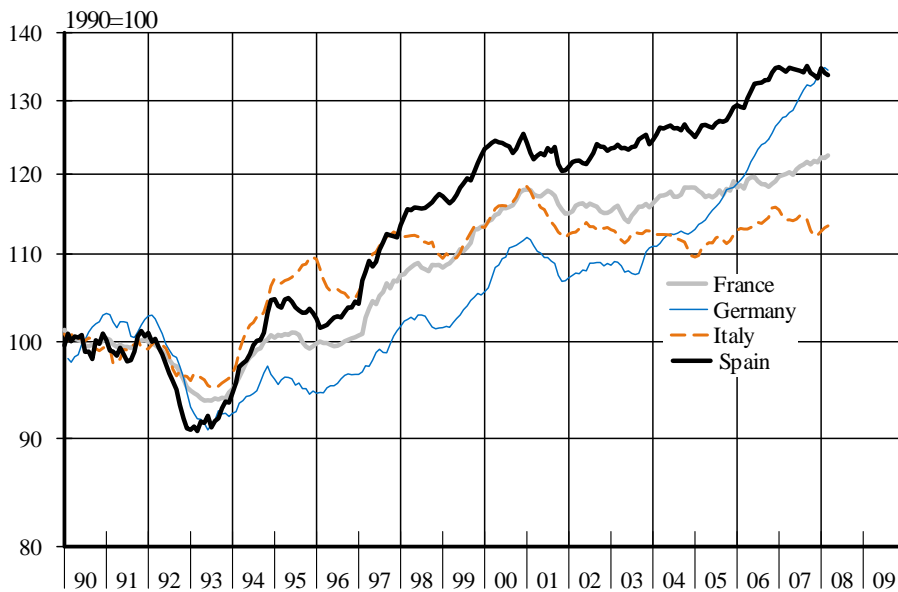
European Union - industrial production



Source: Global insight

Graph 9

Euro area - industrial production



Source: Global insight

Additionally, it is worth to measure the share of Europe in world manufacturing industries. This can be done through two main approaches, relying firstly on exports and secondly on value-added. The following table describes main trends in manufacturing activities over the last ten years. Regarding exports, Europe has succeeded in the most recent period to consolidate its market shares. It is true when EU-15 is considered as well as EU-27, and it is also true when intra-regional trade is excluded. This is essentially due to the sharp improvement in German export performance⁷. Considering value-added, things are a bit different. The share of Europe decreased in the first half of the 2000's, mainly because an impressive increase of the share of China in world manufacturing value-added that doubled in the last ten years. Interestingly, it must also be noticed that the share of Europe fell below the U.S. share, while it was above in mid-1990's. A specific country approach also shows that in terms of value-added, the German performance is less impressive than in terms of exports. This supports the idea that Germany sells the world products that are not fully produced in the country, what Sinn (2003) described as the bazaar economy.

Table 1
Share in world manufacturing exports and value-added

GROUP COUNTRY	<i>Manufactured Exports (share in %)</i>			<i>MVA (share in %) in constant 2000 US\$</i>		
	1995	2000	2006	1995	2000	2006
EU-15	43.9	38.9	40.4	25.9	24.2	21.8
EU-15 (excluding intra-EU 15 trade)	23.3	20.9	22.3	-	-	-
of which						
France	6.0	5.3	4.8	3.4	3.3	3.0
Germany	12.2	10.2	12.0	7.4	6.8	6.3
Italy	5.6	4.6	4.4	4.2	3.6	2.9
Spain	2.0	2.0	2.1	1.7	1.7	1.6
United Kingdom	5.2	4.8	4.2	4.5	4.0	3.3
EU-27	45.8	41.3	44.1	27.1	25.6	23.4
EU-27 (excluding intra-EU 27 trade)	22.6	19.8	21.0	-	-	-
China	3.6	5.7	11.7	5.1	6.7	10.6
USA	11.9	13.1	9.3	24.5	26.7	25.1
Japan	11.7	10.0	7.5	20.4	17.9	15.8

Sources: *Cepii-Chelem database and UNIDO*

⁷ See Roland Döhrn and Torsten Schmidt's paper in this report.

1.2 Strengths and weaknesses of the European manufacturing industry on world markets

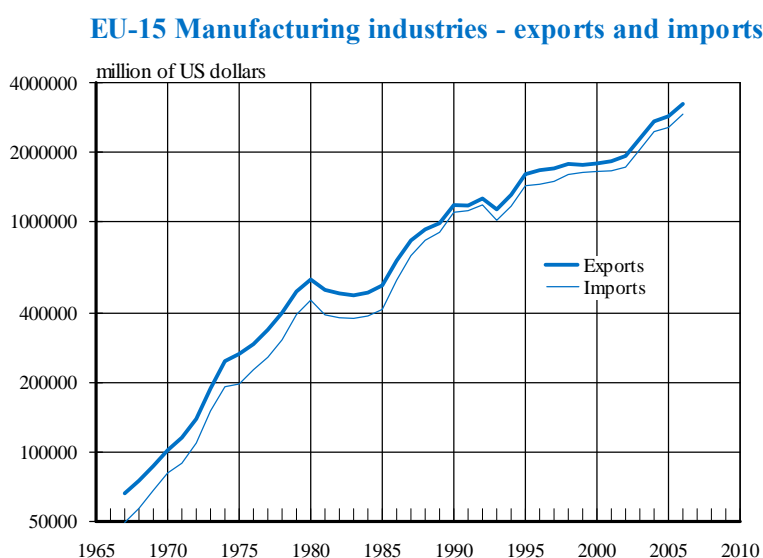
1.2.1. Is there a relocation of manufacturing activities outside Europe?

Strengths and weaknesses of the European manufacturing industry on world markets can be examined through the trade channel. This approach does not give an assessment of the competitiveness of European manufacturing companies but rather an assessment of the competitiveness of Europe as a place to produce manufactured goods and employ people.

One fear often mentioned is that Europe becomes less and less competitive to locate industrial activities, compared to alternative places especially in emerging countries. If the argument was right, we should observe a decline in European exports of manufactured goods and an increase in imports, stemmed by affiliates of European companies established in emerging markets.

As it can be seen with the series of the graphs below, European manufacturing imports didn't grow much faster than exports over the last fifteen years. The trade surplus measured in dollar terms even increased. Of course, national stories differ, Germany benefiting since the beginning of the decade from a large trade surplus while Spain has suffered from a sharp deterioration of its trade balance, but those data do not show a global relocation of industrial activities outside Europe.

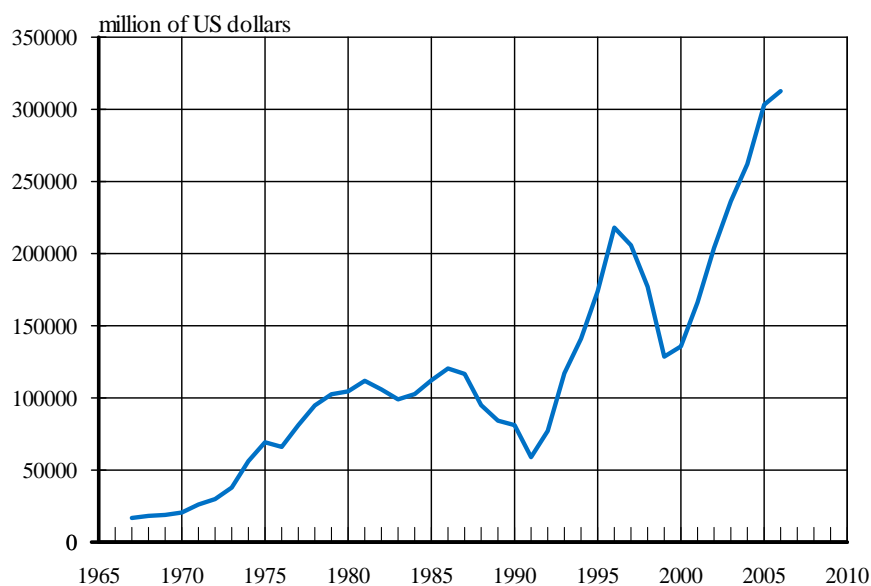
Graph 10



Source: Cepii-chelem database

Graph 11

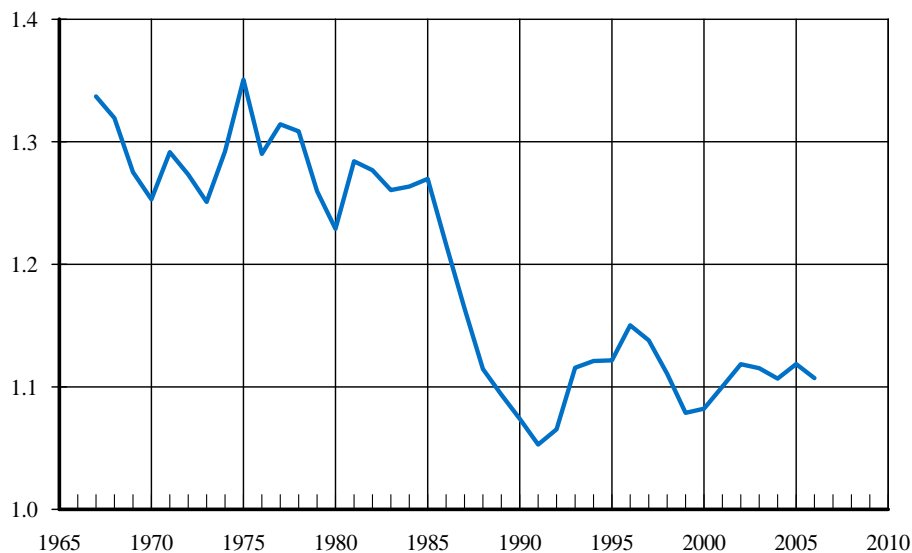
EU-15 Manufacturing industries - Trade balance



Source: Cepii-chelem database

Graph 12

EU-15 Manufacturing industries - ratio between exports and imports



Source: Cepii-chelem database

1.2.2. What are the main comparative advantages of Europe?

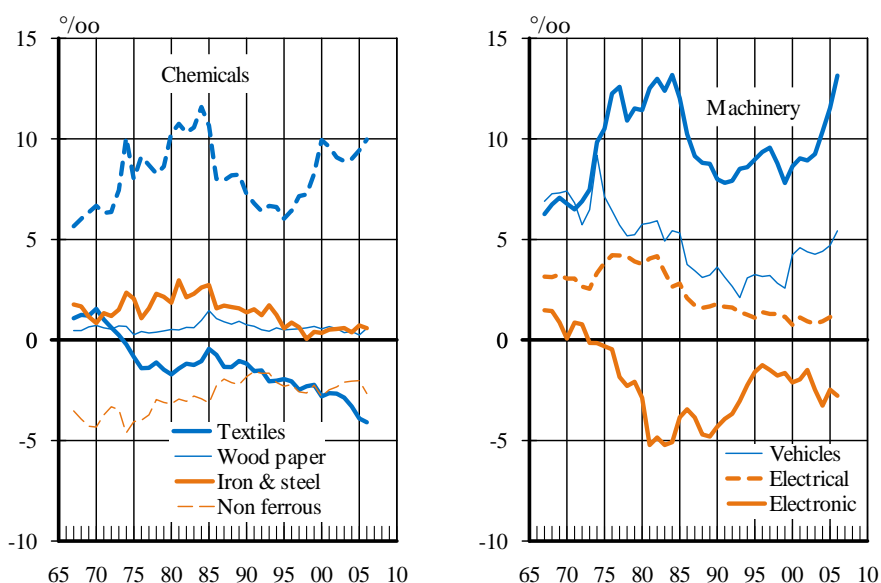
To analyse more in details trade data and its implications on the assessment of the competitiveness of European manufacturing industry, the concept of revealed comparative advantage (RCA) is

traditionally used. To explain trends in trade balance for a given activity, this type of indicator allows to discriminate between the consequences of macro-economic factors (global activity, exchange rates ...) and specific factors. It can be interpreted as the contribution of each sector to the global trade balance⁸. A positive value shows that the trade balance of a given industry is better than total trade balance, while a negative value indicates that trade balance is worst for this industry than for total trade. Therefore, those indicators must be understood as highlighting relative positions and not absolute situations.

Those indicators give a view of the international specialisation of Europe at an aggregated level. Mechanical engineering and chemical industries are in a position of comparative advantage. Textiles, non-ferrous metals and electronics are below the average.

Graph 13

EU-15 Revealed Comparative advantages - ‰ GDP



Source: Cepii-chelem database

On a more detailed basis, various types of products can be classified according to their level of comparative advantage revealed by the observation. By construction, the average for all industries is null, so that there are necessary some industries in positive situation and others in negative situation. Specialised machines, pharmaceutical products, engines and cars in a position of comparative advantage.

⁸ For a detailed presentation, see <http://www.cepii.fr/francgraph/bdd/chelem.htm>.

Textiles, computers, consumer electronics goods are in a negative situation.

Table 2
Comparative advantages of Europe (EU-15) by products (2006, ‰ of GDP)

Comparative advantages above the average		Comparative advantages below the average	
Specialised machines	3.95	Clockmaking	-0.21
Pharmaceuticals	3.60	Ships	-0.27
Engines	2.73	Carpets	-0.37
Cars and cycles	2.48	Miscellaneous manuf. articles	-0.60
Plastic articles	2.03	Leather	-0.76
Miscellaneous hardware	2.00	Non ferrous metals	-1.76
Toiletries	1.78	Consumer electronics	-1.82
Commercial vehicles	1.75	Knitwear	-1.89
Construction equipment	1.72	Clothing	-1.91
Precision instruments	1.46	Computer equipment	-3.19
<i>All industries</i>	<i>0</i>		

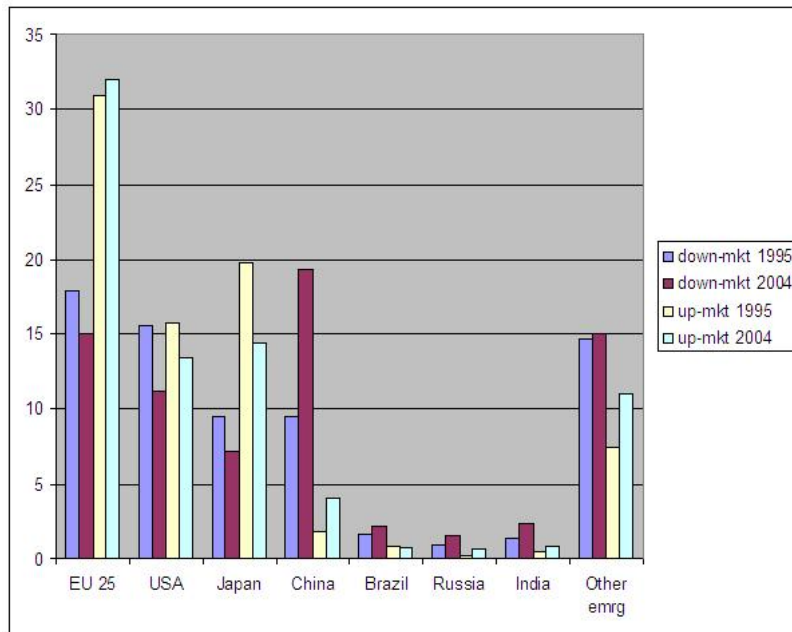
Source: Cepii-Chelem database

The table above allows to identify main industrial activities in which Europe has a comparative advantage in world competition. For the future, it should also lead to raise two series of questions. Firstly, what kind of changes those industries are going to know in the coming years in terms of competitors, product mix and process of production? Subsequently, this should lead to ask what kind of advantages can offer Europe to attract world investors in those industries?

