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French and German export performances An analysis by sector and partner country

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French and German export performances

An Analysis by sector and partner-country

Abstract

Since the beginning of the decade, French exports in goods and services have grown less dynamically than German ones. Indeed, independently of any exchange-rate mechanism, the ratio of French to German exports in manufactured goods in current prices dropped by 3.3% on average per year between 2000 and 2003. Through a descriptive analysis, we attempt to identify the stylized facts behind France's poorer trade results, relatively to Germany. We base our analysis on OECD international trade statistics (STAN bilateral trade database). In particular, we consider France's and Germany's export declarations by sector and by partner-country. France lost market shares with respect to Germany in the majority of the manufacturing sectors between 2000 and 2003. These losses were particularly pronounced in the technologically intensive sectors of "machinery and equipment" and "transport equipment". Concerning the geographical destination of exports, France has lost market shares relatively to Germany on their two principal exports markets, i.e. the Euro area and the United States. In 2003, France nevertheless regained a fraction of the market shares lost over the 2000-2002 period. Recently, Germany has widened the gap with France even further on the Chinese imports market. It seems to have been in a better position to profit from the dynamic growth of the Chinese economy through its exports.

Keywords: International trade, industrial studies: manufacturing, export performances, comparison of France and Germany

Classification JEL: F10, F13, L60

Introduction and executive summary

Since the beginning of the decade, in a context of strongly growing international trade, France's exports in manufactured goods has been increasing less dynamically than Germany's. This pattern cannot be explained by exchange rate mechanisms. This paper attempts to understand the reasons underlying this recent divergence in export performances between the two countries.

We base the first section of the analysis on aggregate annual data from the OECD Economic Outlook database. This database provides annual observations up to the year 2003 and gives forecasts for 2004. In the next sections, we use annual data from the STAN OECD database on international trade that gives data on exports and imports in nominal terms for France and Germany, decomposed by sector and partner country for around 90% of the total exports of manufactured goods of these two countries. Since most of the available and comparable data concerns the manufacturing sector, the more detailed analyses in the paper focus only on this sector. To date, data in the STAN database is only available until the year 2003. However, more recent aggregate data from other sources indicate that the relative performances of France's exports compared to Germany's are still poor. Thus, in 2004, France has registered good export performances, but Germany's performances have been even better¹.

In the first section of the paper, we describe the stylised facts behind France's and Germany's trading patterns of goods and services and of manufactured products since the beginning of the 1990's. The poorer growth of the ratio of French to German exports in manufactured goods between 2000 and 2003 (-3.3% on average per year) follows a period (1992-1999) over which the ratio of French to German exports grew (+1.4% on average per year between 1992 and 1996) then stabilised (+0.1% on average per year from 1997 to 1999). However, between 2000 and 2003, the decrease in France's relative market shares relatively to Germany² is stronger than a catching-up effect between Germany and France.

The second section of the paper decomposes the ratio of French to German exports, by sector and partner country. France registered losses in market shares relatively to Germany in most of the manufacturing sectors between 2000 and 2003. More precisely, the "machinery and equipment" sector and the "transport equipment" sector were the sectors that contributed the most to the drop in French relative market shares. Thus, the relative weakness in the growth in French exports seems to be particularly pronounced in these high-technology sectors.

Regarding partner countries, the analysis indicates that France is losing market shares with respect to Germany in the countries' two main export areas (the European Union, and in particular the Euro area from 2000 to 2002, and the United States), although France regained, in 2003, a fraction of the losses registered on the Euro area export market over the 2000-2002 period. More recently, Germany seems to be in a better position than France to reap the benefits of the dynamic growth of the Chinese economy through its strong export performance.

In the third section, we focus on the following three strategic export markets for France and Germany: the United States, the Euro area and China. We carry out an analysis by sector of French and German exports towards these markets and attempt to interpret the differences in performances between both countries along several dimensions: in particular, geographic orientation of trade, degree of adequacy between the French and German supply and the demand on these local markets.

France's relative market shares in the **Euro area** deteriorated from 1998 to 2003. Between 1998 and 2002, France lost relative market shares in every sector except for

¹ Measured as the growth rate of exports in nominal terms in 2004: +5.0% for France and +8.8% for Germany (sources: INSEE and Bundesbank)

² In the paper, "France's relative market shares" (or relative exports) refers to the ratio between France's and Germany's exports in the relevant sector.

the textile sector. The deterioration of France's relative exports in the "machinery and equipment" sector contributed alone by 40% to the drop in France's total relative market shares. The "food products, beverages and tobacco" sector and the "pharmaceutical industry and chemistry" sector also represented 40% of the decrease. In 2003, France's situation strongly improved, but not enough, however, to breach the gap that had been formed over the 2000-2002 period. In 2003, French trade with the Euro area was boosted by the "transport equipment" sector, the pharmaceutical industry and chemistry" sector and the "food products, beverages and tobacco" sector (these three sectors explain almost 80% of the improvement in the French position with respect to Germany in 2003). The fact that France's domestic demand was far more dynamic than Germany's from 1998 to 2003 can in part explain the weaker relative growth rate of French exports towards the Euro area³. Germany's efforts to maintain a strong price-competitiveness since 2000 could also explain its better relative performance within the Euro area.

France's relative market shares on the **American** market decreased from the beginning of the 1990's to 2003. The high-technology sectors ("transport equipment" and, to a lesser extent, "machinery and equipment") most strongly contributed to this drop. France continued to lose relative market shares in these sectors from 2000 to 2003. However, over the same period, France gained relative market shares in the "pharmaceutical industry and chemistry" sector, but these gains were not strong enough to entail a stabilisation of its relative market shares in the manufacturing sector excluding "transport equipment" in the United-States since 2000.

Finally, after an improvement in France's relative export performances on the **Chinese** market between 1993 and 1997, for the most part due to the "transport equipment" sector, France's relative position deteriorated in China between 1998 and 2003. This deterioration was particularly spectacular for the "transport equipment" sector. The gradual increase in the flow of foreign direct investments from Germany to China, particularly in the automobile sector, may explain at least a fraction of this deterioration.

In the fourth and last section of the paper, we briefly compare the nature (intra-industry or inter-industry) of the trade flows between France and Germany and a number of partner countries. The way the nature of flows varies over time may provide extra insight on the relative weakness in France's export growth. The share of intra-industry trade in France's and Germany's trade flows appears to be much higher with partner countries that have been industrialised for a long time than with other partner countries. This confirms the intuition that trade between industrialised countries and developing countries follows a more "supply-side" logic (theory of comparative advantage) whereas trade between "older" industrialised countries is more the consequence of "demand-side" mechanisms, formalized in the new theory of international trade (consumers' preference for diversity, quality and innovating products..).

Results show that the share of intra-industry trade in the trade flows between France and Germany and economically "catching-up" countries is increasing. This gradual distortion in the nature of trade towards the type of trade that exists between older industrialised countries is apparently more advanced in Germany than in France with respect to China. This observation may shed new light on the difference in export performances between the two countries. Perhaps Germany is more capable of adapting to the economic catching-up of countries such as China or countries of Eastern and Central Europe, by taking into account the change in these countries' domestic demand, which is moving towards the consumption pattern of older industrialised countries. This is, for the time being, only a hypothesis, which could be tested with more sophisticated methods.

³ For Germany, the « Euro area » includes France, whereas for France, it includes Germany. The limits of the "Euro area" therefore change according to the country point of view adopted. Trade with the Euro area also depends on the rate of growth of domestic demand in each country over the period.

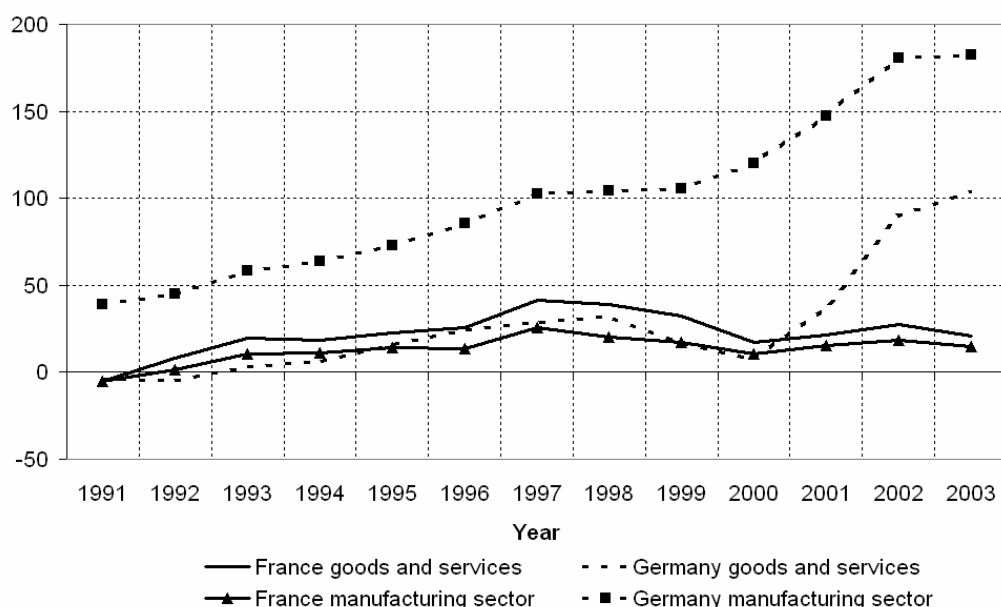
I- France's exports were less dynamic than Germany's in the beginning of the decade

On average between 2000 and 2003, French GDP in nominal terms increased by 3.5%. Domestic demand contributed by 3.7 percentage points to this increase, whereas the contribution of trade was on average negative (-0.2 % GDP)⁴.

If it certainly did have negative effects, the appreciation of the Euro cannot alone explain France's poorer trade performances with respect to Germany over recent years. Germany was faced with the same variations in nominal exchange rates as France but continued to register an increase in its trade surplus in goods and services since the creation of the common currency, whereas it was difficult to maintain the corresponding trade balance for France at a constant level. The same is true for manufactured goods (Graph 1)⁵.

The stagnation of the goods and services trade balance in France from 2000 to 2003 is in part due to the sustained growth in French imports, linked to a strong domestic demand. French export growth, on the other hand, was slower than that of Germany between 2000 and 2003 and even decreased in 2001. The growth differential between French and German exports in goods and services since 2000 is therefore significant. Note that French exports of manufactured goods decreased in 2002 and 2003, whereas total exports of OECD countries continued to increase over the same period (tables 1a and 1b).

Graph 1: Trade balance in goods and services and in manufactured products (exports – imports)



Source: OECD, *Economic Outlook 2005* and STAN OECD 2005 database.
Units: billions of US dollars.

⁴ Source: INSEE, national accounts

⁵ In the rest of the paper, unless stated otherwise, trade flows are expressed in billion of US dollars. We choose US dollars because this enables us to compare trade flows with partner countries outside of the Euro area, for which the US dollar is the reference currency.

Table 1: Growth rate of trade flows in nominal terms (%)
a) Total goods and services

Exports					Imports				
Country	2000	2001	2002	2003	Country	2000	2001	2002	2003
France	0,38	-1,09	5,47	16,73	France	4,81	-2,34	4,18	19,81
Germany	1,13	3,64	10,05	20,79	Germany	2,69	-1,00	2,10	21,41
United States	10,60	-5,79	-2,69	4,10	United States	17,89	-5,14	2,14	8,00
Japan	13,71	-15,48	3,14	13,92	Japan	16,58	-8,44	-2,85	11,23
Total OECD	7,54	-2,85	3,83	14,40	Total OECD	2,69	-1,00	2,10	21,41

Source: OECD, *Economic Outlook 2005*.

b) Manufactured products

Exports					Imports				
Country	2000	2001	2002	2003	Country	2000	2001	2002	2003
France	15,68	1,29	-0,44	-2,19	France	19,61	-0,30	-1,49	-1,11
Germany	18,52	6,83	2,44	-2,09	Germany	19,83	2,61	-3,99	-3,37
United States	12,70	-7,18	-5,20	3,68	United States	15,79	-6,30	2,40	6,76
Japan	19,60	-0,67	-2,83	10,70	Japan	12,68	3,47	-0,01	3,95
Total OECD	24,58	5,93	1,30	7,96	Total OECD	24,91	4,30	1,21	8,46

Source: OECD, *STAN indicators 2005*.

Thus, interrupting a prolonged period of decline in market shares that had begun in the second half of the 1980's, Germany increased its market shares, relatively to the rest of the world⁶, far more strongly than France between 2001 and 2003. The OECD autumn 2004 forecasts suggested an interruption in the increase in market shares for both countries from 2004 onwards (Graph 2).

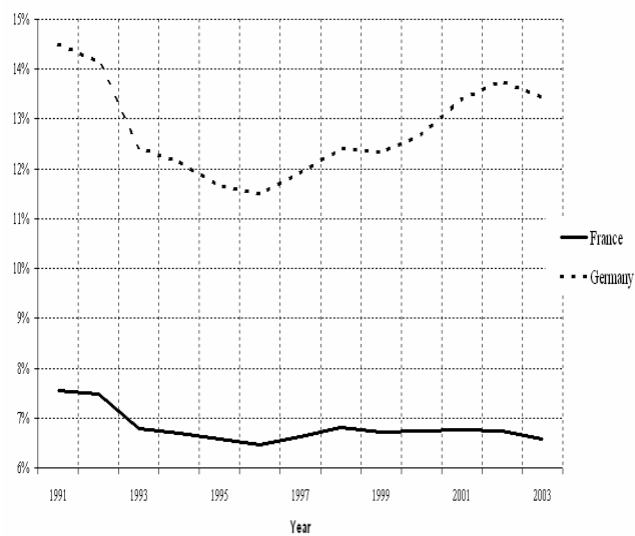
⁶ The denominator of these market shares represents the sum of the exports of 24 OECD countries (with the exception of Central and Eastern European Countries, for which data is not available for a sufficiently long period) and that of a set of other geographical areas: Africa and the Middle East, China, the East-Asian Tigers, other Asian Countries, Latin America and South America. Intra-area exports are therefore not taken into account (because they do not appear in the Economic Outlook OECD database). In the graph 2b, the denominator is the sum of exports of the 24 OECD countries considered.

Graph 2a:
France's and Germany's market shares on the world market (goods and services)



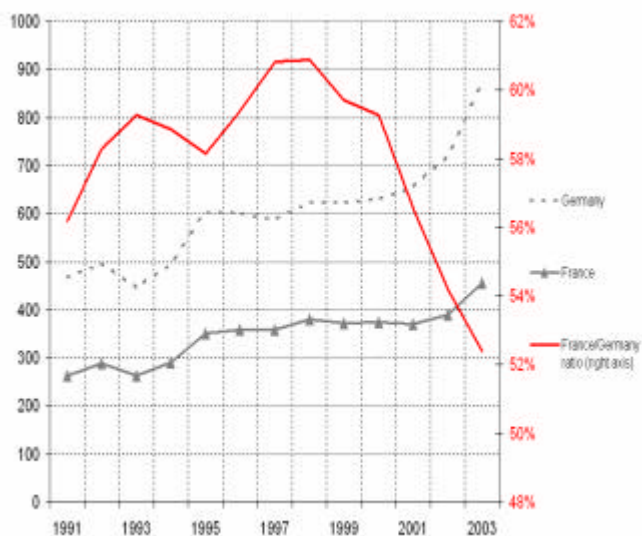
Source: OECD, Economic Outlook 2005, authors' calculations. Units: percentages

Graph 2b:
France's and Germany's market shares as a fraction of the market shares of all OECD countries (manufactured products)



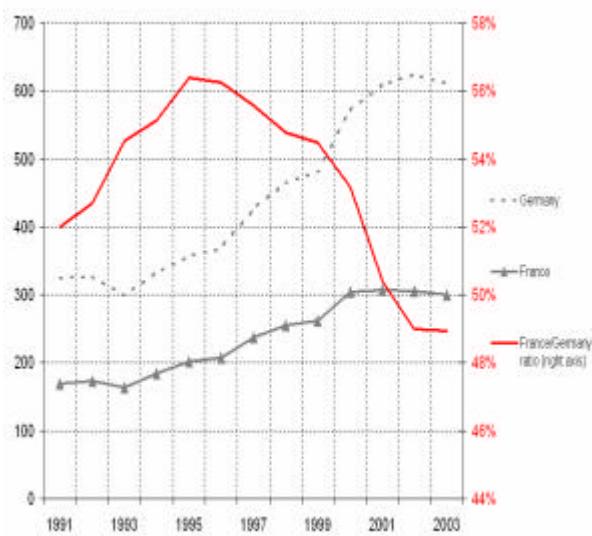
Source: STAN Indicators 2005 database, authors' calculations. Units: percentages.

Graph 2c:
French and German exports of goods and services and France's relative market shares



Source: OECD, Economic Outlook 2005, authors' calculations. Units: billions of US dollars

Graph 2d:
French and Germany exports of manufactured products and France's relative market shares



Source: STAN Indicators 2005 database, authors' calculations. Units: billions of US dollars.

II- Decomposing by sector and partner country

In this section, we attempt to understand the reasons behind the decrease in France's relative market shares, defined as the ratio between France's and Germany's exports in manufactured goods, since the beginning of the decade. We begin by analysing the contributions of the major manufacturing sectors to the variations in this ratio. We then present a similar analysis by geographical area. Box 1 explains the method used to compute the contributions.

In the next sections, we use data on bilateral trade flows of manufactured goods in nominal terms found in the bilateral STAN database (OECD 2005). In order to adopt the view point of the exporting country, we use export declarations. We consider the ten industrial sectors defined in the STAN nomenclature as well as data for trade between France and Germany on the one hand and 45 partner countries on the other hand. These 45 countries represent nearly 90% of the two countries' total exports (for a more detailed description, see annex 1).

Box 1: Contributions to the variations in France's relative market shares

Let X_{FR} , X_{All} , $X_{FR \rightarrow P}$, $X_{All \rightarrow P}$, respectively stand for French and German total exports of manufactured goods and French and German exports of manufactured goods towards a given partner country P.

In the expressions that follow, the rate of change of France's relative market shares, (X_{FR}/X_{All}) , is approximated by the first difference of its logarithm, $(X_{FR}/X_{All}) \approx X_{FR} - X_{All}$. After switching to discrete time, we have the following expression:

$$\left(\frac{X_{FR}}{X_{All}} \right)_t = \left(\sum_P (X_{FR \rightarrow P})_t \left(\frac{X_{FR \rightarrow P}}{X_{FR}} \right)_{(t-1)} \right) - \left(\sum_P (X_{All \rightarrow P})_t \left(\frac{X_{All \rightarrow P}}{X_{All}} \right)_{(t-1)} \right)$$

We therefore decompose the variations in France's relative market shares into the sum of the variations in bilateral exports toward the partner country P, weighted by the share of this country P in the exporting country's total exports. The same expression is used when decomposing by sector.

II.1 Decomposing by sector

Table 2 presents the variations in France's relative market shares as well as the contributions to these variations of the ten industrial sectors defined in the STAN nomenclature.

France's relative market shares increased in the beginning of the 1990's (+1.4% on average per year) then stagnated between 1997 and 1999 (+0.1% on average per year). They strongly decreased between 2000 and 2003 (-3.3% on average per year). This loss in France's relative market shares over the 2000-2003 period therefore goes beyond a simple catching-up effect on behalf of Germany over that period.

The increase in France's relative market shares in the beginning of the 1990's was true for all of the manufacturing sectors (except for "transport equipment") and in particular for the "food products, beverages and tobacco" sector and the "pharmaceutical industry and chemistry" sector, and, to a lesser extent, the textile sector.

Between 2000 and 2003, France registered losses in relative market shares with respect to Germany in almost all of the manufacturing sectors (every sector, except for the textiles, "food products, beverages and tobacco", "pharmaceutical industry and chemistry" sectors for which the increases in France's exports were limited). However, the "machinery and equipment" sector most strongly contributed to the total decrease in market shares (-2.0 points) as well as the transport equipment sector, although to a lesser extent (-0.9 points). Therefore, it is mostly in technologically intensive sectors that France's exports decreased the most with respect to Germany's⁷.

Table 2: Contributions of each sector to the variations in France's relative market shares between 1992 and 2003 (on average per year)

Sector	Weight of the sector in France's exports of manufactured goods	Weight of the sector in Germany's exports of manufactured goods	Contribution of the sector to the variations in France's relative market shares				
	1992-2003	1992-2003	1992-1996	1997-1999	2000-2002	2003	2000-2003
Machinery and equipment	25,5%	33,1%	0,1%	0,5%	-1,9%	-2,3%	-2,0%
Transport equipment	21,6%	23,6%	-0,1%	-0,4%	-1,1%	-0,1%	-0,9%
Pharmaceuticals, Chemistry	20,7%	18,1%	0,4%	0,3%	-0,3%	0,9%	0,0%
Food products	10,7%	4,6%	0,5%	-0,2%	-0,4%	1,2%	0,0%
Metals and metal products	8,1%	8,5%	0,0%	-0,1%	-0,3%	0,0%	-0,2%
Textiles	5,8%	4,7%	0,2%	0,1%	0,0%	0,3%	0,1%
Paper and paper products	3,1%	3,4%	0,0%	0,0%	-0,2%	0,0%	-0,2%
Other manufactured goods	2,0%	2,0%	0,1%	0,0%	0,0%	-0,1%	-0,1%
Non-metallic mineral products	1,9%	1,5%	0,1%	-0,1%	-0,1%	0,0%	-0,1%
Wood and products of wood	0,6%	0,6%	0,0%	0,0%	-0,1%	0,0%	-0,1%
TOTAL	100,0%	100,0%	1,4%	0,1%	-4,4%	0,0%	-3,3%

Source: STAN OECD (2005) database, authors' calculations

Interpretation: on average over the 2000-2002 period, France's relative market shares decreased by 4.4%. The "machinery and equipment" sector, which represents 25.5% of the total of France's exports between 1992 and 2003, contributed by -1.9 points to this decrease.

⁷ Fontagné, Freudenberg and Unal-Kesenci (1999) classified high technology products by detailed industrial sector. In France, these products almost all belong to the "machinery and equipment" sector (measuring and controlling devices, electronic devices), to the "transport equipment" sector (aeronautics) and to the "pharmaceutical industry and chemistry" sector (pharmaceutical industries, nuclear matter).

II.2 Decomposing by partner country

Table 3 presents the variation in France's relative market shares as well as the main contributions of partner countries to this variation over recent years⁸.

Between 2000 and 2003, France lost market shares with respect to Germany on the majority of foreign export markets. The Euro area, the EU15 Member States outside of the Euro area, the Eastern and Central European Countries, the United States and China strongly contributed to this deterioration in the French position.

Table 3: Main contributions by partner country to the variations in France's relative market shares over the 1994-2003 period⁹ (on average per year)

Partner Country/area	Share of exports		Growth rate of exports		Contributions of the partner country to the variations in France's relative market shares					
	1994-2003	1994-2003	1994-2003	1994-2003	1994-2003	1994-2003				2000-2003
						1994-1996	1997-1999	2000-2002	2003	
United States	7,6%	9,4%	5,0%	9,7%	-0,5%	-0,7%	-0,3%	-0,5%	-0,9%	-0,6%
China	1,1%	1,7%	13,5%	14,9%	-0,1%	0,0%	0,1%	-0,4%	-0,5%	-0,4%
Netherlands	4,2%	6,3%	4,1%	4,4%	-0,1%	-0,3%	0,2%	-0,3%	-0,1%	-0,3%
United Kingdom	9,9%	8,1%	6,1%	7,5%	0,0%	0,1%	0,2%	-0,3%	-0,1%	-0,3%
Switzerland	3,2%	4,5%	4,6%	4,2%	-0,1%	-0,1%	0,1%	-0,2%	0,0%	-0,2%
Germany and France	16,0%	10,8%	4,2%	5,5%	0,1%	1,0%	-0,6%	-0,6%	1,5%	-0,1%
Rest of the euro area	29,6%	25,2%	2,2%	1,7%	0,4%	1,1%	0,2%	-0,8%	2,3%	0,0%
4 CEECs	2,0%	6,3%	0,3%	0,9%	-0,5%	-0,7%	-0,4%	-0,3%	-1,4%	-0,5%
Other OECD countries	2,8%	3,5%	0,2%	0,3%	-0,1%	-0,2%	0,3%	-0,3%	-0,1%	-0,3%
Rest of the EU15	2,3%	3,9%	0,2%	0,3%	-0,1%	-0,2%	0,0%	-0,1%	-0,3%	-0,2%
Asia	6,5%	7,2%	0,5%	0,5%	-0,1%	-0,4%	0,3%	-0,2%	-0,3%	-0,2%
Latin and South America	1,4%	1,8%	0,1%	0,2%	-0,1%	-0,1%	-0,1%	0,0%	-0,3%	-0,1%
Rest of the EU25	0,7%	0,9%	0,1%	0,1%	0,0%	0,0%	0,0%	0,0%	-0,1%	0,0%
Other	12,6%	10,3%	4,5%	6,5%	0,0%	-0,2%	0,1%	-0,4%	0,3%	-0,1%
TOTAL	100,0%	100,0%	5,7%	7,1%	-1,4%	-0,5%	0,2%	-4,4%	0,0%	-3,3%

Source: Bilateral STAN database (OECD 2005), authors' calculations

Interpretation: on average per year over the 1994-2003 period, France's relative market shares decreased by 1.4%. China, which represents 1.1% of the total of France's exports between 1994 and 2003, contributed by -0.1 points per year to this decrease, since the growth rate of French exports towards China was smaller (13.5%) than that of German exports towards China (14.9%).