It must be mentioned that international specialisation must not be appreciated only by industries, but also by stages of production. This division of labour is therefore organised using the main assets of the different countries: products are assembled in countries where labour costs are low, while more developed economies focus on activities with higher content in high skill labour. Secondly, the countries or regions specialisation must not be considered only across products or across industries, but also across varieties. Recent studies on very detailed databases show that Europe⁹ is specialised on up-range markets and has succeeded in recent years to keep its market shares in the upper market (Fontagné, Gaulier and Zignago, 2008).

⁹ In this study, Europe refers to EU-25.

Graph 14
World market shares (intra-EU excluded) for standard manufactured goods, by market segment (1995 and 2004, percent)



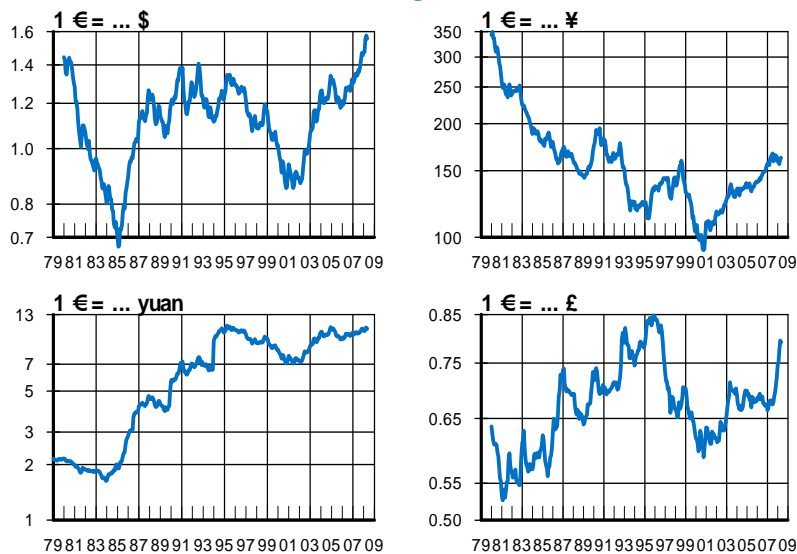
Source: Fontagné, Gaulier, Zignago, 2008

1.2.3. Exchange rate and competitive position of Europe

Competitiveness can be assessed either by the results (market shares) or by underlying factors. Price competitiveness in the short run can be strongly affected by exchange rates movements.

Graph 15

Exchange rates

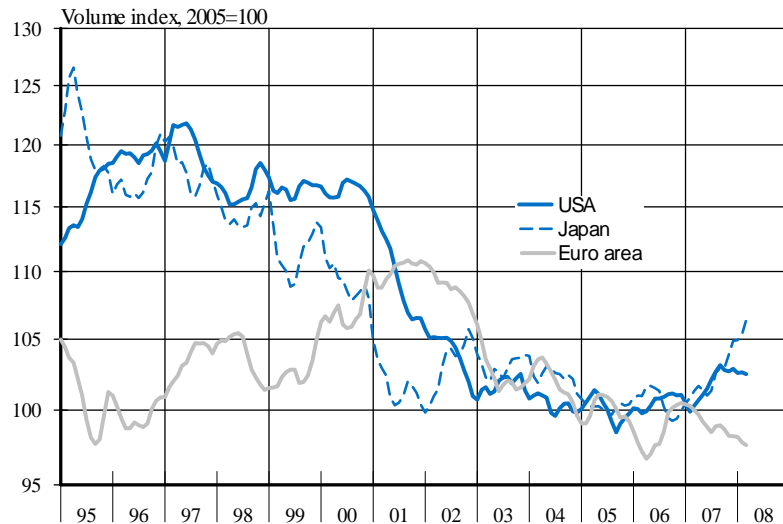


Source: Global insight

Over the last years, the appreciation of the Euro has constituted a brake in export developments of the Euro area members, although some countries have succeeded in counterbalancing this disadvantage by other factors, especially Germany.

Graph 16

Export performances *

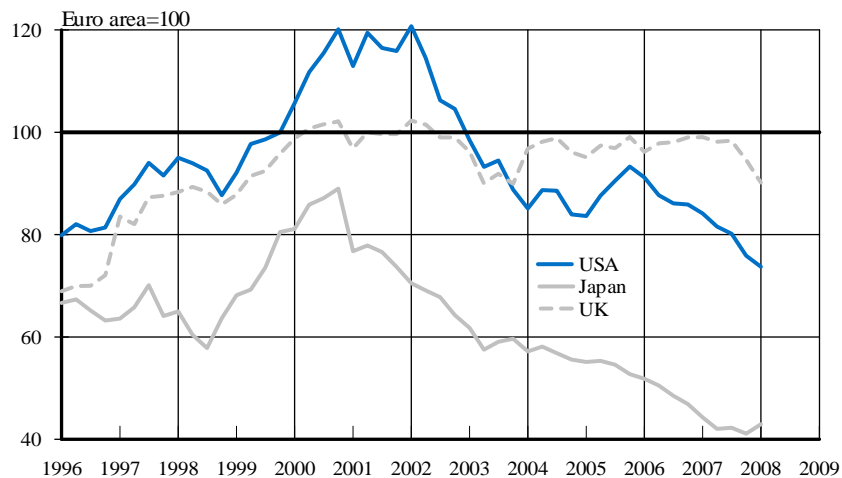


Source: Coe-Rexecode
* Exports / world demand

Regarding hourly labour costs in the manufacturing sectors, the position of the Euro area has recently substantially worsened in the wake of the appreciation of the Euro.

Graph 17

**Hourly labour costs
Manufacturing industries**

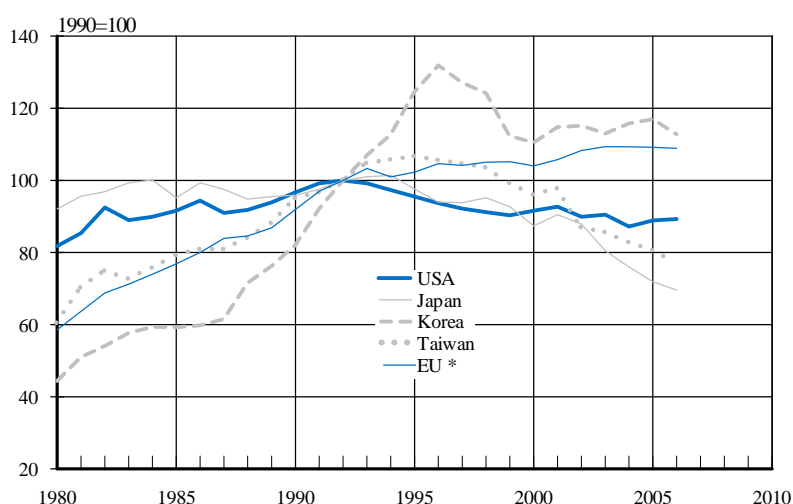


Source: Eurostat

The same trend appears when unit labour costs are considered although at a lower extent, the efforts made by Euro area countries to control unit labour costs having been offset by exchange rates changes.

Graph 18

Unit labour costs (in dollar terms)



Source: BLS

* EU=Belgium, Denmark, France, Germany, Italy, Netherlands, Spain, U.K.

2. Main challenges for the future

If the European industry has given signs of resilience in recent years, it faces many challenges ahead. According to a recent UNCTAD survey, transnational corporations FDI are very attracted by Asia for their foreign direct investment (FDI) in manufacturing industries, due to expanding markets and competitive labour costs. Europe suffers from a low ranking. By comparison, Western Europe benefit from a better ranking in the services sector, in line with the necessity to be close to markets for many of those activities.

Table 3
Attractiveness of regions for FDI
in the manufacturing and services sector 2007-2009
(percent of responses)

Host region	Manufacturing	Services
South, East and South-East Asia	50	28
New EU-12	4	7
Latin America	10	2
North America	12	11
Other developed countries	3	7
South-East Europe and CIS	10	12
Sub-Saharan Africa	2	4
West Asia	3	3
Western Europe	5	26
World	100	100

Source : UNCTAD

Of course, this kind of survey must be taken cautiously. It would be necessary to confront it with hard data. However, it is well known that in balance of payment statistics a large part of FDI is made by holdings. This is why sectoral comparisons of FDI are not reliable, as this leads to underestimate the weight of FDI in the manufacturing and services sector.

Higher transportation costs in the wake of energy price hike or an economic downturn in emerging countries might alleviate the competitive pressure for Europe. However, this kind of prospects highlights clearly a threat for the European manufacturing industry, implying clearly joint reactions of public authorities and of the private sector.

Four main future challenges are mentioned hereafter: business environment, education, research-development and environmental policy.

2.1. A friendly environment for business

Business environment does not concern of course only manufacturing industry. Nevertheless, facing many changes in terms of markets, competitors, regulations, European manufacturing companies have to adapt quickly to this changing environment. Indeed, reactivity can be considered as a key of success in a changing world.

This raises the question of the aim of industrial policies. In the 1970's, this concept was understood as the responsibility of public administrations to identify strategic activities and to undertake medium term programs to encourage the development of those

activities as well as to provide aid and protection for industries regarding as strategic. Nowadays, industrial policy has probably to be rethought. Its role might be to provide the appropriate framework for enterprises in order to make Europe an attractive location for manufacturing activities in terms of investment and job creations. A clear distinction can be made between sector-specific industrial policies and horizontal industrial policies (EEAG, 2008).

This can include several intermediate goals, both at the national and at the European level. For instance, over the last years, several European countries have undertaken structural reforms to make more flexible their labour markets. Another key element regarding the location of industrial activities inside Europe is to maintain a fair competition between countries and to avoid any kind of distortions (tax system, trade barriers ...) that can prevent an optimal distribution of resources. This is clearly a condition of the sustainability of the existence of the European single market. A typical topic to be discussed at the European level regards foreign commercial policy. It must be oriented towards a clear strategy of reciprocity of openness of third markets. If accessibility by non EU companies to the European market must be encouraged, it must be balanced by an easy access to third markets for European companies. Another crucial issue to be debated at the European concerns intellectual property rights, which are a factor of competitiveness.

It is also vital for European companies to have a visibility of the business conditions in the medium term. For instance, if new environmental rules have to be implemented, the time schedule of those changes has to be well known. It can be very costly and counterproductive for European firms to have to adapt to ever changing rules of the games.

2.2 Education: a key of success

In the current context, it appears clearly that Europe cannot compete with other places for job creations in some industrial activities because of the gap of labour costs. What is true today for historic European industrial countries can also become rapidly true for new Member States as their labour market is often rather tight and as immigration has increased the scarcity of labour force for some specific skills.

In order to remain competitive, Europe has therefore to build other assets. Education is naturally a key element. Because of the financial bubble on the first half of the 2000's, many young students have been

attracted by financial industries. It has contributed to the difficulty for manufacturing companies to hire young talented engineers.

More generally, industrial European companies need skilled workers at all levels –workers, supervisors, engineers- to answer to the creation of ever more complex and innovative products. This is also a fundamental element to help European industrial companies to increase service offering and to offer customised solutions. It can be a key of success to resist to the waves of mass products provided by emerging countries.

Indeed, the main risk for Europe would be to become non competitive compared to low labour costs countries, but not to be able to meet technical requirements coming from the most developed competitors (the U.S. and Japan).

2.3. Boosting research and innovation

In the context of the emergence of new competitors, it is widely admitted that research and innovation can allow to keep the technological leadership and thus to compensate costs handicaps of companies operating in Europe. The question is how to favour research activity, especially in manufacturing industry that concentrates 80% of EU private sector R&D expenditures. In 2007, EU-27 gross domestic expenditure on R&D performed by industry totalled U.S. \$ 167 billions on PPP basis against 61.7 billions in China and 107.2 billions in Japan, but compared to 240.9 billions in the U.S. Moreover, EU-27 accounted for 29% in triadic patent families in 2005¹⁰, a bit less than the U.S. (31.4%) and Japan (29.8%).

For some activities, differentiation of products, supplying of niches are crucial for business and competitiveness. In this context, innovation of products and processes are as important as fundamental researches to remain a key player. R&D activities have therefore to be oriented towards applied researches, even though fundamental and academic research remains key elements for the future. It means that enterprises have to be considered as key players for innovation.

For some activities, economies of scale require probably to foster European enterprises co-operation in order to meet global requirements. In the past, aeronautics and spatial activities have given a good example of such co-operation. It does not mean that it should

¹⁰ This statistic Includes only OECD countries.

translate into mergers of European companies but this type of co-operation should be rather based on alliances. For instance, some car producers have already co-operated on the development of engines, without capitalistic linkages.

In this context, public-private partnership must be encouraged. Of course, it can take the form of tax incentives. In order to encourage transnational co-operation, it could be also implemented at a European level. Public-private partnership can also take the form of deeper co-operation between universities and enterprises. Fundamental research undertaken should also be followed by innovation of private enterprises in order to meet demand criteria.

2.4. Threats and opportunities due to the environmental policy

Environmental issues have been placed at the heart of political and societal preoccupation in recent years. It covers a wide range of aspects like global warming and more widely durable development.

Regarding, the greenhouse gas emissions Europe can be classified as the good student compared to other regions. In 2005, EU-27 represented 12% of world emissions, less than China. Moreover, European emissions were lower in 2005 than in 1990, although it slightly increased in the first half of the decade. This can be compared to a strong increase in BRIC's¹¹.

Table 4
Greenhouse gas emissions (Gt eq. CO₂)

	1990	1995	2000	2005
France	0.5	0.5	0.5	0.6
EU27	5.4	5.1	5.0	5.2
USA	6.3	6.6	7.2	7.3
Canada	0.6	0.7	0.7	0.7
Japan	1.2	1.3	1.4	1.4
China	3.9	5.0	5.2	7.5
India	1.6	1.8	2.2	2.4
Brazil	1.2	1.2	1.8	1.9
Russia	3.1	2.2	2.2	2.2
World	34.4	35.3	39.0	43.3

Source: IEA

European environmental policy aims therefore at being exemplar in order to encourage other countries to adopt a comparable

¹¹ Brazil, Russia, India and China.

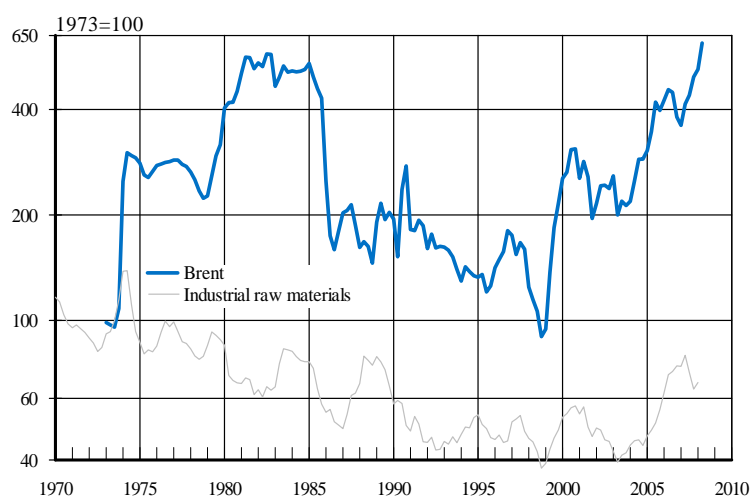
environmental regulation. If it remains an isolated policy, it will not have a strong impact on global environmental conditions and could also be a source of weaker competitiveness of Europe as a location for manufacturing activities.

This gives some guides for environmental and industrial European policies. The additional cost derived from environmental constraints and regulations must be shared at the world level. Otherwise, it could lead to a relocation of activities in places where environmental regulations are weaker than in Europe. It also raised a very tough question which is the control of environmental labels for products consumed in Europe. For finished goods, the question can be solved rather easily. But when environmental constraints concern the production process and not the finished product itself (for instance in chemical industries), this raises the question of how controlling the compatibility of the process used outside the Union? Otherwise, goods might be imported from countries with a low level of environmental regulation that are translated into lower production costs.

On the other hand, environmental constraints can also be an opportunity for European companies. It will imply the apparition of new technologies, in which Europe must get a comparative advantage to be a key player on those markets. In this way, it can transform a constraint into an opportunity. Of course, in a world characterised by a relative scarcity of raw material, and consequently by higher prices, the use of technologies less intensive in energy can also be a source of competitiveness.

Graph 19

Raw material prices *



Source: IMF et Global insight
* deflated by French consumer prices

Conclusion

Several scenarios can be imaged for the future of the European manufacturing industry.

In a gloomy scenario, competition of emerging economies (China, India, Brazil, ...) leads to a shrinking of industrial activities in Europe. In this scenario, GDP growth would be probably substantially reduced as business services activities would also diminished and more generally the purchasing power of European people because of spill over and multiplier effects on employment. Some countries have succeeded in keeping honourable economic growth despite difficulty in the industry sector. But they have benefited from the emergence of other activities (financial industry in the U.K., oil industry in Norway) that cannot be replicate at the level of a region like Europe.

However, Europe has in hands the tools to avoid this gloomy scenario. Risks and constraints rising from past trends developments have been clearly identified in the first part of the paper. The comparative advantages of Europe are going to be more and more challenged in the future, in upper markets by the U.S. and Japan and in lower markets by emerging countries. However, Europe can face this intensifying competition through different channels:

- Answering to niche markets in advanced industrial activities (mechanical engineering, up range textiles, pharmaceutical products ...);
- Focusing in high value added activities in which Europe has or can develop a technological leadership (energy saving engines for cars and aircrafts, chemical products ...);
- Developing a fruitful co-operation between European historic industrial countries and new EU members by extending what has been done by German companies (outsourcing of input) at the image of Japan with other Asian countries.

It should be the main goal for a European industrial policy to give opportunities for enterprises to face those new challenges in order to keep a competitive European manufacturing industry in the coming years.

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On the export performance of German industry: What lessons for the Euro area ?

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Since 2001, when its exchange rate reached a historic low, the Euro appreciated considerably against the Dollar. It is plausible that this had a dampening effect on Euro area exports. However, despite of the fact that the exchange rate is the same for all Euro area members, some countries seem have done better than others. This is particularly true for Germany. Whereas in 2007 total exports of the Euro area to the rest of the world were 50% above their 2000 level, German shipments to countries outside the Euro area surpassed it by almost 70% up (graph 1). This implies that non-German exports increased by only 40% between 2000 and 2007. Of course, exchange rates also left their trace in the German export performance. In 2003 as well as in 2007, when the appreciation of the Euro has been particularly strong, German exports stagnated more or less. In the U.S. market even a fall in exports was recorded. Nevertheless, Germany seems to have suffered less from the Euro appreciation than other Euro area countries did.

Graph 1

Extra-Euro area exports



Source: Eurostat, Deutsche Bundesbank

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In the following, we try to explain why German exports have been so robust compared to the rest of the Euro area. To do so, several factors have to be taken into consideration. First of all, the composition of world trade growth might have favoured German exporters. In this context, regional factors as well as the product structure may have played a role. A positive regional effect means that markets to which German linkages traditionally are particularly close grew faster than other markets. A product structure effect would come into play, if the demand for goods which Germany is specialised on has grown faster than the demand for other products. We will come to these factors in the first section of our paper.

Secondly, the price competitiveness has to be considered. It could have increased in Germany compared to other Euro area countries. Companies may take several measures to enhance their competitiveness. Raising labour productivity – e.g. by intensifying capital intensity – is one option, reducing labour shares another; streamlining the entire value added chain – e.g. by increasing supplies from low cost countries – a third one. Whatever measure is taken, if companies are more successful in doing so than their competitors, it is aimed to bring about a real depreciation which can – at least partially – compensate a nominal appreciation, or amplify a nominal depreciation. Price competitiveness and its sources are in the focus of the second part of this paper.

As a third reason, the reaction of companies to exchange rate changes must be considered. Of course, their possibilities to react are linked to the products they exports as well as to their technological capabilities. However, reactions will differ. Whereas medium sized companies, for which market entry costs are high often, are inclined to defend their market position abroad by lowering their export price or offering additional benefits to their customers, large multinational companies might switch their production between locations to circumvent the consequences of exchange rate variations. Skill intensity of production can also make a difference. Exporters needing highly qualified personnel will take all measures to hold their staff to avoid future hiring and qualification costs when the export conditions will have improved. Our third section will focus on the behaviour of German exporters and their competitors in other Euro area countries.

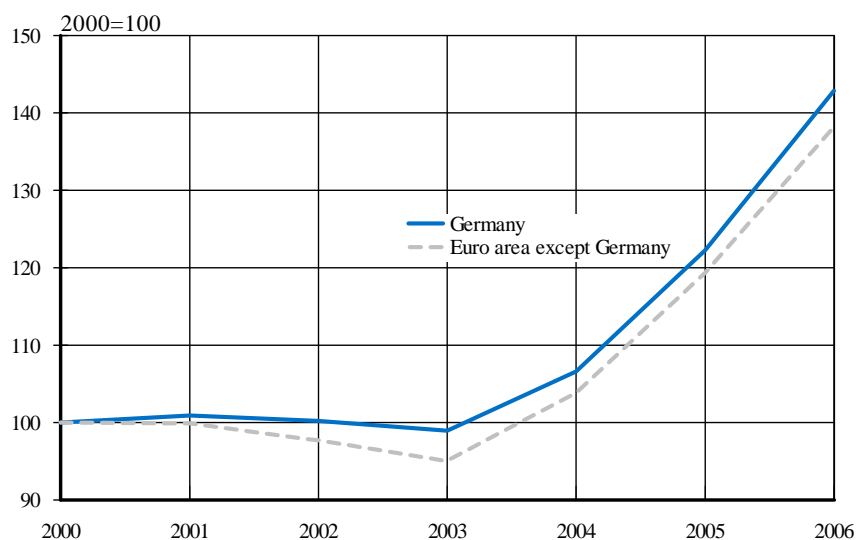
1. Regional and product specialisation

As a first aspect, the regional specialisation of exports will be examined. Comparing the directions of extra-Euro area trade between Germany and the other Euro area countries, some clear differences appear. Firstly, German exporters concentrate more on Eastern Europe, where economies grow stronger. In 2000, which serves as a starting point of the further calculations, the new member states had a share of 13.8% in Germany non-Euro area exports compared to 7.6% in the rest of the Euro area. Also Russia received a higher share (2.0% vs. 1.6%). Secondly, also in the fast growing Asian countries, German exporters were more active, although the picture is somewhat more mixed. China attracted 2.8% of German exports, but only 1.7% of the other Euro area member's shipments. For the other Asian countries, the differences are less pronounced, and in India Germany even is an underperformer. On the other hand, also the United States' importance as an export destination is greater Germany than in the Euro area.

Hence, it is not quite clear whether differences in the regional export patterns were beneficial for Germany. Therefore, we try to isolate the regional factor, by weighting the import development of the main trading partners by their share in the German respectively in the Euro area (less Germany) exports in the year 2000. The figures thus calculated can be interpreted as hypothetical trade which would have been realised if only the regional structure of global trade had changed and the market shares would have been remained the same between 2000 and 2006. They show that Germany indeed benefitted somewhat from the shifts in global trade, but the total effect was rather small (graph 2).

Graph 2

Regional factor in exports *



Source: Authors' calculations.

* Growth in the most important export markets weighted with the share of the markets in total exports in 2000

As a next step, the product pattern of trade is considered. Two indicators calculated by UNCTAD may shed some light on the differences in the composition of exports between Germany and other Euro area members. The first is a diversification index measuring how strong the export pattern of a country on the product level deviates from the global pattern. The second is a specialisation index measuring the width of the export pattern, i.e. how many products contribute to total exports.

Table 1
Diversification and specialisation of the exports of Euro area countries

	Diversification index ¹			Specialisation index ²		
	1995	2000	2006	1995	2000	2006
Germany	0.273	0.282	0.285	0.077	0.096	0.089
France	0.257	0.279	0.300	0.059	0.076	0.079
Italy	0.348	0.375	0.385	0.055	0.055	0.054
Spain	0.358	0.361	0.362	0.142	0.132	0.106
Netherlands	0.345	0.348	0.378	0.058	0.083	0.088
Belgium	0.370	0.350	0.372	0.102	0.088	0.105
Austria	0.378	0.361	0.337	0.078	0.065	0.072
Portugal	0.489	0.449	0.426	0.105	0.106	0.088
Finland	0.526	0.539	0.455	0.204	0.240	0.175
Ireland	0.561	0.583	0.673	0.170	0.239	0.233
Greece	0.606	0.545	0.509	0.108	0.123	0.120

Source: UNCTAD – ¹The diversification index measures, how strong the countries export pattern deviates from the global export patten. It may take values between 0 and 1. The lower the index is, the higher is the similarity in patterns. – ²The specialisation index measures the scope of the export pattern: it is standardized between 0 and 1. The lower the index is, the more products are exported by a country.

As table 1 indicates, Germany export pattern shows the smallest deviation from the global pattern among the Euro area countries, except of France, which showed a lower indicator in the 1990s. However, whereas the French pattern exhibited an increasing dissimilarity with the global pattern, the index for Germany changed only a little. At the same time the specialisation is relatively low, although not as low as in Italy and France. Taking the two indicators together we conclude that Germany seems to offer a relatively broader scope of products which match quite well the pattern of global demand.

Furthermore, it is worthwhile looking at the technology content of German exports as an additional indicator for the strengths of the German export relative to the Euro area. It is often argued that Germany's record in the field of high-tech products is rather poor. Indeed, competitiveness in the international trade – measured by the revealed comparative advantage (RCA index) – in this field is worse for Germany than for the U.S. and the UK, but among the Euro area members also in France (table 2). But at the same time Germany shows an excellent performance in the field of high-standard applied technology. Among the countries considered here, only Japan displays better data.

Table 2
Competitiveness in the international trade with R&D-intensive products (RCA index)

	Top-level technology		High standard applied technology	
	2000	2005	2000	2005
Germany	-30	-37	29	27
France	18	4	13	6
Italy	-73	-75	-30	-27
UK	13	30	10	7
USA	39	46	-4	2
Japan	-38	-43	69	63
<i>OECD import share</i>	<i>21,8%</i>	<i>17,8%</i>	<i>36,1%</i>	<i>38,9%</i>

Source: Döhrn, Engel, Stiebale, 2008.

The bottom line of table 2 indicates the importance of the two segments of R&D-intensive products for total OECD imports. Whereas top level technology goods make up the smaller part of the OECD market, with their market share decreasing over time, applied technology goods form the more important segment, the importance of which is on the rise.

In a recent study, Danninger and Joutz (2007) identified export market growth as the most important driving force of German exports, whereas they found no impact of the product specialisation in investment goods. However, they focused solely in German exports.

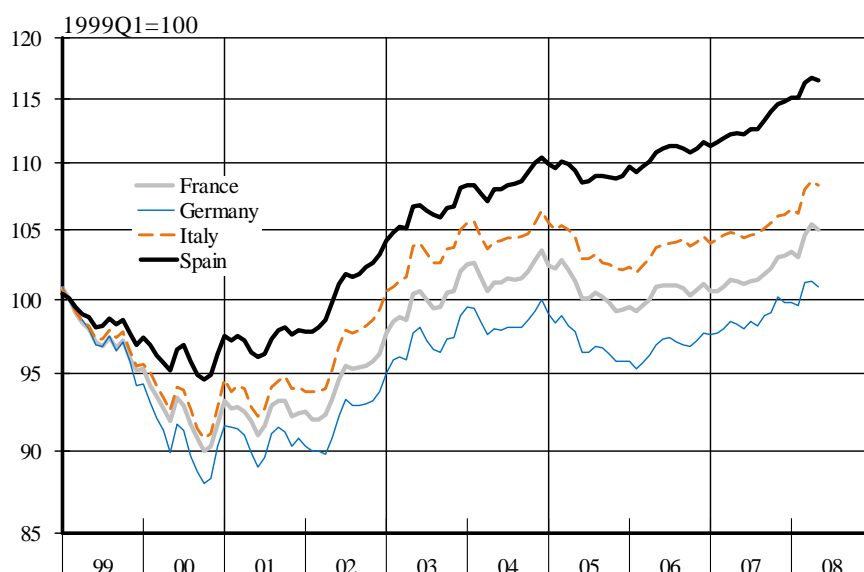
Our comparative analyses give some indication that Germany at least in comparison with its European partners could have benefitted from the changing products pattern in international markets. However, this effect should not be over-estimated, as the differences between the Euro area countries seem to be not too strong.

2. Real effective exchange rate and price competitiveness

As a second aspect explaining German export success Danninger/Joutz (2007) identify price competitiveness, which can be measured by the real effective exchange rate (REER). Since 1999, when the Euro was introduced, differences in the REER between the Euro area members can only be explained by two factors: firstly, the regional pattern of external trade may differ; secondly, inflation has not been the same in all countries. Concerning the first point, Germany seems to be even in a worse position compared to other Euro area countries, because the U.S. and the Asian countries belonging to the Dollar sphere are more important as export destinations. As far as the second explanation for differences in the REER is concerned, Germany gained competitiveness due to its low inflation. However, REERs may differ quite substantially depending on the price index used as a deflator.

Graph 3

Index of price competitiveness in selected Euro area countries



Source: ECB

Looking at consumer prices, inflation in Germany was among the lowest in the Euro area members ever since 1999. The indicator of price competitiveness, which is calculated by the ECB (2007), also includes changes in relative prices between the Euro area countries. It shows its lowest values in Germany (together with Finland which is not displayed in the graph), indicating high price competitiveness (graph 3). On the upper end of the graph, Spain can be found, where inflation was highest. Only Ireland experienced a stronger loss of competitiveness.

Table 4
Labour cost indicators for the Euro area and for Germany
2001-2007, yoy increase in %

	2001	2002	2003	2004	2005	2006	2007
	Negotiated wages						
Germany	2.0	2.8	2.0	1.2	0.9	1.1	1.2
Euro area	2.6	2.7	2.4	2.1	2.1	2.3	2.2
	Hourly labour costs						
Germany	2.4	2.1	2.0	0.2	0.6	1.3	0.9
Euro area	3.7	3.5	3.2	2.5	2.7	2.5	2.6
	Unit labour cost						
Germany	0.6	0.6	0.8	-0.4	-0.7	-1.1	0.2
Euro area	2.3	2.3	2.0	1.0	1.0	0.8	1.4

Sources: Bundesbank, ECB, Destatis

However, consumer prices may be a poor indicator of price competitiveness in foreign trade. As an alternative, unit labour costs can be used for calculating REERs. There has been a remarkable wage moderation in the Euro area as a whole. However, table 4 makes evident that in Germany wages as well as hourly labour costs increased at a considerably lower rate. As a consequence, unit labour costs developed very moderately in the most recent years. Between 2004 and 2006 they even declined.