II.2.1 The Euro area

The Euro area is the geographical area that most strongly negatively contributed to the difference in growth rates between French and German exports between 2000 and 2002. The Euro area as a whole contributed by -1.7 points to the difference in the two countries' export growth rate. However, although German exports towards the Euro area increased more than that of France, France's relative market shares in the Euro area only slightly decreased (Graph 3, compared to the way the relative market shares varied for exports towards the United States and China, Graphs 5 and 6). This may seem surprising since the Euro area's contributions to the variations in France's relative market shares are strongly negative. This apparent paradox can be explained

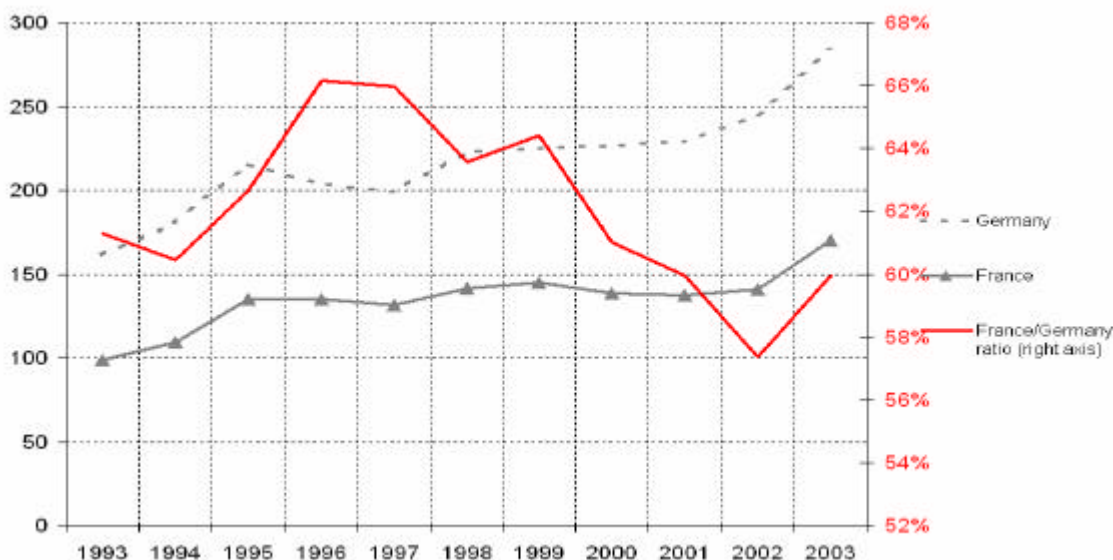
⁸ The analysis begins in 1994 in order to dispose of complete data for trade with the Czech Republic and The Republic of Slovakia. Over the 1994-1996 period, France's relative market shares decreased (-0.5%), whereas it increased over the 1992-1996 period (+1.4). Therefore, France considerably gained relative market shares in 1992 and 1993.

⁹ Geographic areas are defined as follows: Rest of the Euro area: Italy, Spain, Portugal, Greece, Belgium, Luxembourg, Austria, Ireland, and Finland. 4 Central and Eastern European Countries: Poland, Hungary, Czech Republic, Rep of Slovakia. Rest of the EU15: Sweden, Denmark. Rest of the EU25: Malta, Cyprus, Slovenia, Estonia, Latvia, Lithuania. Asia: Korea, Malaysia, Singapore, Thailand, Indonesia, Philippines, Taiwan, Japan, Hong-Kong, India. Latin and South America: Brazil, Argentina, Mexico. Other OECD countries: New Zealand, Australia, Iceland, Norway, Turkey.

by the importance of the share of the two countries' exports that go towards the Euro area (49.8% for France and 42.3% for Germany). This amplifies the variations in relative market shares when computing contributions.

In 2003 however, France regained a fraction of the loss accumulated over the 2000-2002 period with respect to Germany.

Graph 3: French and German exports and France's relative market shares in the Euro area

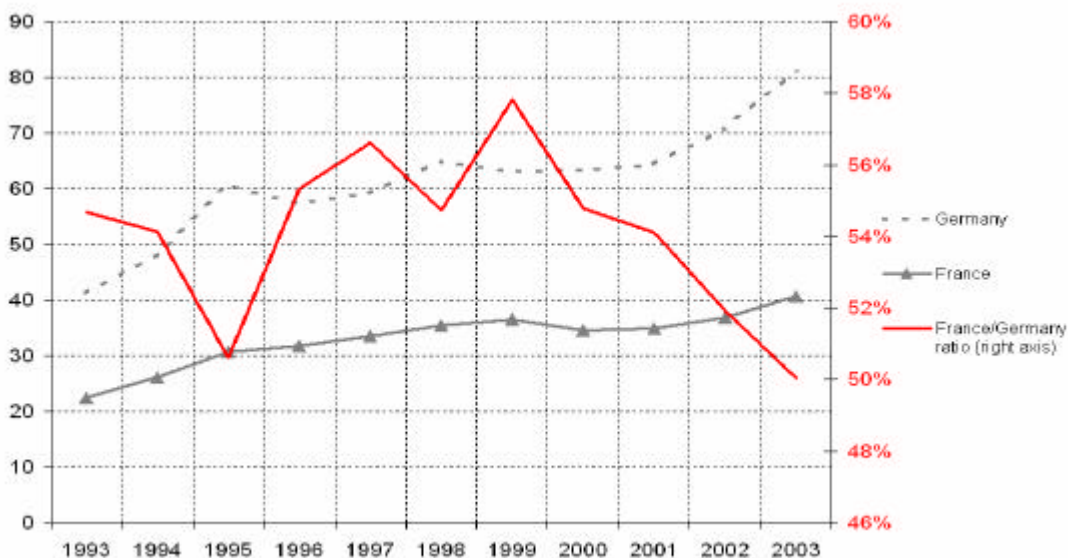


Source: Bilateral STAN database (OECD 2005), authors' calculations. Units: billions of US dollars.

II.2.2 The United Kingdom, Sweden and Denmark

The three countries of the EU15 that do not belong to the Euro area negatively contributed to the variations in France's relative market shares over the 2000-2003 period (-0.5 points per year). From 2000 to 2003, France lost export markets in these three partner countries, whereas it had probably gained export markets between 1995 and 1999.

Graph 4: French and German exports and France's relative market shares in the three EU15 countries that do not belong to the Euro area



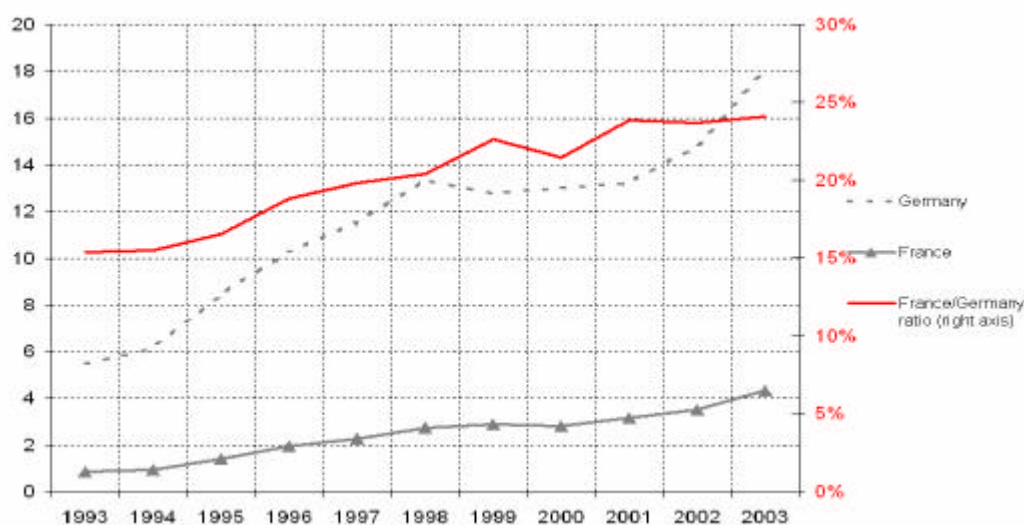
Source: Bilateral STAN database (OECD 2005), authors' calculations. Units: billions of US dollars.

II.2.3. Central and Eastern European Countries

The Central and Eastern European Countries (CEEC) have been trading with Germany for many years and are currently ending the process of trade integration with the Euro area. However, the four main CEEC countries (Czech Republic, Hungary, Poland and the Rep of Slovakia) negatively contributed to the deterioration in France's relative market shares over the 1994-2003 period.

France gained market shares in these four partner countries on average over the period considered (Table 3 and Graph 5). However, the weight of the CEECs in total French exports remained much smaller than their weight in German exports. These countries' contribution to France's relative market shares is therefore negative.

Graph 5: French and German exports and France's relative market shares in the CEECs¹⁰



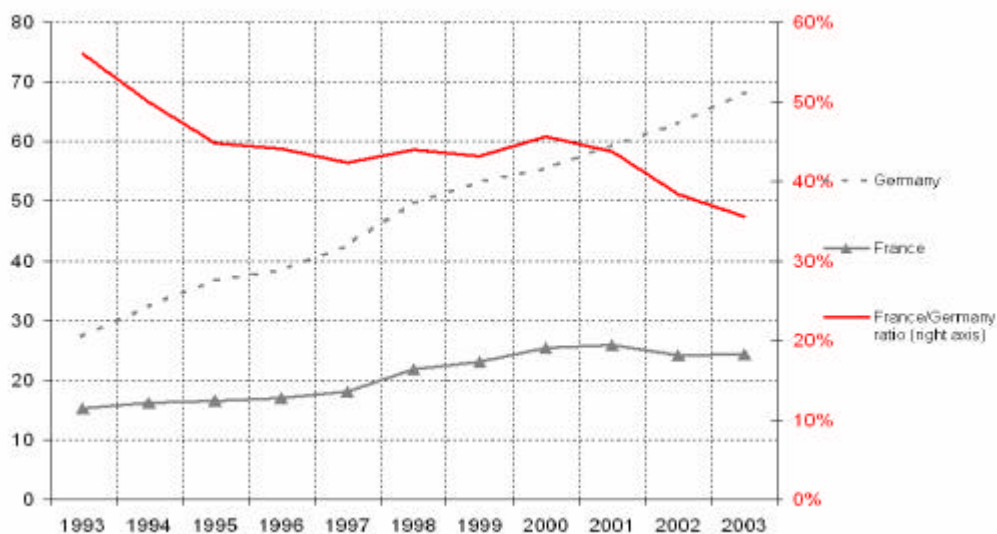
Source: Bilateral STAN database (OECD 2005), authors' calculations. Units: billions of US dollars.

II.2.4 The United States

Compared to the other partner countries, China and the United States contributed very negatively to the difference in growth between French and German exports between 2000 and 2003 (-0.4 point per year for China and -0.6 point per year for the United States). France's losses in relative market shares on the American export market were more pronounced than on the Chinese market over the whole period (Graph 6 and 7). France's relative position on the American market deteriorated since the beginning of the 1990's, due to a strong increase in German exports. The United States' important contribution to the deterioration in France's relative market shares is also due to the significant share of exports towards the United States in Germany's total exports.