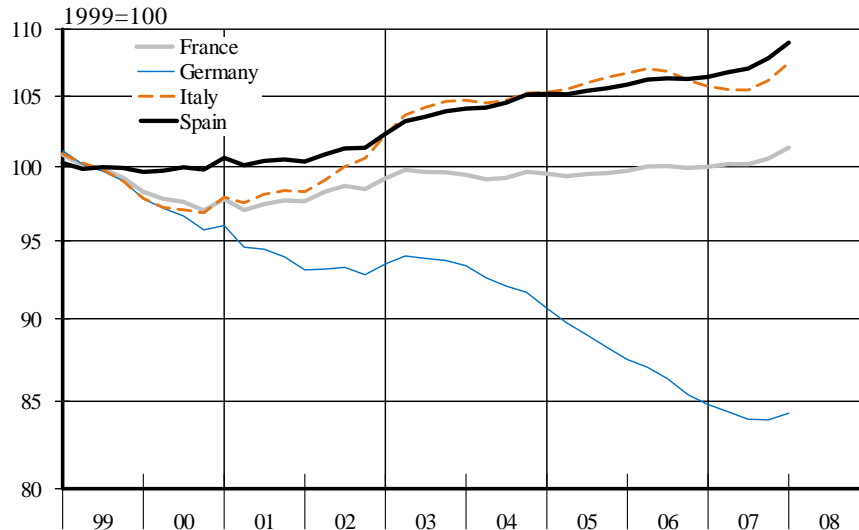
Unit labour costs are not only influenced by the level of wages, but also by the amount of labour necessary to produce a good and the cost structure of the producer. Before the fall of the iron curtain, the local content of goods produced in the Western Europe was quite high compared to Japan and the U.S. The latter benefited from low cost locations in Asia respectively in Central America. In Western Europe, a comparable hinterland was missing. This situation changed dramatically when the transformation in Eastern Europe started. Western European companies established subsidiaries in these countries with low labour costs and changed their supply chains accordingly. However, producers in the individual countries reacted quite differently. In particular in the 1990s, when the new division of

labour was developed between the old EU members and the today's new members, German investors played the most active role. Between 1995 and 1997, when foreign direct investment (FDI) showed its strongest increase, about half of the investment originated from Germany putting the Netherlands in the second and France in the third place (Döhrn et al. 2001). Hence German companies seem have taken the opportunity to relocate labour intensive production to Eastern Europe. Many observers have been very sceptical about investments in Eastern Europe arguing that workplaces were relocated at the detriment of Western Europe. Considering the entire value added chain, also the opposite could be true. Combining cheap labour in a low wage country with skills in high wage countries may be a way to maintain the competitiveness of a producer, which otherwise would have been forced to go out of operation. Micro studies for German companies show that employment in foreign affiliates and at home are correlated positively. This suggests that foreign direct investment in the end may have had a positive impact on home country employment (Döhrn 2003).

Whatever channel may have worked, REER deflated with unit labour costs show a very different profile in the large Euro area countries (graph 4). In Germany, the appreciation of Euro against the dollar shows no obvious impact on the REER. Between 1999 and 2008 the relative competitiveness in unit labour cost terms was improved by 15 percentage points. For France, the REER remained more or less unchanged. Italy and Spain, where unit labour costs increased more than in the EU average, the competitiveness deteriorated considerably, even if not as far as the change of the Dollar/Euro rate would have suggested.

Graph 4

**Real effective exchange rates in selected Euro area countries
deflated with relative unit labour costs ***



Source: Eurostat
* Against 27 countries

3. How companies react?

Even if the factors discussed hitherto would have been equal among all Euro area countries, export performance could have differed because exporting companies may have reacted with unlike strategies to the challenge of an appreciating currency. Such differences may reflect differences in the commitment to foreign markets. Some have made investments in a sales network abroad, which as a rule is associated with high sunk costs. These exporters will make use of any option to defend their market share abroad. Others, which employ sales agents or wholesale traders as partners, may stop exporting if the appreciation smelts down the profits achievable. Of course, also the technological standard and the quality of the product play a role. Companies which are market leaders in their segment often are in a position in which they can sell their products at almost any price. On the other hand, those providing highly standardised products may already face strong reaction to small variations in the exchange rate. Furthermore, size and the extent of globalisation of companies are important factors. Multinational firms can react to exchange rate fluctuations by relocating production inside their companies. Small enterprises mostly have not the choice between different location, and there have to adjust to an appreciation of the currency by other means.

In this context it is worth noting the high importance of small companies for German exports. The latest *Observatory of European SMEs* confirms that the share of exporting manufacturing companies is quite high in Germany compared to other countries of a comparable size¹³. In particular, more companies do relatively high exports. Of course, in most small countries the export share is even higher. But these economies are more open in general. However, here “small” must not only be understood as SMEs, which are defined as companies with less than 250 employees, but in a global sense. Many successful exporters in Germany are small in a global perspective.

Table 5
Exporting SMEs in the manufacturing sector
2005, in %

	Companies with exports	Of which export value ¹			
		under 1 mill €	1 - 2 mill €	2 – 5 mill €	Above 5 mill €
Germany	41,2	74.9	7.5	14.2	3.4
France	33.4	92.5	1.3	4.2	2.0
Italy	21.1	82.5	3.3	11.9	2.6
Spain	39.0	90.8	3.4	1.2	4.6
Netherlands	36.6	47.2	12.1	28.4	12.3
Belgium	52.4	31.2	3.1	58.0	7.7
Austria	46.2	67.4	2.0	12.0	8.5

Source: Gallup Organisation. ¹In % of the companies reporting exports. Difference to 100% because of companies not reporting the magnitude of exports

All in all there is some indication that exports are somewhat deeper rooted in Germany than in other – in particular large – Euro area countries in the sense that more companies contribute to foreign sales. This also might have consequences for the way, companies react to exchange rate changes. In general, they have two options. Firstly, they may adjust product prices in the export market by the same amount, i.e. they pass through the exchange rate variation to their customers. In this case it is likely that higher prices lead to a reduction of demand and hence to a loss of the market share. Secondly, firms may try to hold prices in the export markets constant by reducing export prices denominated in Euro, i.e. they follow a pricing to market strategy. Which strategy is feasible depends heavily on the intensity of competition in the export markets, but also, as mentioned above, on company specific factors.

Empirical studies suggest that German firms neither pass through the entire exchange rate risk nor do they all follow the pricing-to-market strategy. However, pricing to market plays an important role (Döhrn

¹³ In some countries, e.g. in France, the share of total exporting SMEs is higher than in Germany due to a larger number of exporters in the service sector.

and Milton 1999, Stahn 2008). This is in line with recent analyses of the consequences of exchange rate shocks on the German economy. They show that after an appreciation of the Euro the export price falls significantly while no reaction of real exports can be observed. This result suggests that German firms managed to defend their market shares. With regard to the discussion above is likely that the ability to lower export prices was improved by the reduction of unit labour costs. In particular the wage moderation and shifts of production to low wage countries during recent years enforced the price competitiveness of German companies.

4. Conclusion: what lessons for the Euro area?

Contrary to other countries in the Euro area, the German economy seems to have digested the continued appreciation of the Euro against the U.S. dollar quite well. This paper suggests that three factors have contributed to this. Firstly, Germany to some extent was favoured by the regional profile and the product pattern of the global demand. However, this effect seems have been not too strong. Secondly, and more important, German producers obviously were able to improve their price competitiveness despite of the dollar devaluation. Wage moderation, which led in some of the recent years even to a decline in unit labour costs, was one of the driving forces. Another was that German companies seem to have utilised the chances to establish a new division of labour with Eastern Europe more offensively than their competitors in other Euro area countries. Thus, shifting parts of the product to low wage locations in the end did not cause severe problems to the German economy but made the value added chain more profitable and, by that, helped to create workplaces in Germany, too. A third factor is the pricing behaviour of companies, which here was touched only cursory in this paper and should be analysed in more detail. In Germany, exchange rate shocks lead to reactions rather in export prices than in export quantities. This behaviour is compatible with the observation that the German export sector is broader based than in the other large Euro area countries. In particular for smaller companies, which contribute substantially to German exports, entry costs are high so that they tend to stabilize their export market share when exchange rates fluctuate.

What are the lessons for other countries in the Euro area? The most important message seems to be that in the absence of exchange rates as an adjustment mechanism, unit labour costs are the decisive factor for price competitiveness abroad. A second message is, that a broad based export sector could help to stabilise exports when exchange

rates alter. This seems to be true with respect to the range of products traded as well as concerning the number of companies being active as exporters. Of course, changing the structure of the export sector is no policy option for the short run. However, an industrial policy concentrating on large firms and trying to pick the winners may in the long run be counterproductive. This is particularly true because delocalisation of production is for large firms a more realistic option than for small ones.

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The effects of globalisation on the European Industry: measurement attempts and policy implications

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1. Globalisation: general remarks

Economic textbooks define globalisation as a progressive process of economic integration among countries that is fuelled by growing movements of production factors (capital and labour) across the world.

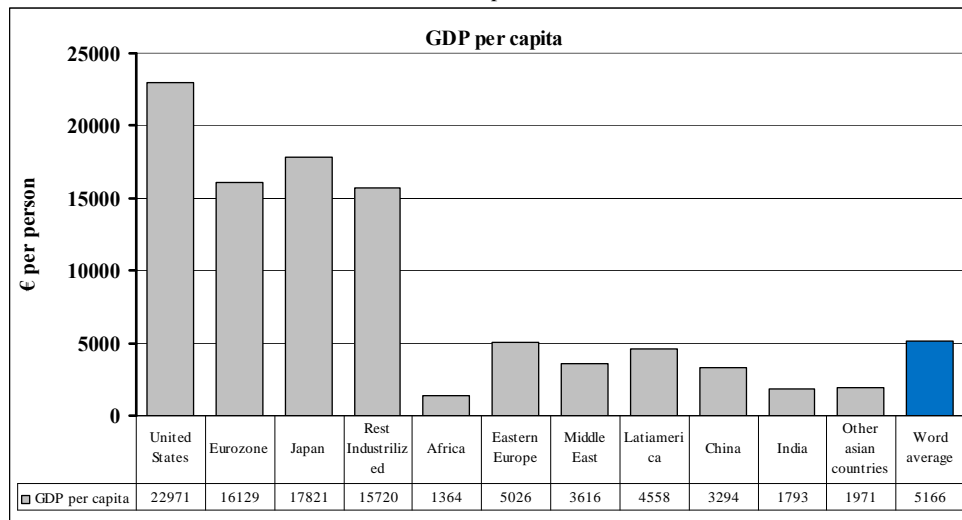
The term “Globalisation” was firstly introduced by Theodore Levitt in *The Globalisation of Markets* to describe the transformations that were observed in the world economy since mid-sixties, so that we should not refer it as a “new phenomenon”.

Nevertheless, the growing integration process leading by multinational organisations (IMF, UN, WTO, ...) joint with ITC development and dissemination have accelerated the effects of globalisation and have brought it into media and stakeholders agenda, generating both favourable and unfavourable feelings against globalisation.

For a better understanding of globalisation process it is necessary to look at the huge gaps in per capita income between developed and developing countries.

According to IMF figures, as they are shown in graph 1, in 2005 average per capita income in developed countries was around 20.000 € while developing countries averages were under 5.000€ for the same period.

Graph 1



Source: Own estimation from IMF data.

Looking at figures showed in previous graph it is easy to guess that these income differences would tend to reduce when interactions among economies increase, as it happens in communicating vessels experiments.

Globalisation can be seen as a process where different economies increase their linkages narrowing their incomes gap.

These linkages between economies, which ease the mobility of production factors (capital and labour), can be summarized as follows:

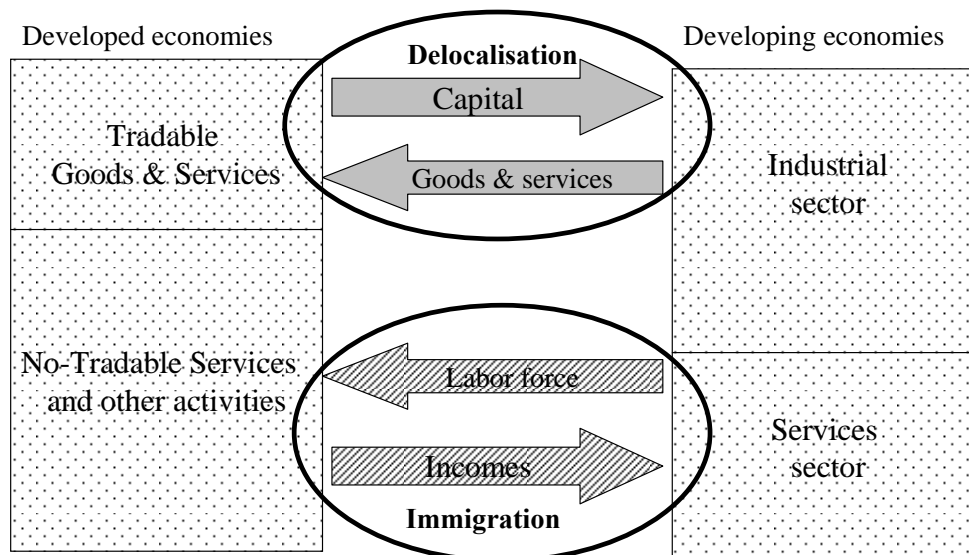
- **Transports development** easing physic movements of people and merchandises;
- **Information networks** allowing knowledge shared and remote working;
- **Trade agreements**, which reduce custom taxes and increase foreign trade;
- **Integration process** that homogenises regulations and increase flows of goods, services, capital and labour force.

It is true that none of these elements are new, but it is also true that some of them (information networks, trade agreements, or integration process) have experienced relevant advances over last years and this is one of the reasons behind the recent rise of globalisation.

Additionally it is worth to note that the enter of new big partners in the world scenario, the so-called “BRICs” (Brazil, Russia, India, China), has also contributed to accelerate the globalisation process.

If we look at the globalisation process as an increasing flow of production factors between developed and developing economies, the more visible effects can be summarized in two main concepts: delocalisation and immigration.

Figure 1



As it is shown in figure 1, **delocalisation** concept includes capital flows going from developed economies to industrial activities in developing economies and flows of goods and services produced in developing countries that are bought by developing customers.

On the contrary, **immigration** includes flows of people from developing countries that offers labour force in non tradable activities (construction, personal services, ...) in developed countries, and flows of incomes returned to native countries.

Macroeconomic, or aggregated, effects of these two main consequences of globalisation are quite different in both group of countries (developed and developing) and while delocalisation process tend to narrow income gaps, immigration would keep, or even enlarge, this income spreads.

Tables 1 and 2 summarise the main macroeconomic effects of these two phenomena.

**Table 1
Macroeconomic Effects of Delocalisation**

Developed countries	Developing countries
Tertiartisation	Industrialisation.
Increasing external financial assets. FDI outflows	Increasing financial liabilities. FDI Inflows
Worsening of trade balance and improvement of income balance. Exchange rate depreciation.	Improvement of trade balance and worsening of income balance. Exchange rate appreciation.
Reduction of costs and inflationary pressures.	Increase of wages and inflationary pressures
Employment looses	Employment gains.

**Table 2
Macroeconomic Effects of Immigration**

Developed countries	Developing countries
Labor force increases	Labor force reduces
Unemployment rates rises	Unemployment rate comes down
Wages remain stable	Wage pressure increases
Potential growth increases	Potential growth reduces
Deterioration in incomes external balance	Improvement in incomes external balance

As it is shown in previous tables, delocalisation as well as immigration would generate positive and negative effects, both in developed and developing countries, so the right management of globalisation should try to minimise the negative impacts and maximise the positive ones.

Focusing on delocalisation process, as the main subject of the present paper, there are some features that should be pointed out.

A general view of delocalisation includes all kind of total or partial displacements of production activities from one region to other looking for higher profitability, so it is a broader concept than the offshoring one.

Although massive production displacements started in early sixties, jointly with firm internationalisation process, movements to less developed countries are relatively new (late 1980's and early 1990's) so the worrying about damaged effects in developed countries is quite recent.

Delocalisation flows are not restricted to North-South (developed to developing) movements and it exists significant flows between developed economies (North-North).

Historically, delocalisation was mainly an industrial phenomenon but last years it has been extended to service activities impelled by ICT technologies' development.

Looking at the factors that favour the activities' localisation, i.e. the foreign direct investment (FDI), we can observe some recent changes in investors' behaviour. Even though receptor economies should still present an adequate trade-off between supply (production) and demand factors (local market size, regulation, etc.) some recent studies have shown that basic supply factors (labour costs, nearness to commodities, etc.) have become less valuable in favour to supply advanced factors (labour qualification, technology availability, etc.).

The following table summarises the FDI location factors grouped in five main categories.

Table 3
FDI Localisation Factors

Groups	Factors
Social environment	Language Live style and quality Entrepreneurial culture Countries historical links Social sensibility to foreign investor
Supply factor (basic and advanced)	Physical and environmental factors Labor force Infrastructures Technology availability
Market factors	Local market size Local market growth Accessibility to local or neighbor markets
Political and economic system	Economic stability Political stability
Economic Policy	Trade barriers Exchange rates Supra-national integration Fiscal policy Labor market regulations

Source: Muñoz and Guarasa (2002).

All in all, the main forces driven these FDI flows nowadays are an adequate wage to productivity ratio, agglomeration advantages, closeness to emerging markets, labour qualification and regulatory environment.

2. EU restructuring effects

After having presented the main outlines about globalisation process we have tried to collect some empirical evidences on the quantitative effects of this process in the European Union.

It is worth to note that the analysis of the up cited effects of globalisation can be rightly performed using aggregate or macroeconomic data and we should look at microeconomic (firm level) numbers.

In this point, the *European Foundation for the Improvement of Living Conditions* (<http://www.eurofound.europa.eu>) launched in 2001 an information resource named European Monitoring Centre on Change (EMCC) to promote an understanding of how to anticipate and manage change in the European economy.

One of the objectives of this EMCC is to provide up-to-date news and analysis on company restructuring in Europe through its *European Restructuring Monitor (ERM)* (<http://www.eurofound.europa.eu/emcc/erm/index.php>).

As it is stated in its webpage, the European Restructuring Monitor (ERM) has been monitoring the extent of restructuring activities in Europe and their employment consequences since 2002. Its geographic coverage was extended in May 2005 to cover the 27 EU Member States, plus Norway, and to date 7809 restructuring cases have been collected.

Supported by an extensive network of correspondents who gather data through a daily review of national newspapers and specialised economic press, the ERM is a unique collection of mini-case-examples (fact sheets) which grows at a rate of approximately 30 new entries per week and includes all industrial restructuring cases that:

- affect at least one EU country;
- entail an announced or actual reduction of at least 100 jobs;
- or involve sites employing more than 250 people and affecting at least 10% of workforce;
- create at least 100 jobs.

The ERM allows for the compilation of statistics comparing countries, sectors and types of restructuring and the identification of relevant company cases. Drawing on the data collected through the ERM over the previous three months, an overview report (ERM quarterly) outlines major European trends in restructuring.

The ERM is also an early warning mechanism for all actors involved in the process of anticipating and managing change by identifying sectors and countries that are likely to undergo a phase of severe restructuring in the short to medium term.

Although we cannot use these numbers as hard statistics because of collection methodology, in our view they are quite interesting to analyse the main underlying trends in the restructuring process that we can link to the effects of globalisation.

A first approach to the ERM statistics show us that the main types of restructuring that have affected European countries have been business expansion and internal restructuring, which sum more than one third of cases each one (table 4).

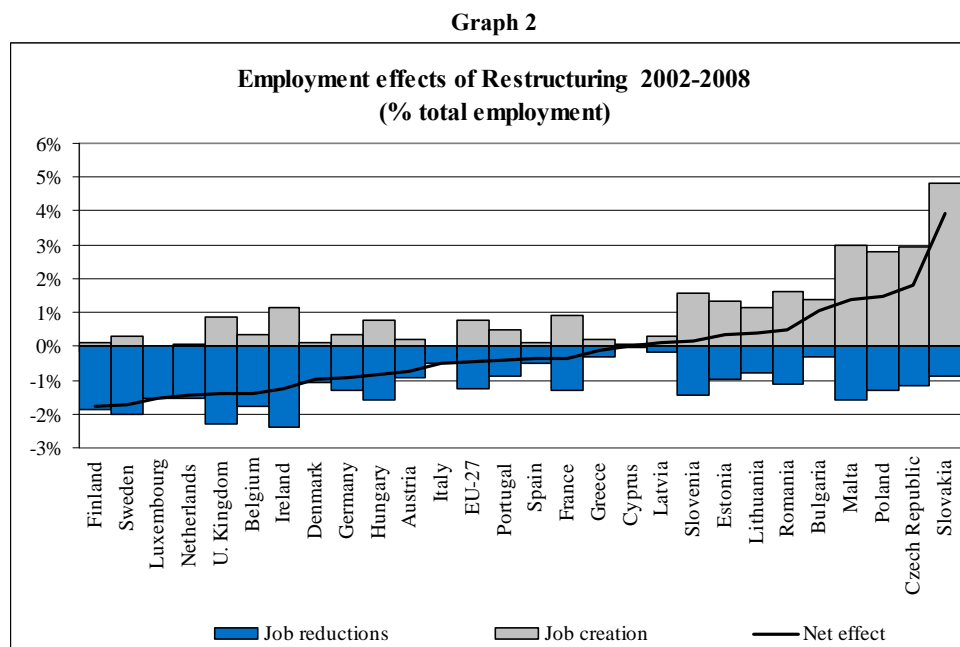
Table 4
Breakdown of employment effect by type of restructuring

Type of restructuring	# Planned job reductions	% Planned job reductions	# planned job creation	% planned job creation	# Cases	% Cases
Business expansion	650	0.02	1.512.711	91.32	2.721	36.84
Internal restructuring	1.920.101	73.12	57.549	3.47	2.622	35.50
Bankruptcy / closure	367.914	14.01	1.425	0.09	1.128	15.27
Offshoring / Delocalisation	146.879	5.59	331	0.02	438	5.93
Merger / acquisition	109.228	4.16	75.513	4.56	235	3.18
Relocation	42.484	1.62	5.920	0.36	165	2.23
Outsourcing	29.187	1.11	395	0.02	47	0.64
Other	9.657	0.37	2.590	0.16	29	0.39
Total	2.626.100	100	1.656.434	100	7.385	100

Source: ERM. June 2008.

If we look at the employment effects showed in table 4, we could advance that almost 1 million of jobs would have been lost in the European Union since 2002 because of this restructuring process, what means less than 0.5% of average total employment. Obviously, the main source of job losses is the internal restructuring process, followed by direct closure and offshoring activities.

Going into country specific level, we can analyse the employment effects of this restructuring process related to total employment level as it is shown in graph 2.



Source: Own estimation from ERM and Eurostat Data. June 2008.

Looking at the figures showed in graph 2 we can identify at least three groups of countries with different employment effects:

- **Most affected countries**, which includes these countries where net employment effect is under -0.5% of total employment;
- **Less affected countries**, where net effects are negative but less than -0.5% of total employment;
- **Benefited countries**, where net employment effects are positive.

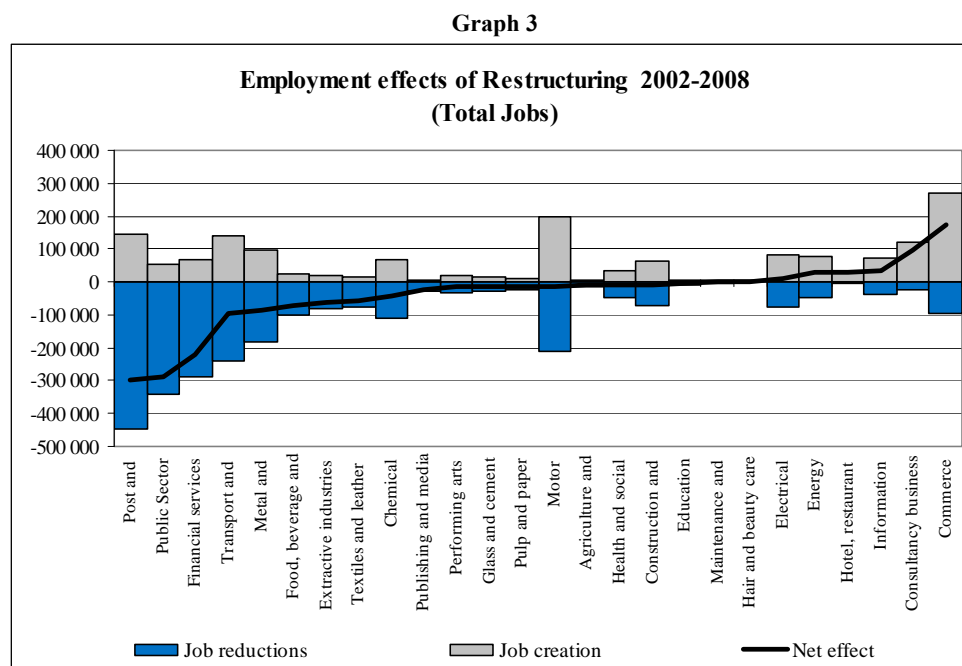
The first group is mostly constituted by high-income countries with the remarkable exception of Hungary where the job expansion effects have been significantly lower than those registered in the rest of new members.

In the second group we can find mid-income countries from former EU-15 like Portugal, Greece or Spain, plus Italy and France, that is, in fact, one of the EU-15 members with higher job creation effects (just Ireland shows higher effects).

The third group includes, as we could expect, new members but not in a homogeneous intensity. In fact, there are quantitative differences between one group with Malta, Poland, Czech Republic and

Slovaquia, where job creation effects are higher than 3% of total employment, and a second group where positive job effects are more limited (less than 2%).

Turning to sectoral analysis we can see that the most affected activities in absolute terms are post and communication, public sector, and financial services, that sums more than one million of jobs lost. (see graph 3).



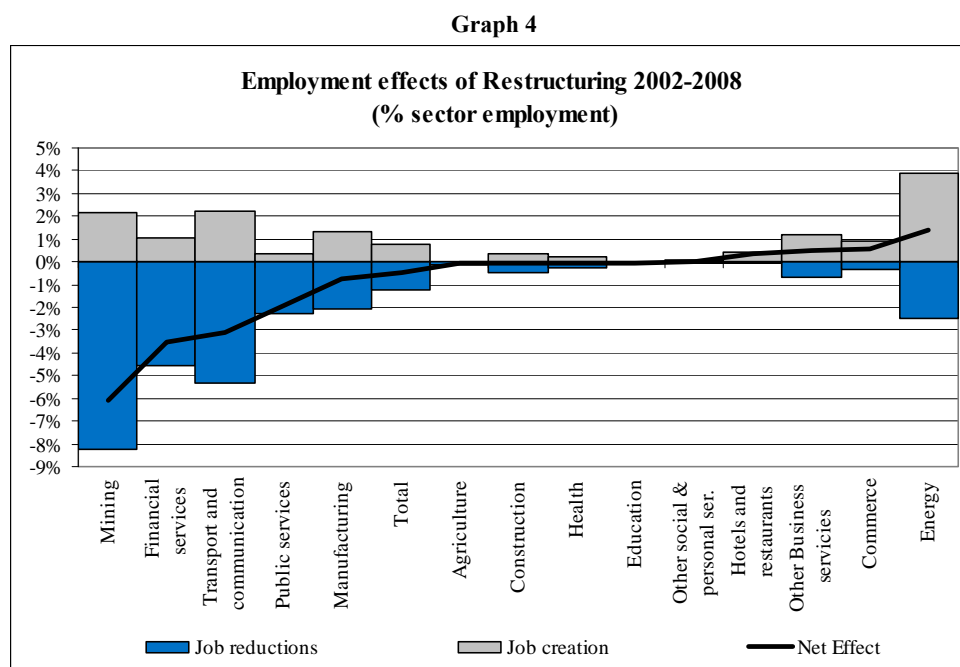
Source: Own estimation from ERM data. June 2008

On the positive side in net effects terms we find some high-skills services like ICT activities, consultancy and business service joint with commerce.

It is interesting to note that motor is, after retail trade, the second sector in terms of new jobs created, but it is also one that shows high job reduction effects, what means, at the end, a slight negative net effect. Looking at these figures, we could guess that motor activities have moved from EU-15 to new members without significant losses of total employment.

In order to analyse the relative sectoral employment effects we have grouped the ERM sectoral classification into Eurostat standard, and we have estimated the relative effects related to total employment by activity.

Figures presented in graph 4 show us that the most affected sector has been mining and quarrying, with almost 7% of employment being destroyed by restructuring procedures, followed by financial services and transports and communications, with around 4% of total employment affected.



Source: Own estimation from ERM and Eurostat Data. June 2008.

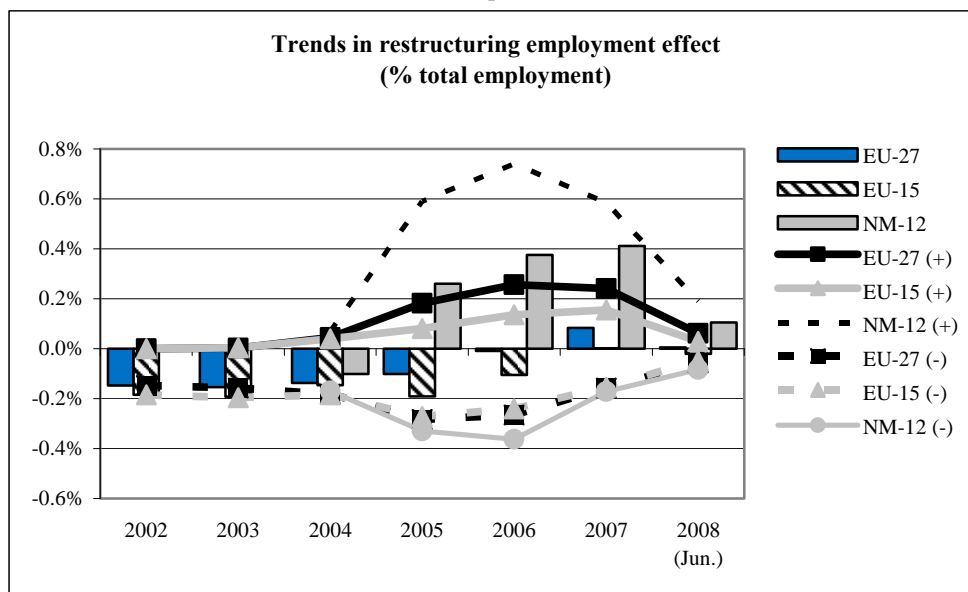
On the positive side, we can observe that in the energy sector restructuring operations have created new jobs that represent almost 4% of total sectoral employment.