¹⁰ French exports towards the CEECs increased more rapidly than German exports on average over the 1994-2003 period. The increase in France's relative market shares in the CEECs probably corresponds to a catching-up process following the gradual integration of the CEECs into the EU. However, French exports of manufactured products towards these countries are still four times smaller than German exports in 2003. Germany is still a privileged trading partner of these countries, thanks to its geographical closeness and to geo-strategic and historical factors.

Graph 6: French and German exports and France's relative market shares on the American market

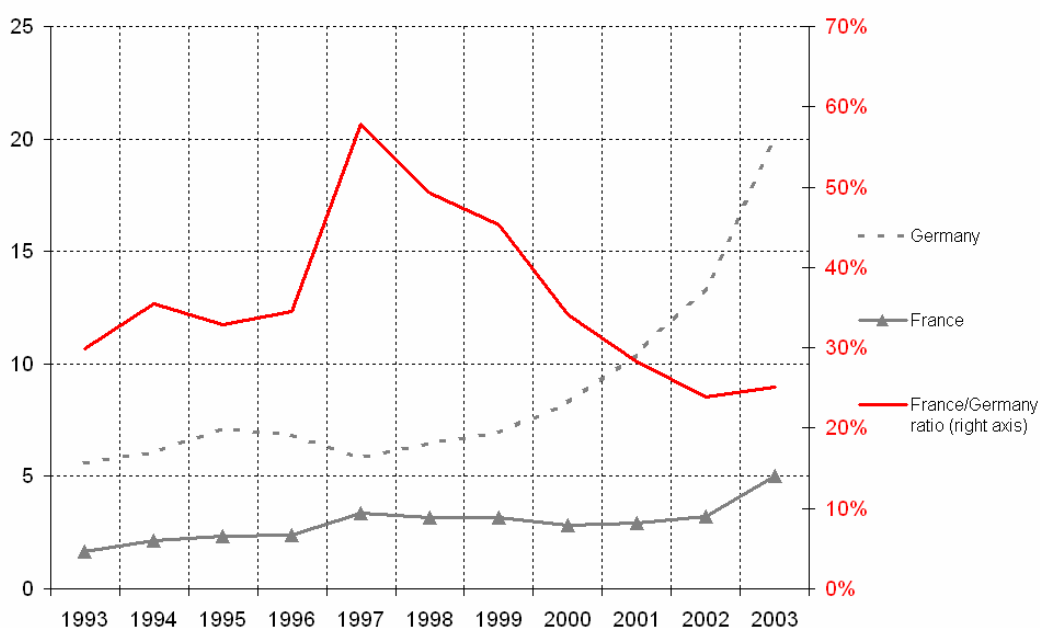


Source: Bilateral STAN database (OECD 2005), authors' calculations. Units: billions of US dollars.

II.2.5 China

The deterioration in France's position in China was very pronounced between 1997 and 2003 (Graph 7). Not only did German exports towards China strongly increase, but French exports also decreased at the end of the 1990's. At the beginning of the decade, French exports towards China stabilised then increased again, but at a lower rate than the rate of growth in German exports.

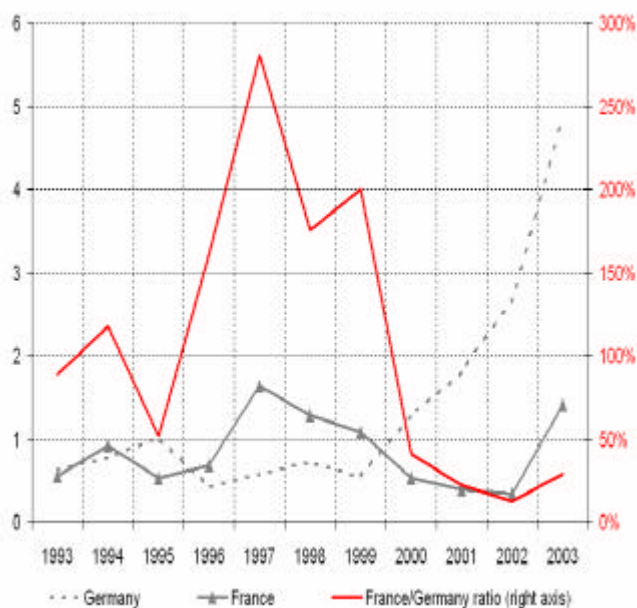
Graph 7: French and German exports and France's relative market shares on the Chinese market



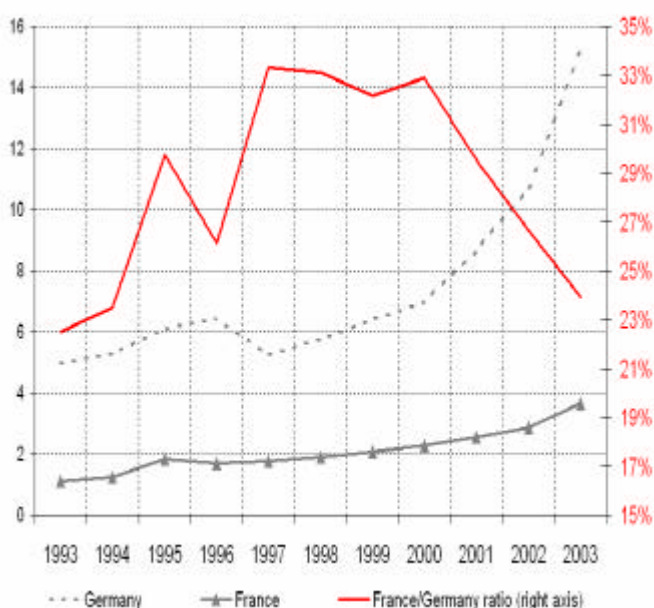
Source: Bilateral STAN database (OECD 2005), authors' calculations. Units: billions of US dollars.

The 1997 peak in France's relative market shares is in part explained by the « transport equipment » sector (Graph 8). The growth in French exports in this sector over the 1996-1997 period may reflect the signing of several large contracts (in the aeronautical industry in particular). German exports towards China in this sector strongly increased since the end of the 1990's. France's relative market shares on the Chinese market decreased over this period in the manufacturing sector excluding transport equipment, but to a lesser extent.

Graph 8a:
French and German exports and relative market shares on the Chinese market in the « transport equipment » sector



Graph 8b:
French and German exports and relative market shares on the Chinese market in the manufacturing sector excluding transport equipment



Source: Bilateral STAN database (OECD 2005), authors' calculations. Units : billions of US dollars.

These results tend to indicate that a more detailed analysis by sector of the variations in French and German exports towards China would be interesting.

III- Detailed analysis of the US, euro area and Chinese markets

In view of previous results, section 3 analyzes in more details the variations of France's relative market shares in the American market, the Euro area and China. Annex 3 provides results for a similar analysis of the EU-15, of the 4 largest CEECs (Hungary, Poland, the Czech Republic and Slovakia) and of the EU-25 markets.

In order to better understand why France is loosing market shares in these areas, it is straightforward to adopt the view point of the partner country considered. Thus, we will switch to another point of view: when possible, we will use declared imports data by each partner country (source: STAN 2005) instead of the declared exports data of France and Germany we have focused upon until now. These declared imports contain elements that could influence the competition level among imported products (transport costs and diverse transaction costs). Unfortunately, the STAN database does not contain declared imports by China. In that particular case, we therefore stick to the declared exports of France and Germany.

III.1. France's relative trade performances on the Euro area market

Table 4 gives the contributions of the 10 main manufactured sectors to the variations in France's relative market shares in the Euro area.

Over the past decade, we can identify three periods for the pattern of France's relative share in Euro area imports. During the first period (1993-1997), France gained market shares in all of the manufactured sectors in comparison with Germany (+3.3% per year on average). Technologically intensive sectors (machinery and equipment, transport equipment, pharmaceuticals and chemistry) were the sectors that contributed the most to the improvement in French relative results.

However, France's situation deteriorated in comparison with Germany during the 1998-2002 period. Germany regained market shares in all sectors, except in the textile industry. More precisely, the machinery and equipment sector explains 40% of the deterioration in France's relative market shares over that period. Taken together, the food products, pharmaceuticals and chemistry and transport equipment sectors also explain 40% of this deterioration.

The year 2003 was that of a reversal of trend in France's relative market shares in the Euro area. Indeed, France regained market shares with respect to Germany in all sectors, except in the machinery and equipment sector. The stronger growth of exports in the automobile sector in 2003 explains the improvement in the French position in the transport equipment sector (Graph 9).

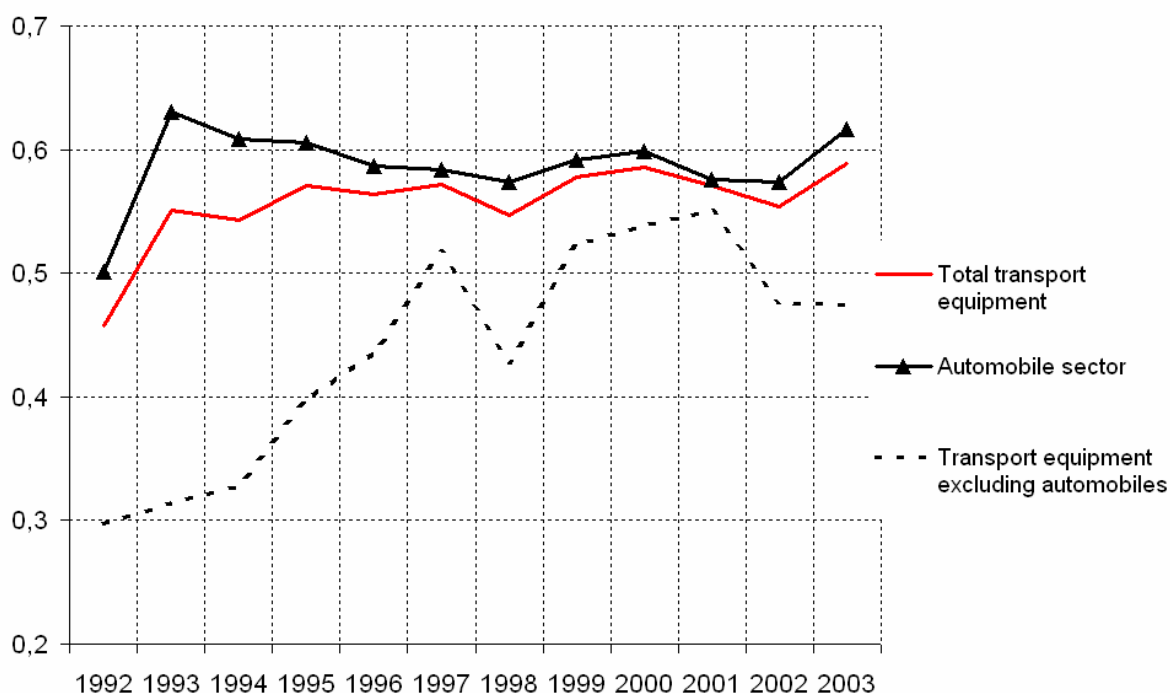
The trade potential represented by these sectors can be illustrated using a decomposition of bilateral trade links as shown in box 3. Graphs 10a and 10b use this approach to describe the « machinery and equipment » sector, which contributes the most to the variations in France's relative market shares over the recent period.