To finalise this quantitative revision of restructuring operations in the European Union we have performed some kind of time trend analysis to investigate their recent evolution.

Graph 5 shows the evolution of employment effects of restructuring operations as a share of total employment, both in former EU-15 and the 12 New Members¹⁴, as well as EU-27 totals.

¹⁴ ERM started to collect information for new members in 2005.

Graph 5



Source: Own estimation from ERM and Eurostat Data. June 2008.

The analysis of time evolution showed in previous graph offers us the following facts:

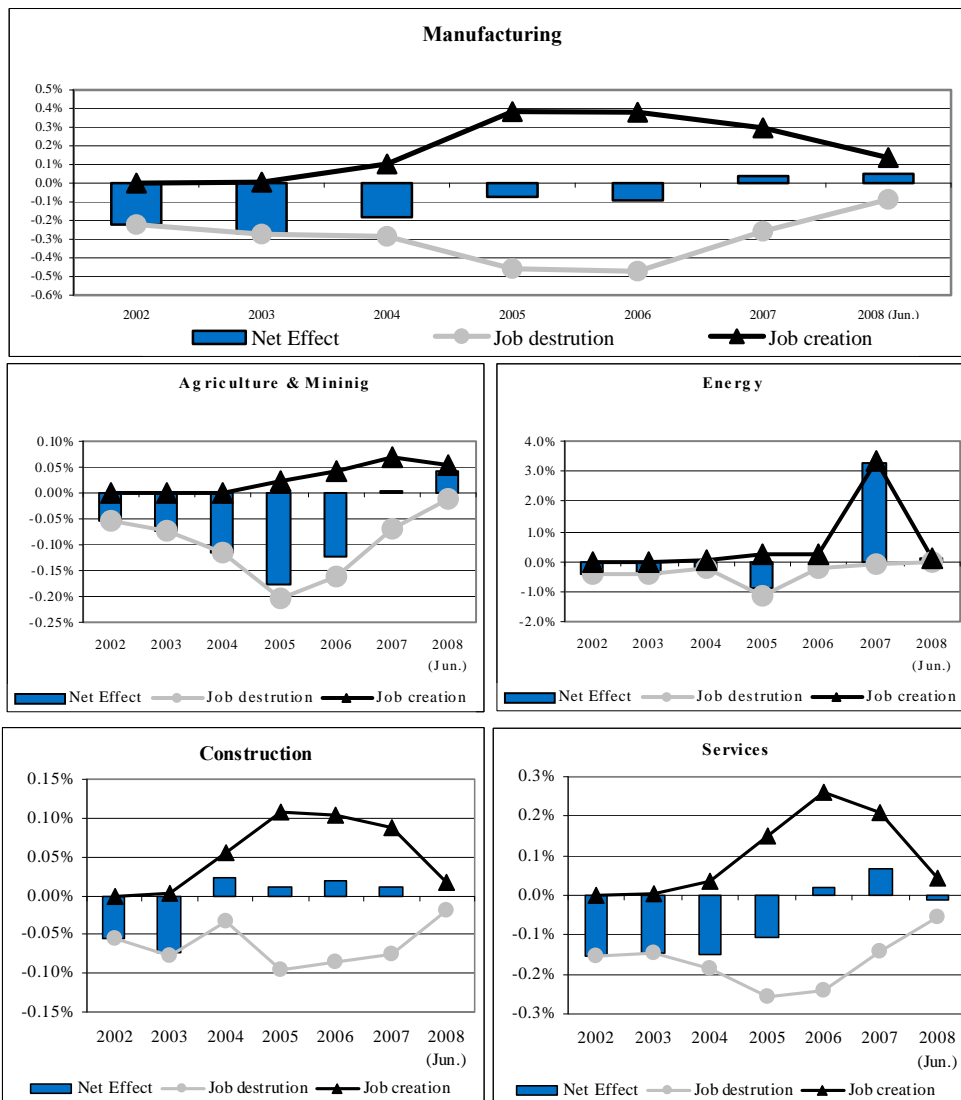
- The negative effects on employment have been growing in EU-15 since 2002 until 2005, when trends seem to have been changed, and during 2007 the net effect was slightly positive.
- On the contrary net employment effects in NM-12 has been positive since 2005 and has shown upward trend (apart from uncompleted figures for 2008).
- At the full UE-27 level, restructuring effects on employment turned positive last year because of a progressive reduction on negative effects.

We will finalise this analysis showing some time trend graphs where sectoral level effects have been represented, grouped into five main sectors: agriculture and mining, energy, manufacturing, construction and services.

As it is shown in graph 6, time trends are quite similar among sectors, with growing negative effects until 2005, a turning point in 2006, and a small recovery since then, while the positive effects shows a symmetric evolution, with an upward trend until 2005/2006 and a turning point afterwards.

Focusing on manufacturing activities, we can observe that net effects were quite negative (-0.2% of total employment) during the first three years, slightly negative between 2005 and 2006, and marginally positive in 2007 and during the first months of 2008.

Graph 6
Restructuring employment effect
(% sector employment)



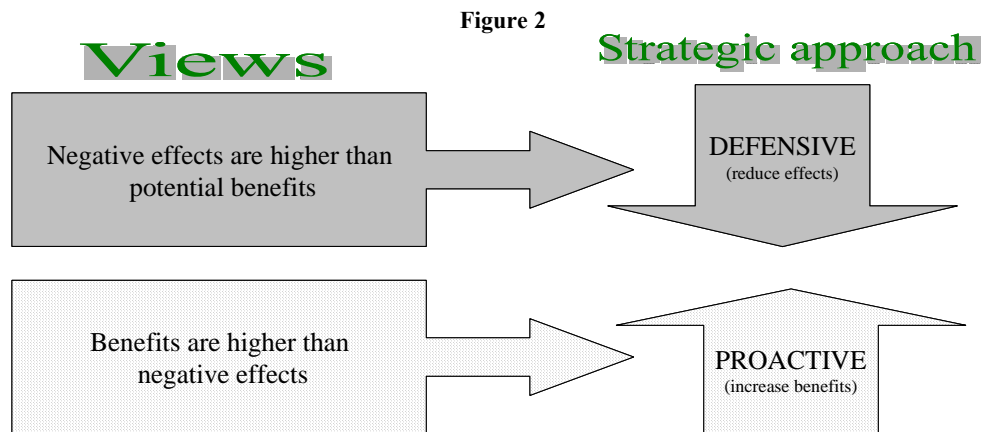
Source: Own estimation from ERM and Eurostat Data. June 2008

3. Strategic and policy implications

In this third section, we will present a set of alternative strategies and policy actions to tackle globalisation effects that have been extracted from different academic papers and professional reports.

As a starting point it is useful to remark that as it was shown in the first section, globalisation process yields both risks to be minimised and opportunities to be taken in a framework of full cooperation between developed and developing economies.

Without this global cooperation, developed economies, as the European one, could face these globalisation effects in two different ways which are subject to the perception about the net balance between positive and negative effects (see figure 2).



If developed economies feel that negative effects are higher than potential benefits they should adopt some defensive strategies in order to reduce these negative effects. On the contrary, if they look at the globalisation process as an opportunity to be taken even with some damaged effects, they should adopt a more proactive position to maximise the potential benefits.

None of these strategic approaches are free of problems and are fully effective for all situations and time terms, and there are some cautions that should be considered.

Defensive strategies are not effective in the medium term so they just solve short-term problems. Usually they fight against “symptom” not the “core illness” so the problem is not solved at all. Sometimes they are not fully compatible with national or supranational regulation. (i.e. European regulation) and they would need new agreements among

partners to be implemented. Additionally, economic costs associated with these strategies are bigger as globalisation advances and they could become unaffordable in a short period of time.

As the **proactive strategies** are concerned it is relevant to note that they should be effective in a medium or long term, but they are consuming resources since the beginning. On the other hand, they are quite easy to formulate but it is more difficult to specify in policy actions, and finally, this kind of strategies are affected by the competence against other developed economies, so the intensity of specific policies should be higher than those of competitors to be effective.

In order to illustrate the kind of policies that can be taken under the two alternative approaches we have collected a list of examples that have been either implemented somewhere or suggested by somebody (academic, professional or political).

List of examples has been grouped in seven different groups or mainlines in each one of the two alternatives approaches as it is shown in following table.

Table 5
Mainlines in Policy Actions

Defensive strategy	Proactive Strategy
Workers involvement in management	Develop high Value Added and Hi-Tech activities
Increase restrictions for delocalisation process.	Facilitate new business environment
Facilitate return of delocalised companies	Promote human capital
Promote employability of dismissed workers	Increase R&D
Increase social cohesion	Reinforce agglomeration economies
Prevent delocalisation of risk activities and sectors	Promote non-delocalisable activities.
Reduce delocalisation benefits.	Attract foreign direct investment

Source: Author's elaboration. June 2008.

Tables 6 and 7 resume the main specific policies that we have found through a literature revision's work, classified into the seven main lines showed in table 5.

Table 6
Policy Actions for Defensive Strategies

Policy Description	Strategic Line
Establish worker controls in subsidized companies Restructuring plans should be approved by Workers Councils	Worker involvement in management
Establish commitments of permanence for the subsidized companies Reduce government contracts in companies with delocalisation process. Demand the return of the received subsidies Forbid closure of profitability firms Increase labor guaranties	Increase restrictions for delocalisation process
Subsidise returned companies	Facilitate return of delocalised companies
Promote training and recycling of workers with employability difficulties Establish workers "by-passes" during closures process	Promote employability of dismissed workers
Subsidise less qualified employment Promote "social" and "environmental" labelling Boycott of delocalized products Increase trade union coordination between headquarter and branches	Increase social cohesion
Develop sector observatories Establish fiscal benefits to delocalisation risky activities or regions Promote practices of preventive reindustrialisation and industrial diversification Establish a compulsory wage insurance	Prevent delocalisation of risk activities and sectors
Fiscal harmonisation among countries Increase dismissal costs Impose higher taxes on re-imported products Impose taxes on transport and environmental taxes Establish fiscal benefits for outside EU exports. Replace social contributions with indirect taxes on imports Create a wage guaranty fund with delocalisation savings Promote regional labelling Extend quality and environmental certifications	Reduce delocalisation benefits

Source: Author's elaboration. June 2008

Table 7
Policy Actions for Proactive Strategies

Policy Description	Strategic Line
Subsidize Biotechnological and Nanotechnologist companies	Develop high Value Added and Hi-Tech activities
Reduce administrative issues to launch a new business. Reduce profit taxes Liberalize labor market Increase subsidies to SME's Promote venture capital funds Develop new business and prospective observatories Establish public agencies to offer specialized advice for new business creation.	Facilitate new business environment
Establish systems for tracking and promoting workers' skills. Increase public funding to continuous and employability training Promote a closeness relationship between firms and universities	Promote human capital
Increase R&D public funding Fiscal benefits for private companies R&D activities	Increase R&D
Develop "competitiveness poles" Clonation of technological parks	Reinforce agglomeration economies
Reduce social contributions to less skilled jobs and non-delocalizable activities.	Promote non-delocalizable activities.
Fiscal benefits for foreign firms managers. Fiscal benefits for foreign companies headquarter establishment Reinforce guaranties to industrial and intellectual property rights. Increase private and public infrastructures.	Attract foreign direct investment

Source: Author's elaboration. June 2008.

In our view, it should be necessary to establish an adequate policy mix of short-term defensive policies, preventing medium term damaging effects, which could ease the transition and implementation process of the longer term pro-active actions.

As an example, some protectionist measures without medium term damaged effects could be the implementation of quality standards and labelling, environmental certifications, or some measures of labour force protection.

Additionally, the development of some temporary subsidies could be useful with predefined deadlines that could help to the necessary transformation and adaptation of the production system, similar to the well-known Common Agricultural Policy, what would mean somewhat like a new Common Industrial Policy.

These short term measures should be implemented jointly with long term strategic actions, preferred those based on R&D activities or, even more interesting, those actions that promotes the innovation activities, because innovation plays a key role in putting into value all R&D activities by making new products and process.

Any case, all those strategies and actions should be taken in a framework of social stakeholders' general agreement, as it is stated in a recent report of the European Restructuring Monitor: "*The current question is no longer one of 'whether' to restructure or not, but rather 'how' to restructure, so that negative social and economic costs are minimised.*" (Support Measures For Business Creation Following Restructuring, 2005).

This new concept of '**socially responsible restructuring**' can be defined as the use of one or more approaches to consciously take into account the interests of all the organization's stakeholders – managers, owners/shareholders, workers as well as the larger community. So, "socially responsible restructuring" should include elements like an anticipatory or forward-looking approach; timely information and continuous social dialogue with all actors concerned and negotiations with workforce representatives on how to prevent the adverse effects of restructuring.

Some examples of this kind of restructuring could be:

- Internal and/or external outplacement services;
- SME creation unit;
- Mobility support, both geographic and job mobility;
- Early retirement;
- Part-time jobs;
- Flexible leave;
- Sub-contracted workers.

At the end, developed countries should adapt their economies to the new paradigms of *Globalisation* and *Knowledge economy*, trying to promote those activities than cannot be relocated or those linked to fields that show higher potential growth.

The following table summarises those activities grouped in three different fields of action:

Table 8
Activities to be promoted in developed countries to face globalisation

Field of action	Examples of industries
Capabilities and requirements of the Knowledge Society	R&D and top-end high-tech in general Expert services: business and personal Education for the knowledge society (recognising the end of the “education once-and-for-all” and “job for life” models) Highly efficient physical distribution services to complement e-commerce Intelligent buildings and living spaces Special financial services geared to the new conditions: venture capital as a “normal” service; recognizing the value of intangible products and assets, catering to highly irregular incomes and to the proliferation of micro and mini firms, etc.
Quality of life as defined by national culture and values.	Entertainment industries Environment industry: clean air and water, safer waste disposal systems, alternative energies, etc. Creative industries Health industries and services: orthodox and alternative; preventive and curing. Beauty, body care, sports and healthy living Habitat: Architecture, landscaping, interior design the spread of good taste (fashion, home and office decoration, etc.) Specialized tourism: for locals and foreigner Food: convenience and gourmet foods (in-restaurant, in-store, home delivery, made-to-order, etc.)
Economic Growth and demographic trends.	Old age care and leisure time use Personal services Business services for the self-employed, micro and mini firms Construction and urban renewal Infrastructure (new and old) extension, improvement and maintenance

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European enlargement: a challenge for the Greek industry

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Greece is a country in which traditionally comparative advantage lies in the service sector while at the same time overall external balance has been continually in deficit, largely due to the dependence on industrial imports.

Economic policy in Greece has always emphasised the importance of a healthy, internationally active, manufacturing industry that would contribute to the reduction of external imbalances and promote productivity growth in the economy as a whole.

The Greek industrial base has been concentrated in traditional sectors; as a result it has faced increasing competition in the context of European integration and globalisation. At the same time the industry has not benefited from foreign direct investment as this was directed to low cost countries in Europe and Asia.

Has the Greek industrial sector managed to acquire the necessary flexibility and adaptability to survive or even increase its role in the new global environment?

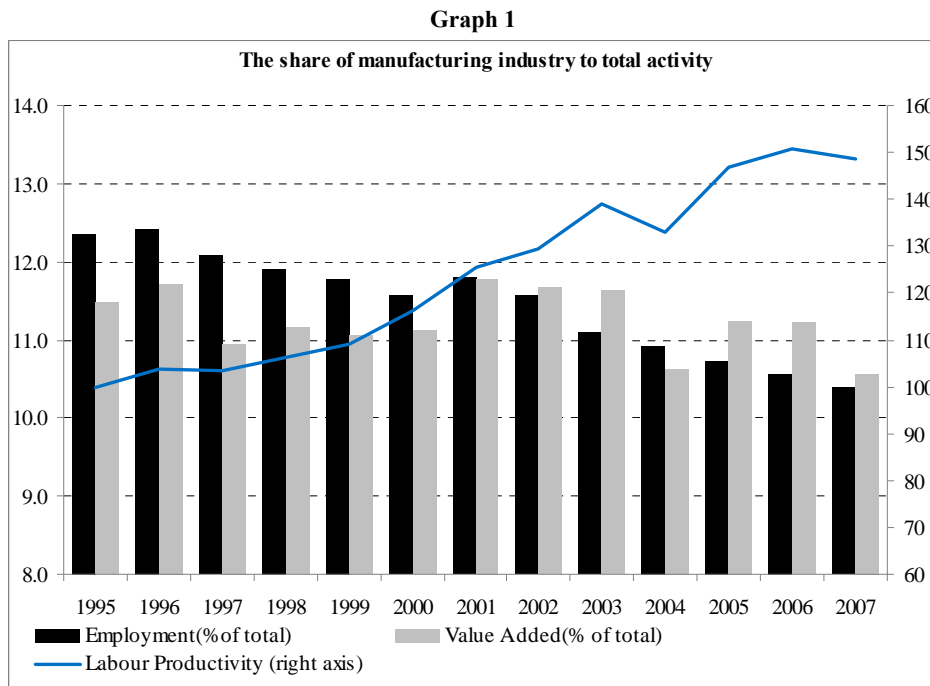
What are the prospects for a small country with largely traditional industrial structure in the new global environment?

In the first part of this paper, we present the main trends and structural characteristics in the Greek industry. Then, the question of international competitiveness is addressed. In order to assess the international position of Greek manufacture we identify strengths and weaknesses of the economic structure as they are reflected in the structure of the external balance and examine the evolution of market shares in key areas.

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1. Manufacturing industry in Greece: recent trends

During the last decade, the average annual growth rate of value added generated by the manufacturing industry, was somewhat lower than the rate of growth of GDP (3.1% and 3.6% respectively) in volume terms. The share of manufacturing industry in the total economy, always in terms of value added, shows no persistent trend but has declined marginally, between 1995 and 2007. As shown in Graph 1, while the share of manufacturing industry in total value added was 11.5%, in 1995, it dropped to 10.6% in 2007.



Source: NSSG (National Statistical Service of Greece)

An important structural development during this period is the reduction of the share of Greek manufacturing industry in total employment. Measured in terms of full time equivalent persons employed, the share of manufacturing sector in total employment was reduced by two percentage points, from 12.4% in 1995 to 10.4% in 2007 (Graph 1). This downward trend may reflect the process of externalisation of certain activities of industrial companies, like cleaning or accountancy, so, to some extent, it represents a contraction of employment in industrial companies that is compensated by an increase in the service sector. However, the actual scale of employment reduction suggests that it relates, predominately, to more fundamental restructuring associated with productivity gains. In fact, employment in the manufacturing industry declined by 9.5% between 1995 and 2007 and as result labour productivity, in the same period,

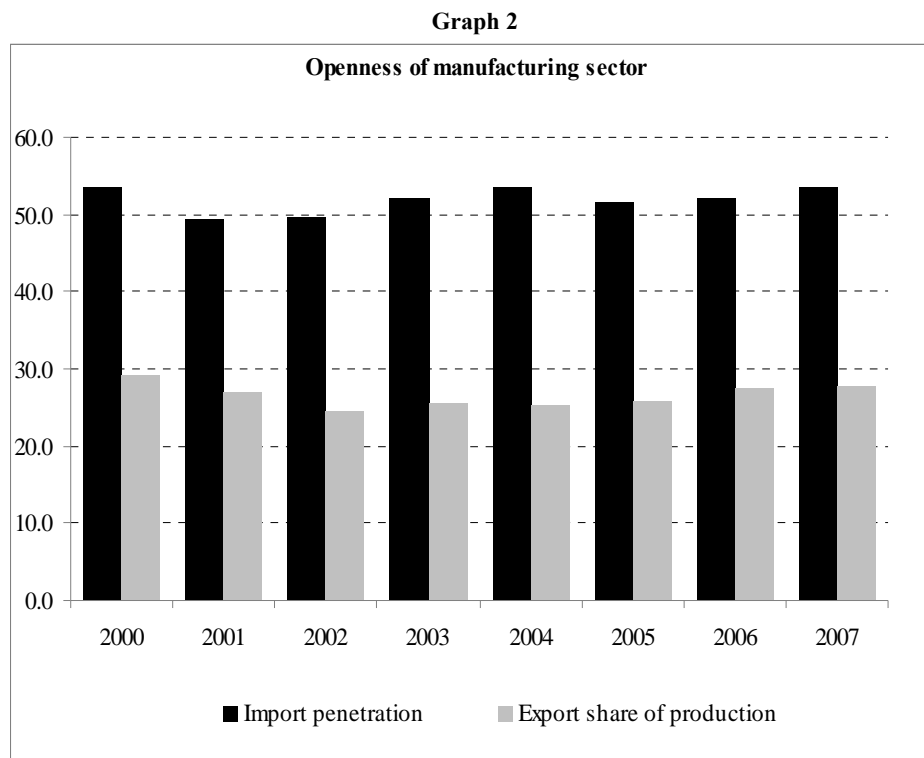
increased substantially. Labour productivity, also plotted in Graph 1 (right axis, 1995=100), followed an upward trend during this period and increased by 48% compared to an increase of 33% of the corresponding measure for total economy.

In short, we observe a substantial increase in productivity, along with a significant increase in production, while the loss in employment may be viewed as evidence of substantial restructuring. On the whole, these trends may be perceived as, however, to relate them to trade developments in order to fully assess their significance.

2. The manufacturing structure reflected in the structure of trade

2.1. Openness to trade and international competitiveness

Measures of openness to trade can reveal overall strengths or weaknesses of the domestic structure in comparison to international developments. Graph 2 depicts the evolution of two such measures, Import penetration (IP) and Export share in production (XSP), for the period under consideration and for the aggregate manufacturing industry.



Source: NSSG (National Statistical Service of Greece)

As shown in the graph, both measures are relatively stable, during the recent period, at around 52% and 27% respectively, although, XSP declined marginally between 2000 and 2002 to recover thereafter. However, Greek industry is compared unfavourably in relation to EU, according to both measures, as IP is higher and XSP lower than the corresponding EU indices (45% and 47% for EU-15 excluding Greece). Moreover, XSP follows a clearly positive trend in the case of EU-15.

One interpretation of the evolution of IP and XSP is that the positive developments in manufacturing production are more related to domestic demand as they are not clearly reflected in trade performance.

A measure of trade performance that assesses export specialisation is the Balassa index of revealed comparative advantage (RCA). This index compares the share of exports of a given sector in total exports of the country in question to the corresponding world share. For any given industry, a value greater than 1 shows export specialisation, or revealed comparative advantage, whereas a value smaller than 1 comparative disadvantage.

Table 1.
Revealed comparative advantage in manufactured goods

	1991-95	1996-2000	2001-2005
Total trade	0.70	0.72	0.80
EU_15	0.67	0.67	0.75

Source: Comtrade, author's calculations

Table 1 shows the evolution of export specialisation as measured by the Balassa index for the period 1991-2005. The index refers to total manufacturing industry and uses both the world trade and the EU-15 trade as a basis for comparison.

Clearly, the revealed comparative disadvantage of Greek manufactured exports appears to be diminishing in comparison to both the world manufacturing trade and the EU-15 manufacturing trade. Interestingly it diminishes more quickly outside the EU-15 area.

Of course a more detailed approach is required to assess the evolution of comparative advantage. In what follows we examine trade performance of manufacturing sectors focusing on the contribution of such sectors to overall trade balance.

A very useful tool to assess the contribution of individual production sectors to trade balance and, thereby, to assess the impact of

production structure to the external balance is the concept of structural balance.

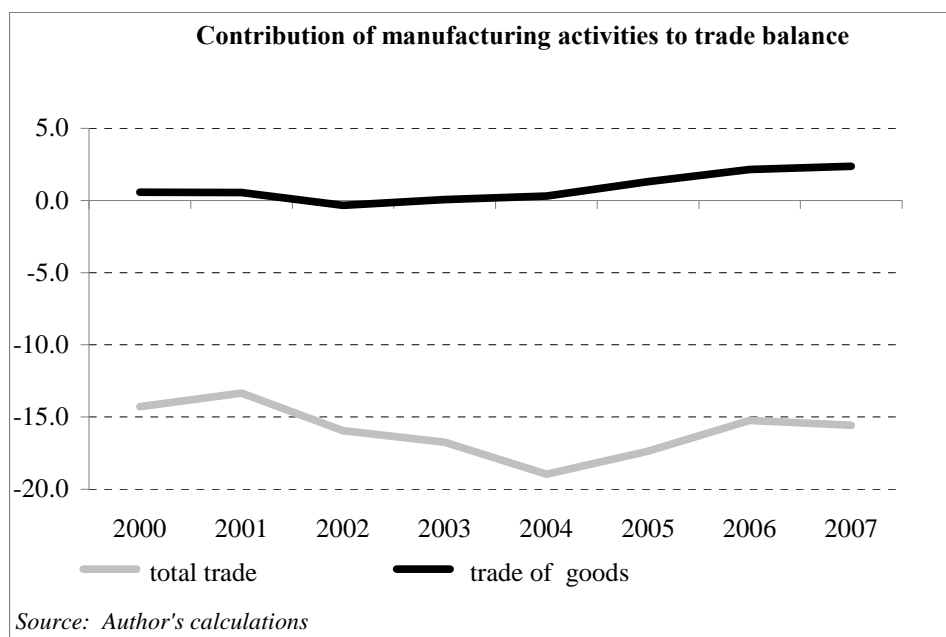
The notion of structural balance stems from the observation that in the absence of any comparative advantage, or, disadvantage, in other words, in the absence of sectoral specialisation, total balance is distributed in accordance to the share of each sector's trade, that is the sum of exports and imports, to total trade. Therefore, if we multiply the overall trade balance with the share of each sector's trade to total trade, we derive a reference balance for each given sector, the potential or neutral balance, against which we can compare the actual one:

$$(X-M) * (X_i + M_i) / (X + M)$$

The difference between actual and neutral balance, as a percentage of total trade, may be used as an index of structural balance. This index allows for a categorisation of production sectors according to their contribution to total balance. A positive value of structural balance signifies strength, or comparative advantage, while a negative value signifies weakness or comparative disadvantage. Note that the index captures the relative significance of sectoral trade so that the positive (negative) sign does not necessarily correspond to a surplus (deficit) of the actual balance.

In the remainder, we use the concept of structural balance to identify strengths and weaknesses of Greek manufacturing trade. An advantage of this approach, in comparison to the Balassa index, is that it allows decomposition by sector or trading area.

Graph 3



Graph 3 depicts the contribution of Greek manufacturing trade to the total balance of goods and services, as well as to the balance of merchandise trade. As expected, the index of structural trade balance of manufacturing industries is negative in relation to total trade, since historically, services constitute the component of external flows that is in surplus. However, the contribution of manufactured goods in the balance of merchandise trade is positive and, after 2004, increasing. This positive value reflects of course, in addition to the increasing strength of the industrial sector, the increasing weakness of the Greek primary sector.

2.2. Sectoral contribution to manufacturing trade balance

In Table 2 we present the structural balance of individual manufacturing sectors. Note that because the index is relative, the sum of sectoral results is zero.

Table 2
Relative Structural balance of manufacturing sectors

	2000	2004	2007
coke and refined petroleum products	4.0	2.9	3.2
Food products and beverages	2.7	1.8	2.0
basic metals	1.6	2.1	1.9
wearing and dressing apparel	3.9	3.1	1.3
Textiles	0.1	1.0	0.6
electrical machinery and apparatus	-0.1	-0.1	0.5
rubber and plastic products	0.1	0.1	0.4
metal products except machinery and equipment	-0.4	0.0	0.3
non-metallic mineral products	0.9	0.3	0.3
Tobacco products	0.4	0.3	0.3
Publishing, and printing	0.3	0.2	0.2
furniture	0.8	0.1	-0.2
wood products	0.2	-0.2	-0.3
leather products	-0.2	-0.3	-0.4
pulp, paper and paper products	-0.8	-0.5	-0.5
office machinery and computers	-1.0	-0.7	-0.6
machinery and equipment	-3.9	-1.3	-0.7
medical, precision and optical instruments	-0.8	-0.7	-0.8
radio, television and communication equipment	-0.9	-0.8	-1.0
Manufacture of chemicals and chemical products	-1.8	-1.3	-1.1
other transport equipment	-1.8	-2.7	-2.2
motor vehicles, and trailers	-3.4	-3.3	-3.2

Source: Comtrade, author's calculations

A number of observations may be derived on the basis of the above results:

- Although the contribution of the main traditional sectors (food products and beverages, basic metals, textiles and dressing apparel, non-metallic mineral products, Tobacco products) remains positive, it is gradually diminishing in significance.
- Certain non traditional sectors (electrical machinery and apparatus, metal products except machinery and equipment) appear to gain significance and contribute positively to the manufacturing trade balance in the recent period.
- Although the impact of sectors like machinery and equipment and manufacture of chemicals and chemical products, remains negative its absolute value gets smaller.
- Finally, other transport equipment and motor vehicles continue to exert a significant negative contribution to manufacturing trade balance.

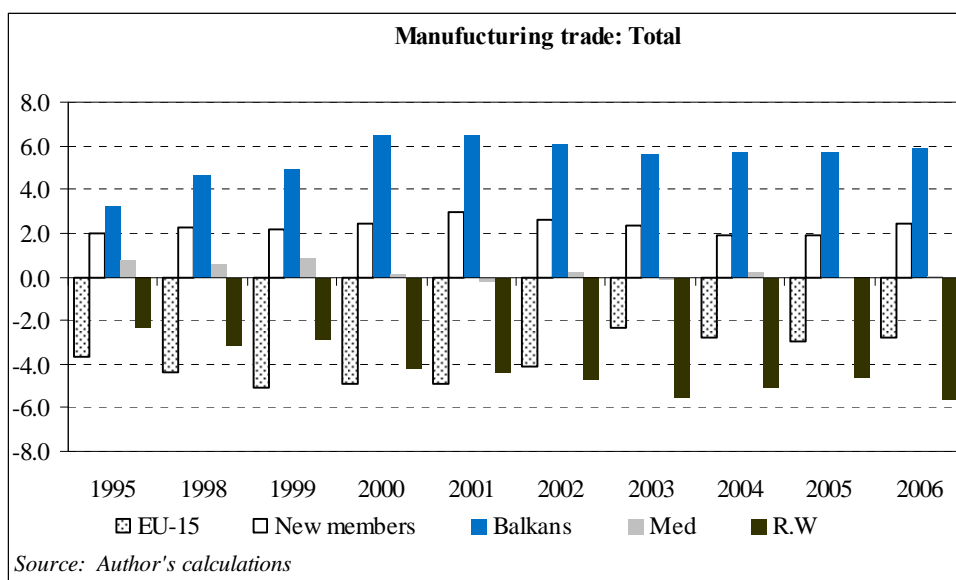
The above results point towards some restructuring of sectoral contribution to manufacturing trade balance. More importantly, despite the apparent weakening of the performance of traditional sectors, it appears that the increasing significance of non traditional sectors is compensating, so that the overall contribution of manufacturing industry to merchandise balance is positive and increasing.