Table 4: Contributions of each sector to the variations in France's relative market shares in the Euro area between 1993 and 2003 (on average per year)

Sector	Weight of the sector in France's exports of manufactured goods towards the euro area	Weight of the sector in Germany's exports of manufactured goods towards the euro area	Contribution of the sector to the variations in France's relative market shares in the euro area			
	1993-2003	1993-2003	1993-1997	1998-2002	2003	1998-2003
Textiles	5,5%	5,0%	0,2%	0,0%	0,4%	0,1%
Other manufactured goods	1,7%	2,3%	0,1%	-0,1%	0,0%	-0,1%
Non-metallic mineral products	2,0%	1,7%	0,1%	-0,1%	0,2%	0,0%
Wood and products of wood	0,9%	0,7%	0,0%	-0,1%	0,1%	0,0%
Metals and metal products	9,3%	9,3%	0,1%	-0,1%	0,6%	0,1%
Transport equipment	21,0%	23,1%	0,8%	-0,3%	1,6%	0,0%
Paper and paper products	3,6%	3,9%	0,1%	-0,2%	0,1%	-0,1%
Pharmaceuticals, Chemistry	21,1%	17,9%	0,5%	-0,3%	1,1%	0,0%
Food products	11,8%	6,5%	0,4%	-0,6%	1,3%	-0,3%
Machinery and equipment	23,2%	29,6%	1,0%	-1,3%	-0,1%	-1,1%
TOTAL	100,0%	100,0%	3,3%	-2,9%	5,3%	-1,5%

Source: Bilateral STAN database (OECD 2005), authors' calculations.

Graph 9: Relative market shares (France/Germany) on the Euro area market in the transport equipment sector



Source: Bilateral STAN database (OECD 2005)

Box 3 : Analysis of a country's market shares on an importing market

To analyze the market share of a country on a foreign market, we use the method introduced by Erkel-Rousse and Guimbert and published by Aussilloux and Pajot (2003).

Let trade flows be represented as follows (the arrow direction indicates the flow direction):

$M_{i \rightarrow j}^s$ and $X_{i \rightarrow j}^s$ are the trade flow of product s between country i and j , declared respectively by the importing country j and by the exporting country i .

$X_{i \rightarrow .}$ and $X_{i \rightarrow .}^s$ are the total exports by country i and the total exports of products s by country i .

$M_{.\rightarrow j}$ and $M_{.\rightarrow j}^s$ are the total imports by country j and the total imports of products s by country j .

The decomposition (in a purely accounting sense) of exporting country i 's market shares in the total of the imports by country j is:

$$\underbrace{\frac{M_{i \rightarrow j}^s}{M_{.\rightarrow j}^s}}_{\text{market share in the imports}} = \underbrace{\left(\frac{M_{i \rightarrow j}^s}{X_{i \rightarrow j}^s} \right)}_{\text{mirror flows}} \underbrace{\left(\frac{X_{i \rightarrow .}^s}{M_{.\rightarrow j}^s} \right)}_{\text{supply and demand adequation}} \underbrace{\left(\frac{X_{i \rightarrow j}^s}{X_{i \rightarrow .}^s} \right)}_{\text{geographic orientation}}$$

The first term represents the «mirror flows»: both countries declare the same trade flows but the amounts declared are generally slightly different, due to the FOB declarations of the exporting country (excluding transport and transaction costs, including tariffs) and CIF declarations of the importing country (including transport and transaction costs), of the time discrepancy between the expedition of the product and its arrival on its destination market (that can involve different market values, if the exchange rate has varied during the shipment, for example), etc. All these elements are likely to influence the degree of competition between imported products.

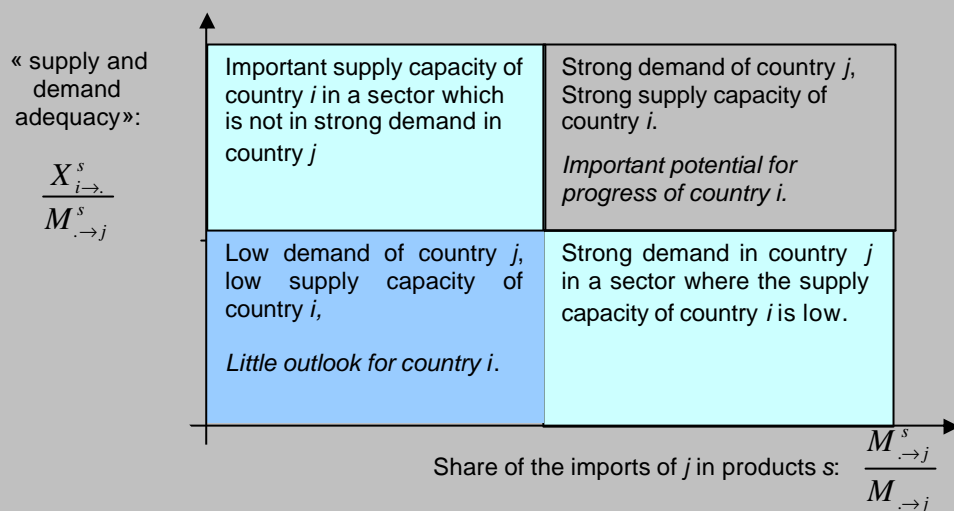
The second term is a quantitative measure of the capacity of country i 's exporting supply to respond to country j 's importing demand. If the country j 's importing demand is high and if country i is capable of quantitatively responding to this demand thanks to its specialization in the production of that product, to the relative sizes of both countries and to the sectoral structure of country j 's imports, there is a strong trade potential in product s between country i and j :

$$\underbrace{\left(\frac{X_{i \rightarrow .}^s}{M_{.\rightarrow j}^s} \right)}_{\text{Supply and demand adequation}} = \underbrace{\left(\frac{X_{i \rightarrow .}^s}{X_{i \rightarrow .}^s} \right)}_{\text{specialization}} \underbrace{\left(\frac{X_{i \rightarrow .}^s}{M_{.\rightarrow j}^s} \right)}_{\text{size}} \underbrace{\left(\frac{M_{.\rightarrow j}^s}{M_{.\rightarrow j}^s} \right)}_{\text{demand structure}}$$

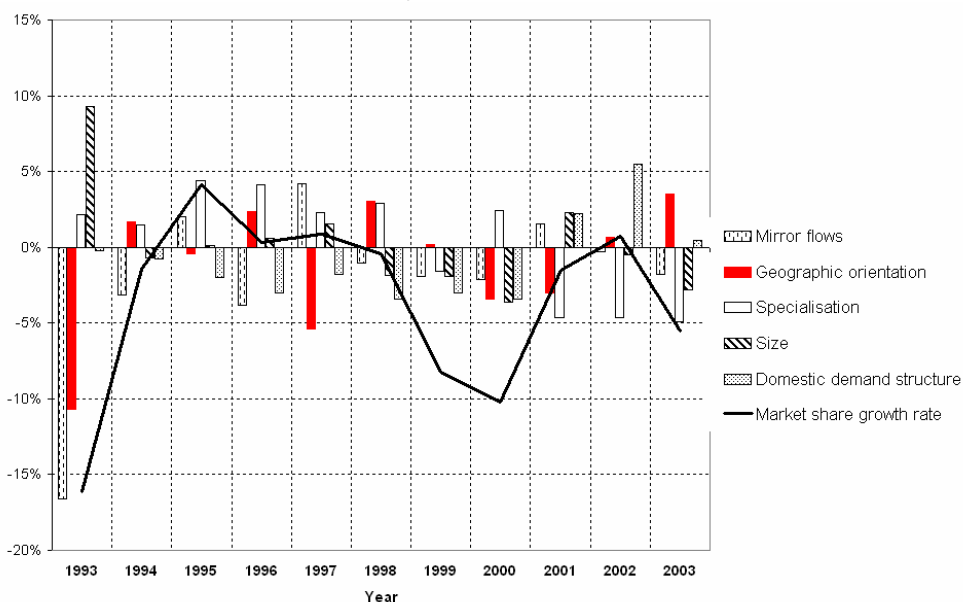
The third term represents the orientation of the exports in product s by country i towards country j . This degree of geographic orientation is influenced by the commercial strategy of country i on the market j , which has an impact on its capacity to respond to (qualitatively this time) the demand on the market j .

Among the components of the « supply and demand adequacy » term, the demand structure gives information about the *sectoral* structure of the importing market. It can therefore be interesting to represent on a graph the position of each sector *s* as a function of the sectoral structure of country *j*'s demand (the x axis) and of the supply adequacy of country *i* to country *j*'s demand (the y axis). The sector *s*'s position relatively to the median calculated over all of the products gives an indication on the the country *i*'s ability to respond to country *j*'s demand in the corresponding sector.

Ceteris paribus, including $M_{i \rightarrow j}^s$ et $X_{i \rightarrow j}^s$, the « supply and demand adequacy » term decreases with the share of imports of country *j* in sector *s*. Thus, by construction, more sectors are in the North-East and South-West part of the following graph.



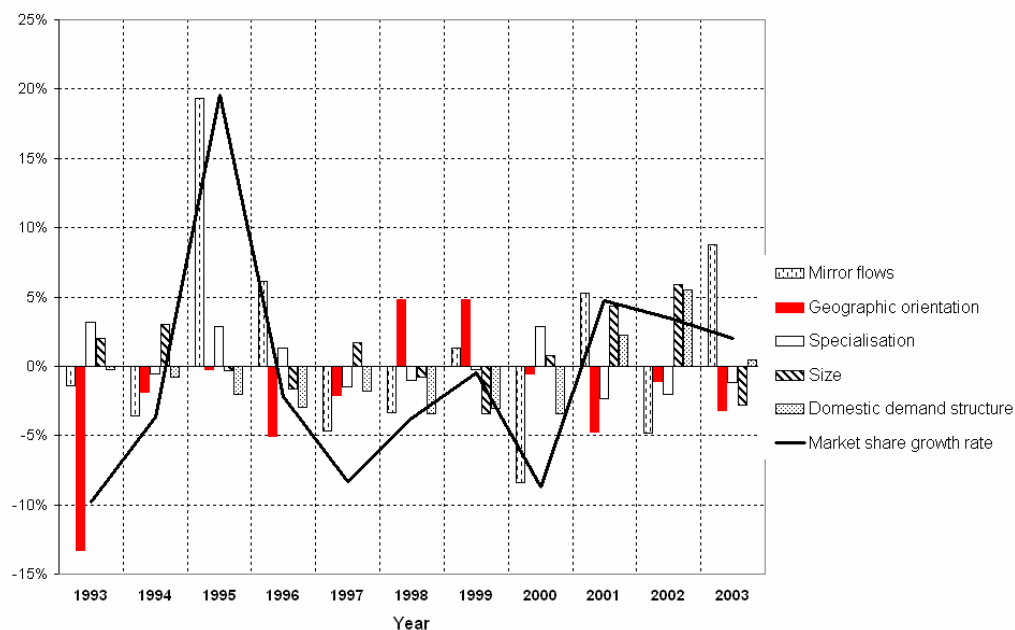
Graph 10a: Variations in France's market shares in the Euro area's imports in the machinery and equipment sector



Source: Bilateral STAN database (OECD 2005), authors' calculations.

Interpretation: In 2000, France's relative market shares in the Euro area's imports in the machinery and equipment sector decreased by 10%. The « geographic orientation » component contributed by -3,5% to this decrease.

Graph 10b: Variations in Germany's market shares in the Euro area's imports in the machinery and equipment sector



Source: Bilateral STAN database (OECD 2005), authors' calculations.

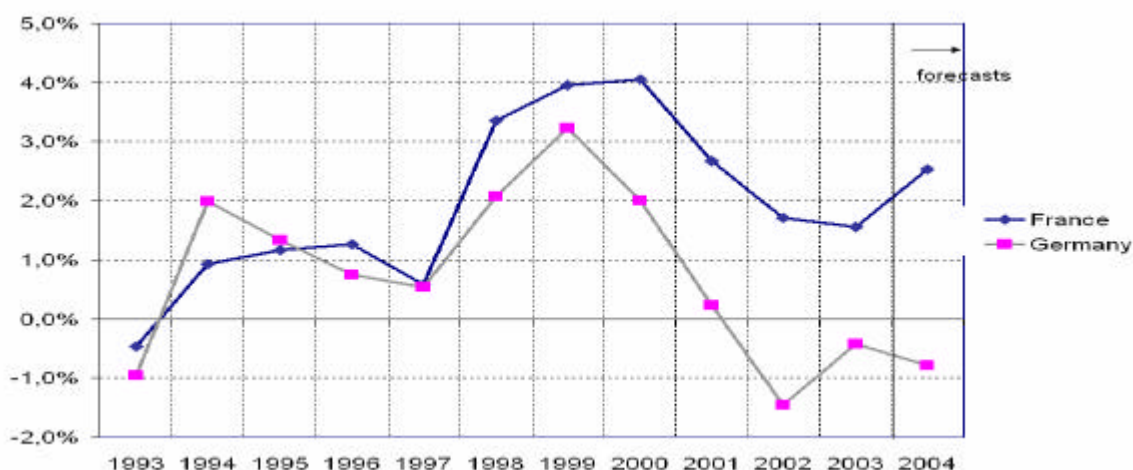
In addition to the strong contribution of the “mirror flows“ term certain years (especially 1993 for France and 1995 for Germany), the key point in these two graphs is the strong decrease in French market shares between 1998 and 2001 in the “machinery and equipment“ sector, to a certain extent mainly due to the strong negative contribution of the degree of geographic orientation of French exports and to the very positive contribution of the degree of geographic orientation of German exports in this same sector during this period. One possible explanation could be that France's strategic positioning on the Euro area's machinery and equipment market may not have given France the possibility of benefiting from the possibilities provided by the increase in external demand which resulted for the good situation in the Euro area's economy during the end of the 1990's and the beginning of the decade. However, the market shares decomposition explained in Box 3, in a purely accounting sense, does not allow for a “causality“ analysis. Therefore, one cannot exclude the opposite explanation: the strong contribution of the “geographic orientation“ term is essentially a result, not a cause, of international competition mechanisms over the period.

Between 1998 and 2000, both the “size“ term and the “domestic demand structure“ term contributed negatively on average to the variations in France's and Germany's market shares in the Euro area. Between 2001 and 2003, on the contrary, the increase in German exports in the machinery and equipment sector significantly contributed to the improvement in Germany's relative trade performances in the Euro area. The “domestic demand structure“ first contributed negatively, between 1994 and 2000, and then contributed positively, between 2001 and 2003, to the variations in France's and Germany's market shares in the machinery and equipment sector.

The contributions of the “domestic demand structure“ term to the variations in France's and Germany's market shares were however less favourable (more negative or less positive) for France than for Germany over the period. This result can to a large extent be explained by the fact that France's domestic demand was stronger than that of Germany between 1998 and 2003 (Graph 11a). This is confirmed by the fact that the growth rate of the Euro area's (excluding France and Germany) final domestic

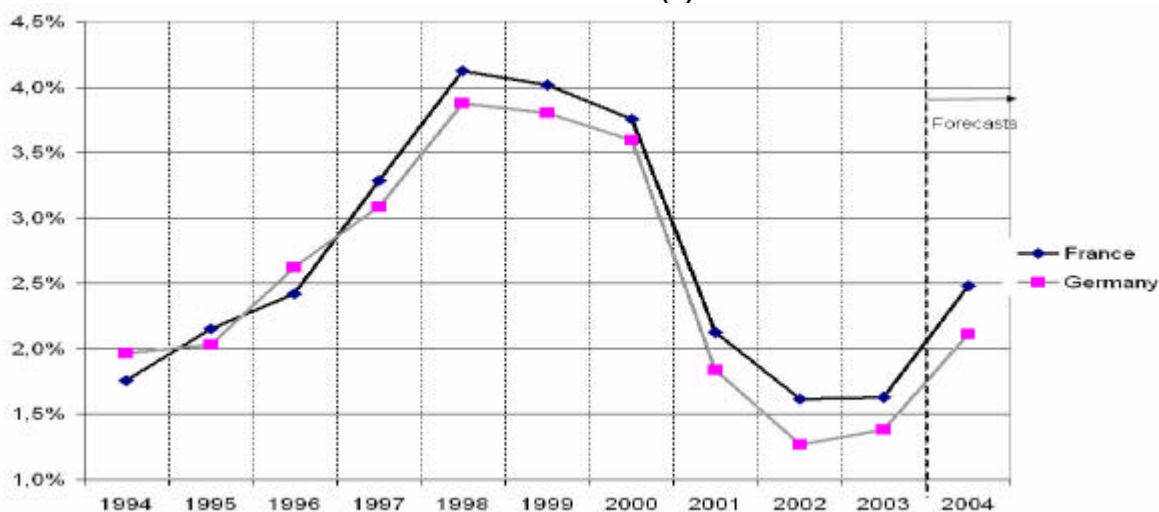
demand addressed to France¹¹ was, on average over the 1998-2003 period, greater by 0.2 points to that of the Euro area's final domestic demand addressed to Germany¹² (Graph 11b). Therefore, it seems that France's manufactured exports have been significantly affected by the sluggishness of its main partner's domestic demand.

Graph 11a: Growth rate of final domestic demand in France and Germany (%)



Source: OECD Economic outlook 2005, data in constant prices.

Graph 11b: Growth rate of the Euro area's (excluding France and Germany) final domestic demand (%)



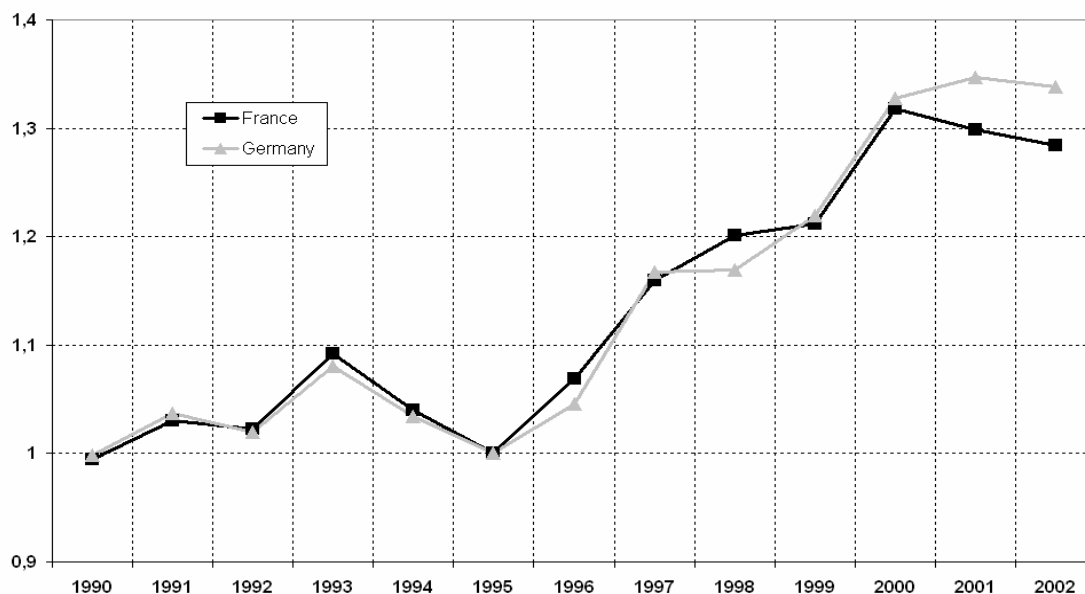
Source: OECD Economic outlook 2005, data in constant prices.

Germany's efforts to maintain its price-competitiveness since 2000 may also explain a share of its better trade performances within the Euro area (Graph 11c).

¹¹ This refers to the average of the final domestic demand indexes of the countries considered, weighted by the geographic structure of France's manufactured exports.

¹² The Euro area's (excluding France and Germany) final domestic demand addressed to these two countries is slightly different due to the country weights used for the structure of France's exports on the one hand and Germany's exports on the other. France exports therefore do not appear to be directed towards markets with less potential than German exports... except as regards the bilateral trade relations between France and Germany.

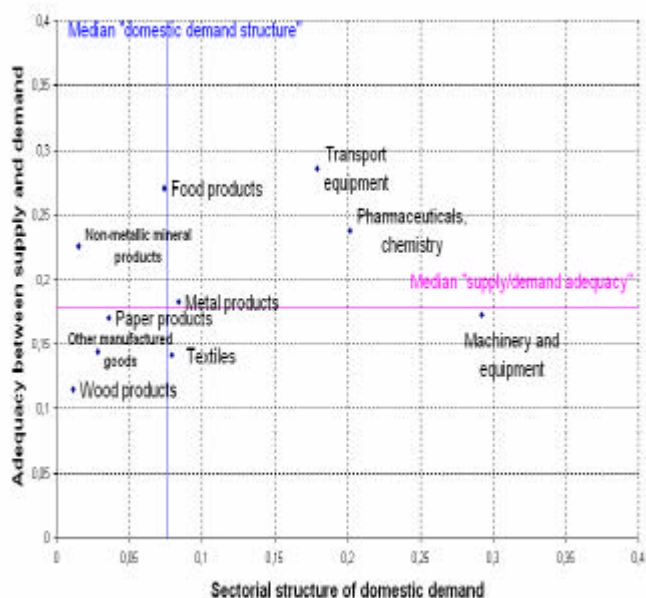
Graph 11c: Price-competitiveness with respect to the Euro area (excluding France and Germany) in the manufacturing sector



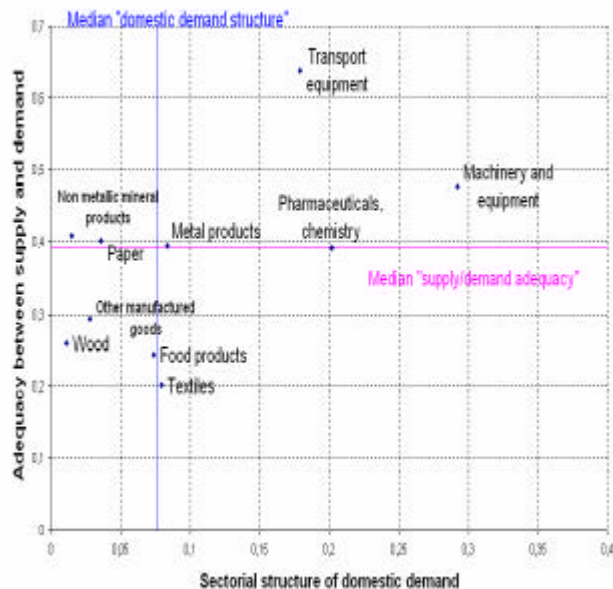
Interpretation: an increase corresponds to an improvement in price-competitiveness.
 Source: STAN OECD database (2005) and Flubil, authors' calculations.

The “domestic demand structure” term also provides information on the sectoral structure of the importing market. It can therefore be useful to represent on a graph the ten main manufacturing sectors as a function of the “domestic demand structure” term (x axis) and the “quantitative adequacy between supply and demand” (y axis) (Graphs 12a and 12b).

Graph 12a:
 France's position with respect to the sectoral structure of the Euro area's domestic demand in 2003.



Graph 12b:
 Germany's position with respect to the sectoral structure of the Euro area's domestic demand in 2003.



Source: Bilateral STAN database (OECD 2005), authors' calculations

Several sectors are in the North-East part of these graphs (“transport equipment”, “pharmaceuticals and chemistry” and, for Germany, “machinery and equipment”). The Euro area’s domestic demand in these products is strong and France’s (mainly in “transport equipment” and “pharmaceuticals and chemistry”) and Germany’s (mainly “transport equipment” and “machinery and equipment”) supply appears to be well adapted to it. These sectors therefore represent an important potential for the progress of French and German exports on the Euro area market. However, Germany’s position seems to be stronger than that of France in all of these sectors.

III.2. France’s relative trade performances on the American market

France’s relative market shares on the American market decreased over the 1992-2003 period. The technologically intensive sectors such as “transport equipment” and, to a lesser extent, “machinery and equipment” most strongly contributed to this decrease (table 5). However, in the “pharmaceuticals, chemistry” sector, France gained relative market shares since the beginning of the decade, but not enough to enable its relative markets on the American market excluding transport equipment to return to their previous level between 2000 and 2003.