In order to be able to assess more accurately the changes described above we need to take a closer look to the geographical dimension of trade developments.

2.3. Structural balance indices by trading area

In Graphs 4 to 5 we present structural balance indices by five trading areas and by broad categories of manufactured goods. The trading areas to be considered are: EU-15, New members of EU (the first ten new members), Balkan countries, Mediterranean countries (Med) and the rest of the Rest of the World (R.W).

Graph 4
Contribution of main trading areas to manufacturing trade balance

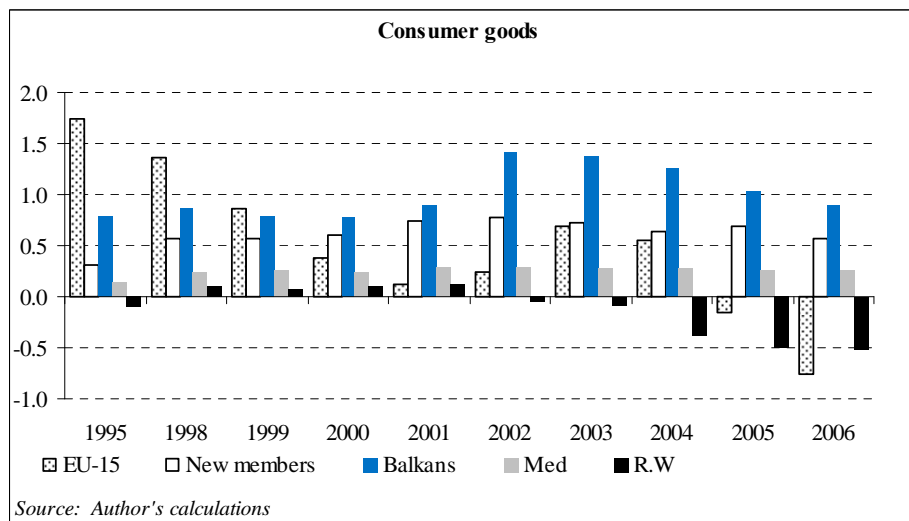
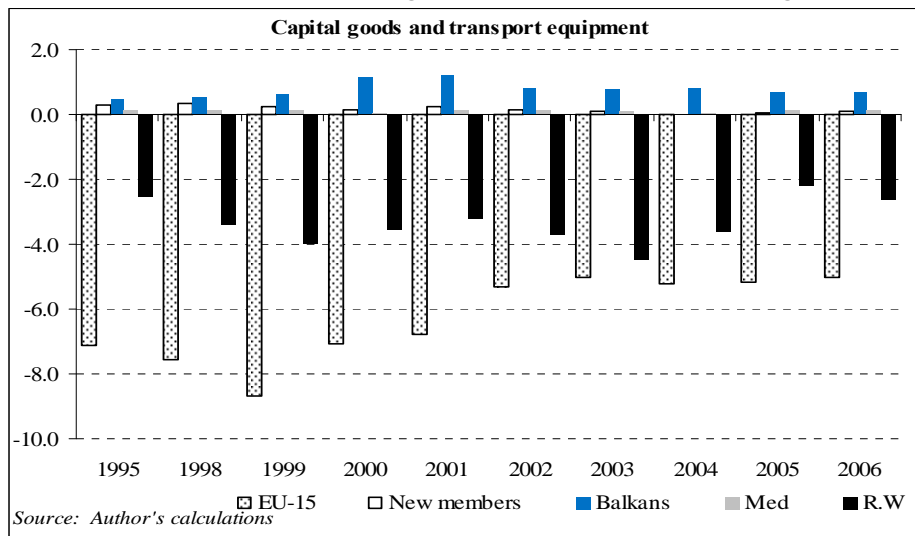


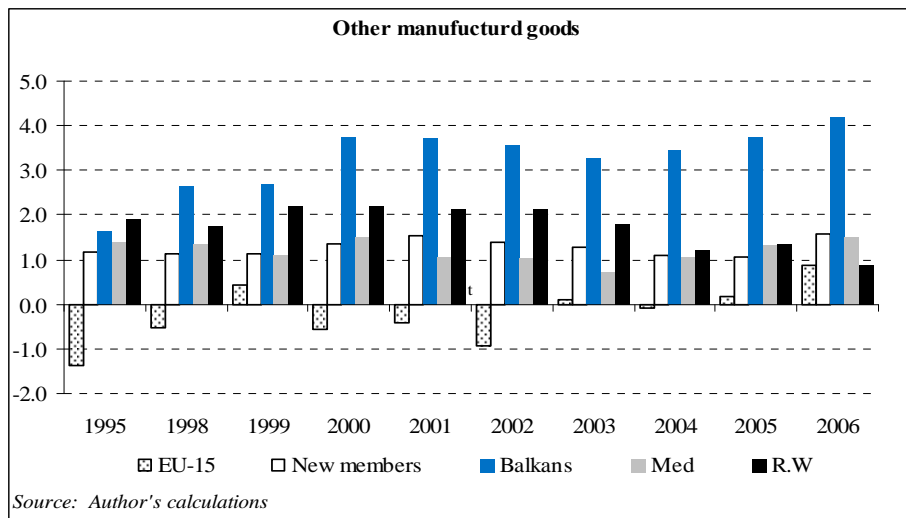
As shown in Graph 4, the structural balance indicator for total manufacturing trade is significantly negative for the EU-15, even more so for the rest of the world. It is interesting to underline that although the negative contribution of the manufacturing trade between Greece and the Rest of the World is increasing, the corresponding index with EU-15 is improving as the absolute number is diminishing.

On the other hand, the index is positive for New EU member countries, as well as the Balkan and the Mediterranean countries. Most striking is the measure of the positive contribution of the Balkan countries.

Thus, it can be argued that the Greek manufacturing sectors continue to perform poorly in global markets but they perform relatively well in the Balkan countries, the new EU member and the Mediterranean countries. On the other hand, the poor performance in EU-15 is marginally improving.

Graph 5
Contribution of Manufacturing sectors to trade balance: Main categories





The structural balance indicator is further disaggregated by broad categories of manufactured goods and presented in graph 5. The analysis is based on the BEC categorisation of international trade, which classifies trade flows in accordance to basic economic activity and stage of production.

As shown in Graph 5, the trade of capital goods and transport equipment is characterised by a significant structural deficit, stemming from the transactions with the EU-15 and the rest of the world.

On the other hand, the structural balance of consumer goods is predominantly positive for all trading areas, but shows signs of weakening in the period after 2003. In particular, the contribution of the rest of the world in the balance of consumer goods trade turned negative in 2003, while the traditionally strong positive contribution of EU-15 turned negative in 2005.

The structural balance indicator for “other manufactured goods” is positive for all markets in the most recent years, while the contribution of EU-15 trade exhibits an upward trend. The most significant contributions relate to the Balkan countries and to a lesser extent to the rest of the world and the New EU members, while the contribution of trade with the Mediterranean countries is significantly higher than that of EU-15. Thus, the category of “other manufactured goods” appears to have a globally positive contribution to the balance of manufactured goods.

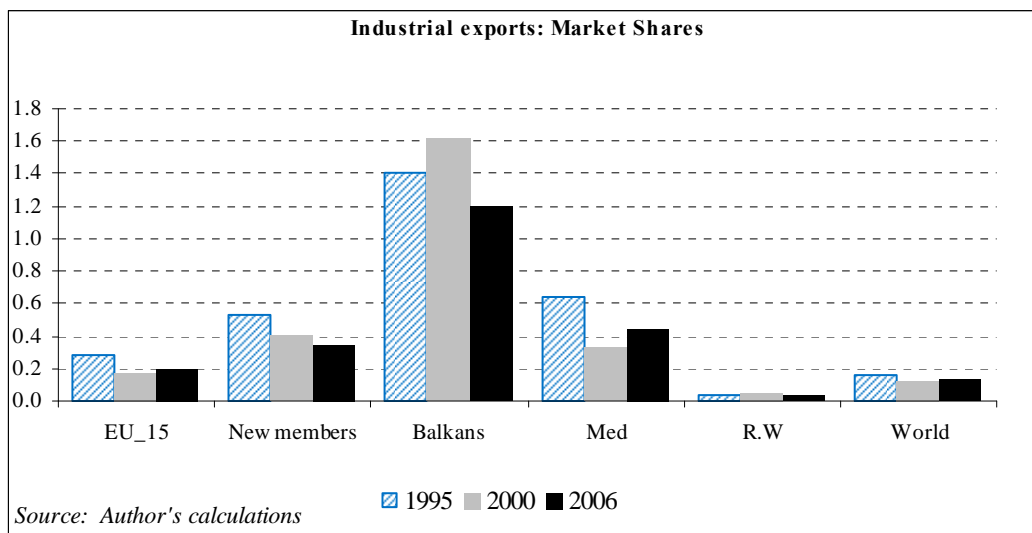
As mentioned already these results can be interpreted as indications for the evolution of comparative advantage. So, accordingly, we can conclude that a subset of industrial sectors appears to perform relatively well in global markets, while an even larger subset performs well in the New EU members, the Balkan and the Mediterranean countries. But the area in which the Greek manufacturing industry performs better is the Balkan.

2.4. Market shares

To gain some further insights on export performance we examine the evolution of market shares for the main trading areas and main partners.

In graph 6 we present the shares of total manufacturing exports in the geographical areas defined above. As shown in the graph, the world share of Greek manufacturing exports is very low (0.14% in 2006) while the corresponding share to EU-15 is 0.2. Both shares deteriorated between 1995 and 2000 but recovered partly between 2000 and 2006. Shares in the new members, the Balkan and the Mediterranean countries were significantly higher, 0.4%, 1.2% and 0.44% respectively in 2006. Obviously there is a geographical bias of Greek manufacturing exports mainly to the Balkan countries and to a lesser extent to the new members, the Mediterranean countries and, finally, to the EU-15 as opposed to exports to the rest of the world.

Graph 6

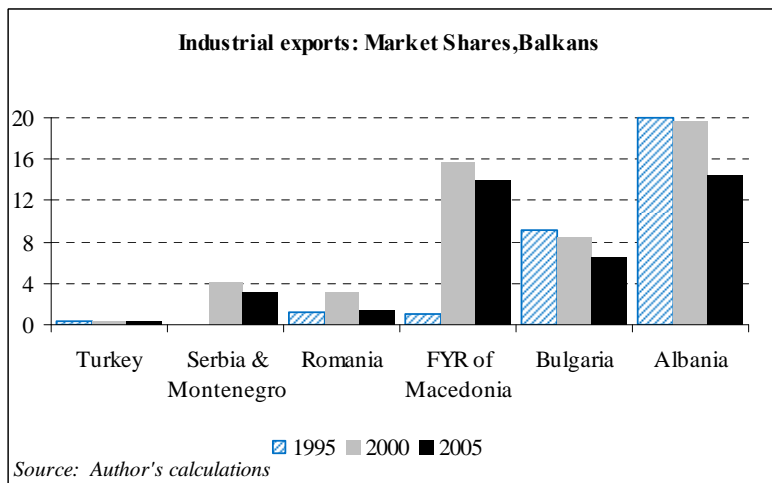
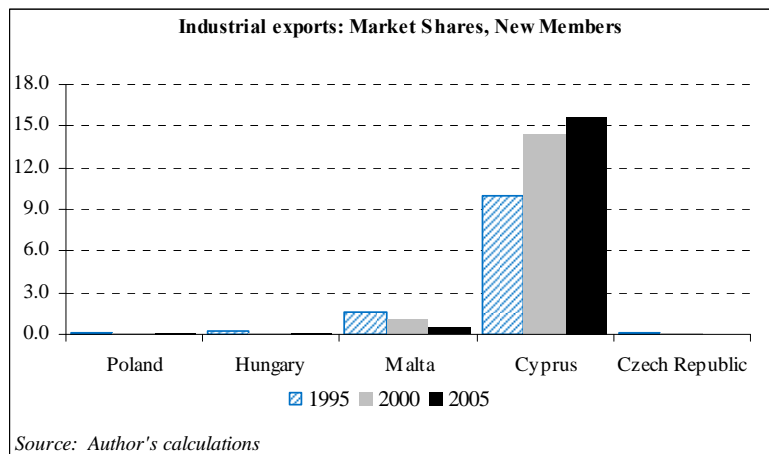


Graph 7 decomposes further the market share in the new member states and in the Balkan countries in order to identify trading partners of particular significance.

It is evident from the graph that the success in the new member states is quite limited as the most important destinations appears to be Cyprus and Malta, both very small countries. On the other hand, shares in the Balkan countries are more widely spread. Significant shares of manufactured goods in Albania, FYROM, Bulgaria, Romania, Serbia Montenegro and Turkey are worth mentioning.

In relation to the Balkan countries one cannot support that there is evidence of a pattern of increasing shares. Indeed shares are lower in 2005 than in 2000 for most Balkan countries, a fact that can be attributed partly to the recent upheavals in the area. However, current shares are quite significant and well established, so they may support some optimism for the future of Greek manufacturing, especially in view of increasing incomes in this area.

Graph 7



Conclusion

Although the service sector has played, traditionally a dominant role in Greek economy the industrial sector has assumed a key role in promoting productivity growth. The Greek manufacturing industry has performed relatively satisfactory in recent years, in terms of productivity growth and to a lesser extent in terms of output growth.

As manufacturing output is being concentrated in traditional sectors the industry has faced intense competition from low cost countries.

The analysis has indicated that the contribution of traditional industrial sectors in overall trade balance has gradually diminished. At the same time the industry has shown some signs of resilience in the face of the challenges of European integration and globalisation, managing to adapt to some extent to new markets and new sectors.

In terms basic economic activity embodied in trade, the relative success is based on processed manufacturing products and to a lesser extent in consumer products, while capital and transport goods remain areas of absolute and relative comparative disadvantage.

The geographical distribution of comparative advantage points towards the Balkan countries and to some degree the New EU-member states and Mediterranean countries as the more promising destination for further improvement of international performance of Greek industry. In this context, it appears that the country may benefit from the further EU enlargement in South Eastern Europe and from closer collaboration with Mediterranean countries.

Still Greek industry faces many challenges ahead. Indeed, the main risk would be to loose further competitiveness compared to low labour costs countries in the traditional sectors, and not to be able to increase or sustain market shares in some currently dynamic sectors. In an optimistic scenario a number of dynamic sectors (metal products, chemical products) may increase their market shares and their contribution to overall trade balance, while some traditional sectors may benefit from their operations in neighbouring low cost countries. In a gloomy scenario, competition of emerging economies would lead to a shrinking of industrial activities in Greece and substantial reduction in GDP growth.