Table 5: Contributions of each sector to the variations in France’s relative market shares in the United States between 1992 and 2003 (on average per year)

Sector	Weight of the sector in France's exports of manufactured goods towards the USA	Weight of the sector in Germany's exports of manufactured goods towards the USA	Contributions of the sector to the variations in France's relative market shares in the USA				
	1992-2003	1992-2003	1992-1996	1997-1999	2000-2002	2003	2000-2003
Food products	8,3%	1,6%	0,5%	1,0%	0,0%	1,2%	0,3%
Textiles	3,7%	1,7%	0,2%	0,1%	0,1%	0,2%	0,1%
Wood and products of wood	0,5%	0,3%	0,0%	0,0%	-0,1%	0,0%	-0,1%
Paper and paper products	1,4%	1,4%	-0,1%	-0,1%	0,0%	-0,2%	-0,1%
Pharmaceuticals, Chemistry	18,6%	15,1%	-0,3%	-1,1%	1,9%	0,2%	1,4%
Non-metallic mineral products	2,3%	1,3%	0,1%	0,1%	-0,1%	-0,1%	-0,1%
Metals and metal products	6,6%	6,2%	-0,1%	-0,4%	-0,4%	-0,6%	-0,5%
Machinery and equipment	25,3%	36,4%	-0,7%	0,2%	-1,2%	-3,4%	-1,8%
Other manufactured goods	2,5%	1,6%	0,1%	0,0%	0,1%	-0,2%	0,0%
Total exc. transport equipment	69,4%	65,6%	-0,2%	0,0%	0,3%	-2,9%	-0,5%
Transport equipment	30,6%	34,4%	-5,1%	-0,6%	-4,0%	-5,5%	-4,3%
TOTAL	100,0%	100,0%	-5,3%	-0,6%	-3,7%	-8,4%	-4,9%

Source: STAN OECD database (2005), authors’ calculations

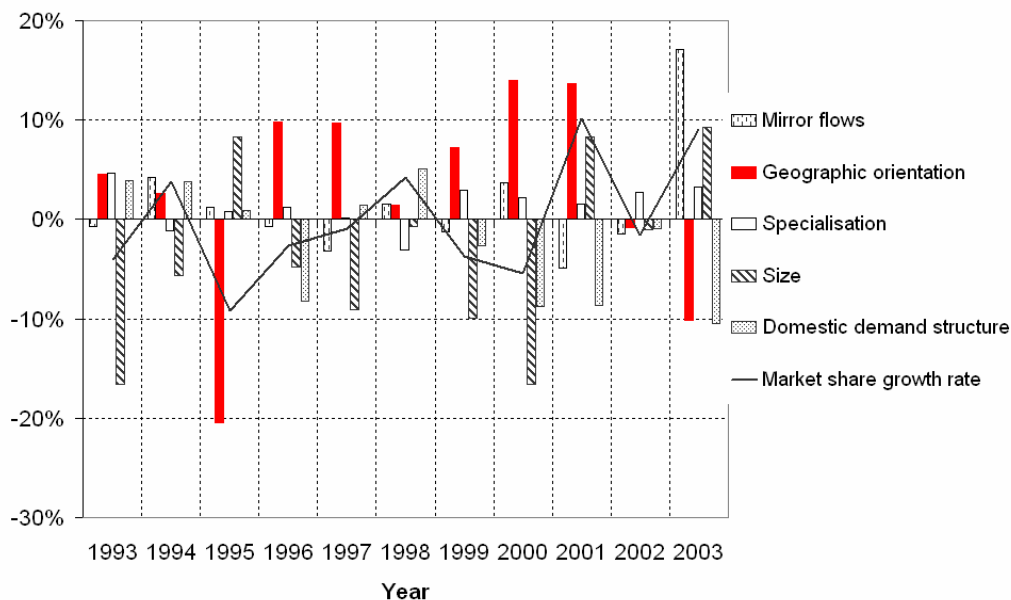
The graphs 13a and 13b present French and German export performances on the American market in the “pharmaceuticals, chemistry” sector. Although, over the whole period, Germany’s market share decreased (-2.0% on average per year), that of France decreased over the 1993-2000 period (-1.8%, also on average per year), then increased again over the 2000-2003 period (+3.1% on average per year).

The “geographic orientation” term in particular, and, to a much lesser extent the “specialisation” term positively contributed to the variations in France’s market shares in the “pharmaceuticals, chemistry” sector in 2000 and 2001. On the other hand, the “domestic demand structure” term negatively contributed to the variations in both countries’ market shares in the “pharmaceuticals, chemistry” sector in the United States from 1999 to 2003. American imports in this sector were less dynamic over this period relatively to other sectors.

Furthermore, the “geographic orientation” term for exports in the “transport equipment” sector positively contributed to Germany’s position over the entire period (Graphs of annex 4). Almost every year, the contribution of this term to the variations in the share

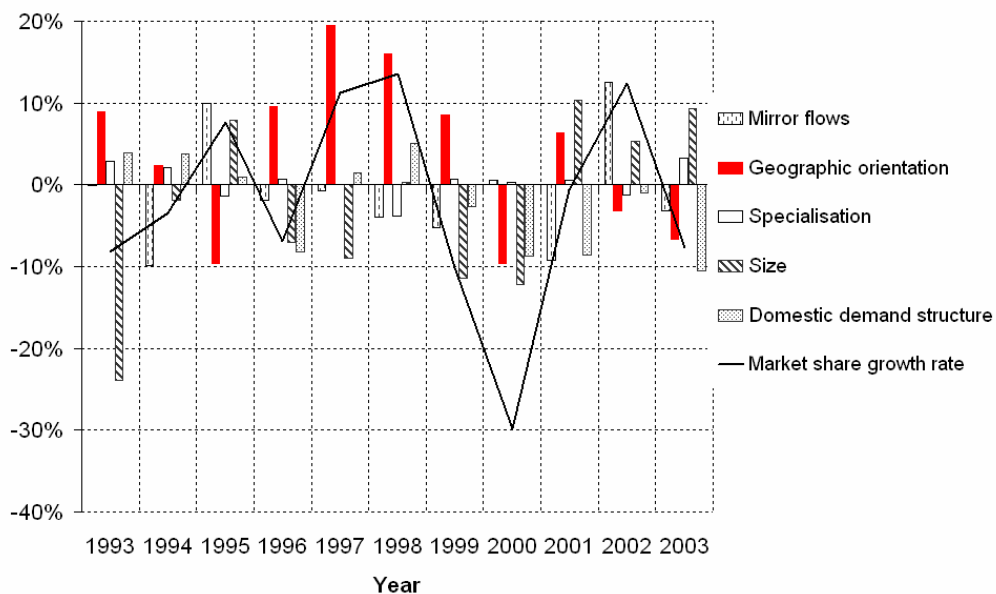
of German exports on the American market for this sector was positive and, when it was negative, the “geographic orientation” term weighted even more, negatively, on the variations of the France market share.

Graph 13a: Variations in France’s market shares on the American market in the “pharmaceuticals, chemistry” sector



Source: *Bilateral STAN database (OECD 2005), authors’ calculations*

Graph 13b: Variations in Germany’s market shares on the American market in the “pharmaceuticals, chemistry” sector



Source: *Bilateral STAN database (OECD 2005), authors’ calculations*

III.3. France's relative trade performances on the Chinese market

France gained market shares with respect to Germany between 1993 and 1997 (+5.6% on average per year) on the Chinese market. However, it is the "transport equipment" sector that alone explains the improvement in France's relative performances over this period. The other sectors contributed negatively on average to the variations in France's relative market share over the entire period considered. The "machinery and equipment" and "pharmaceuticals, chemistry" sectors' negative contributions are clearly larger than the positive contributions of the "food products" and "textile products" sectors, because of the stronger weight of the former in France's and Germany's exports.

Between 1998 and 2003, France's relative market share strongly deteriorated (-16.7% on average per year), because of the stagnation of French exports and the clear increase in German exports. The technologically intensive sectors ("transport equipment" and, to a lesser extent, "machinery and equipment" most strongly contributed to the deterioration in France's relative market shares in China since 1998.

Table 6: Contributions of each sector to the variations in France's relative market shares in China between 1993 and 2003 (on average per year)

Sector	Weight of the sector in France's exports of manufactured goods towards China	Weight of the sector in Germany's exports of manufactured goods towards China	Contribution of the sector to the variations in France's relative market shares in China			
	1993-2003	1993-2003	1993-1997	1998-2002	2003	1998-2003
Food products	2,3%	1,3%	0,2%	0,4%	0,3%	0,4%
Textiles	2,1%	0,8%	0,2%	0,2%	1,0%	0,4%
Other manufactured goods	0,6%	0,5%	-0,2%	0,0%	0,7%	0,1%
Non-metallic mineral products	1,2%	0,8%	0,2%	-0,1%	-0,1%	-0,1%
Pharmaceuticals, Chemistry	10,4%	8,3%	-0,5%	-0,2%	-2,0%	-0,5%
Wood and products of wood	0,3%	0,8%	0,0%	-0,3%	0,0%	-0,3%
Paper and paper products	1,2%	1,1%	0,6%	-0,5%	1,0%	-0,2%
Metals and metal products	6,7%	7,3%	-0,1%	-1,5%	-1,0%	-1,4%
Machinery and equipment	45,9%	65,2%	-5,4%	-5,7%	-10,3%	-6,4%
Total exc. Transport equipment	70,6%	86,1%	-5,1%	-7,6%	-10,5%	-8,1%
Transport equipment	29,4%	13,9%	11,1%	-13,6%	16,6%	-8,6%
TOTAL	100,0%	100,0%	5,9%	-21,2%	6,0%	-16,7%

Source: Bilateral STAN database (OECD 2005), authors' calculations

The graphs 14 more precisely describe the variations in French and German exports towards China in the « transport equipment » sector. In this sector, France's market shares increased in 1996 and 1997, decreased almost every year from 1998 to 2000 then increased again in 2003. The geographic orientation of France's and Germany's exports to China was the term that most strongly contributed to the variations in France's relative trade performances over that period. The significant increase in French exports in 1996, 1997 and 2003 corresponds in part to specific contracts between France and China in the aeronautics sector.

The « geographic orientation » term very strongly contributed to the increase in German market shares in the « transport equipment » sector in China between 1999 and 2003. This positive contribution can in part be explained by the strong growth in German exports of automobiles towards China since 1999¹³. It can furthermore be related to the strong increase in foreign direct investments (FDI) in China coming from

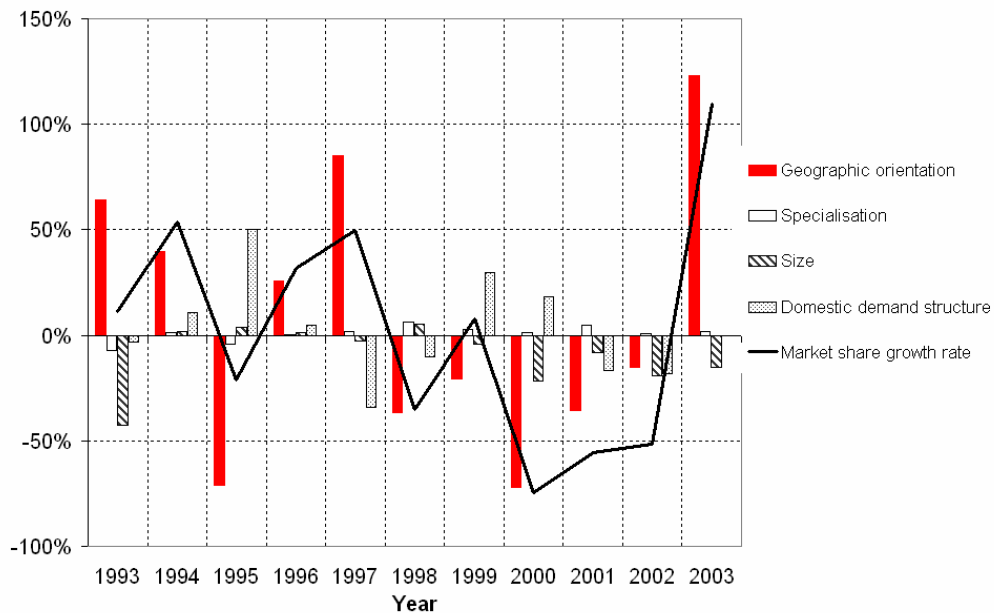
¹³ Although it is relatively not open to imported cars, the automobile market in China strongly developed since the formal entry of China into the WTO in 2001. Germany seems to have managed to profit from this development: two of the three largest Chinese automobile groups are currently partners of German groups (source: French embassy in China, 2004).

Germany since the beginning of the 1990's, compared to the low levels of FDIs in China coming from France (annex 5).

The « specialisation » contributed relatively little to the deterioration in French market shares at the very beginning of the decade. The air transport crisis that followed the 9/11 events, that may have depressed the air transport sector in France (but also in Germany), seems to have only marginally contributed to the relative deterioration in France's trade performances in China at the beginning of the decade.

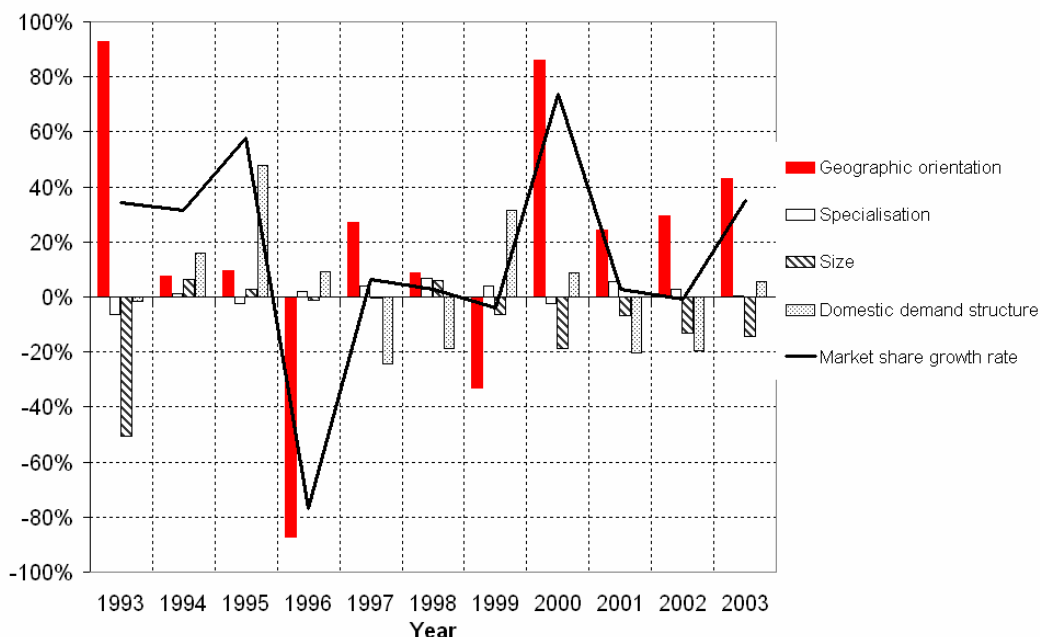
Both the "size" (due to the rapid expansion of the Chinese market in the "transport equipment" sector since the beginning of the decade) and the "domestic demand structure" terms negatively contributed to the variations in the market shares of the two countries in 2001 and 2002.

Graph 14a: Variations in France's market shares in the Chinese market in the « transport equipment » sector



Source: Bilateral STAN database (OECD 2005), authors' calculations

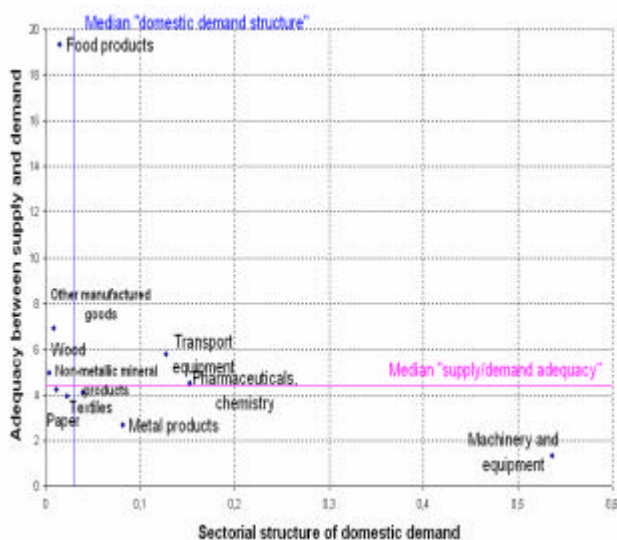
Graph 14b: Variations in Germany's market shares in the Chinese market in the « transport equipment » sector



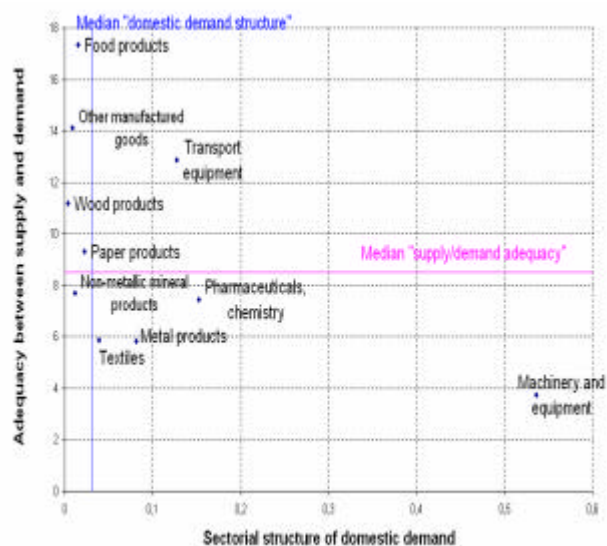
Source: Bilateral STAN database (OECD 2005), authors' calculations

The « domestic demand structure » term provides information on the sectoral structure of the importing market. It is therefore interesting, as for the Euro area, to represent on a graph the ten manufacturing sectors as a function of the “domestic demand structure” term (x axis) and the “quantitative supply and demand adequacy” term (y axis) (Graphs 15).

Graph 15a: France's position with respect to the sectoral structure of Chinese domestic demand in 2003.



Graph 15b: Germany's position with respect to the sectoral structure of Chinese domestic demand in 2003.



Source: Bilateral STAN database (OECD 2005), authors' calculations .

On the Chinese market, the only sector in the favourable part of Graphs 15 (North-East) is the “transport equipment“ sector. Chinese domestic demand is strong for this sector and France’s supply – and even more so Germany’s – is significant. In the “metal products”, “machinery and equipment” and “pharmaceuticals, chemistry” sectors, Chinese domestic demand is strong but the French and German supply’s adequacy to this demand appears to be more favourable than in other sectors.

IV- Inter-industry or intra-industry trade?

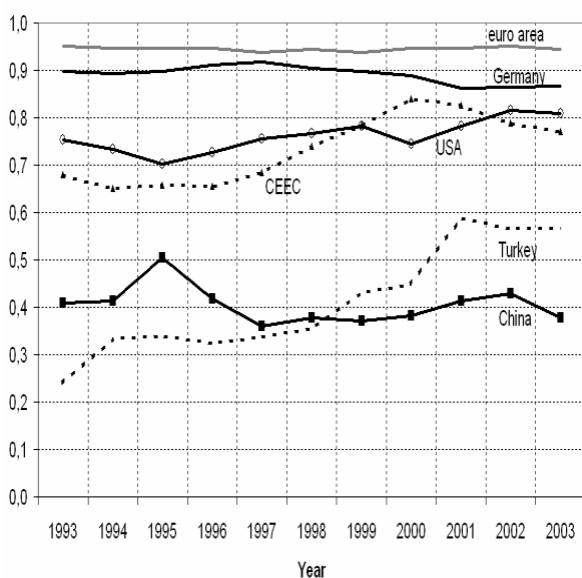
An analysis of the nature (intra-industry / inter-industry) of the trade flows between France and Germany and a few of their main partner countries may provide extra insight on France's weaker export performances in the beginning of the years 2000. The gradual distortion in the nature of trade with some economically catching-up countries (China in particular) seems to be more advanced in Germany than in France.

Inter-industry trade refers to the bilateral trade of different products (belonging to different sectors) between two countries. The comparative advantages theory described by Heckscher, Ohlin, and Samuelson justifies the existence of these types of trade flows by the fact that each country specialises in the product that uses more intensely the factors of production with which it is relatively more endowed.

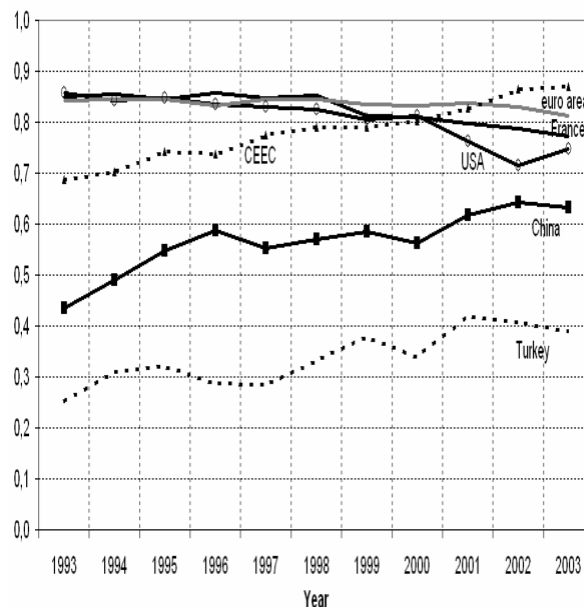
Intra-industry trade, on the other hand, refers to cross-exchanges of different varieties of the same product. The new theory of international trade formalises this type of trade by relating it both to "demand-side" mechanisms (consumers' preferences for diversity or for quality) and "supply-side" mechanisms (the existence of increasing returns to scale allows countries to specialise in the production of a particular variety / quality of the same good).

The nature of the trade flows between two countries can be quite simply characterised by the Greenaway Milner indicator (1982), the construction of which is described in annex 6.

Graph 16a: Greenaway Milner indicator for French trade flows



Graph 16b: Greenaway Milner indicator for German trade flows



Source: Bilateral STAN database (OECD 2005), authors' calculations.

Interpretation: if the trade flows between two countries are balanced in each sector, the indicator is worth 1: trade is exclusively intra-industry. If, on the other hand, each country entirely specialises in the sectors for which it presents a comparative advantage, the indicator is worth 0 and trade is exclusively inter-industry.

NB: the ten manufacturing sectors considered are relatively aggregated. The indicator is therefore biased upwards.

Trade flows between two very similar developed countries are relatively more of an intra-industry nature. The Greenaway Milner indicator for the trade flows between Germany on the one hand and France on the other hand with the Euro area or with the United States is high (close to one).

Trade with economically catching-up countries (China, Turkey, and, to a lesser extent, Central and Eastern European Countries) is more of an inter-industry nature in the beginning of the period. However, the share of intra-industry trade between France and Germany and most of these countries regularly increased over the period. The Greenaway Milner indicator for trade with the CEECs even caught-up with that of the Euro area and the United States near the end of the 1990's. It particularly increased for trade between France and Turkey and for trade between Germany and China.

This last observation may shed new light on the differences in export performances between France and Germany on the Chinese market. Perhaps Germany is more capable of adapting to the economic catching-up of this strongly growing country. This is, for the time being, only a hypothesis, which could be looked into with more sophisticated methods¹⁴.

¹⁴Of the type, for example, developed by Fontagné, Freudenberg and Péridy (1997).

Conclusion

This paper analysed in a relatively detailed manner the contributions of ten large manufacturing sectors as well as that of France's and Germany's main partner countries to the variations in France's relative market shares from the middle of the 1990's to the beginning of this decade.

France's relatively weaker export performances since the beginning of the decade are mostly visible in technologically intensive sectors such as the "transport equipment" sector and the "machinery and equipment" sector, but also, to a lesser extent, in most of the other manufacturing sectors.

Regarding partner countries, France registered losses in relative market shares with respect to Germany towards its two main export partners: the EU (and in particular the Euro area between 2000 and 2002) and the United States. More recently, China also contributed to the lesser dynamic growth of France's exports relatively to Germany. Germany therefore seems to be succeeding in increasing manufactured exports towards these three areas, adapting to China's economic catching-up and successfully responding to the change in the sectoral composition of European and American domestic demands.

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Annex 1: The data

Data for bilateral trade flows come from the STAN 2005 OECD database (www.oecd.org/sti/stan), which provides a homogenous set of comparable international trade data. We chose this database because it includes, contrary to the CEPII's CHELEM database, data for differentiated mirror flows. Import declarations include elements that may influence the degree of competition between imported products (transport costs and transaction costs for instance) that it may be interesting to take into account -or not-, depending on the analysis carried out¹⁵.

The STAN database provides a detailed decomposition by sector of trade flows, following the ISIC Rev 3 classification (International Standard Industrial Classification of all Economic Activities Revision 3). In this paper, we limit the analysis to the ten main manufacturing sectors, for which the data provided is relatively complete: «food products, beverages and tobacco», «textiles, textile products, leather and footwear», «wood and products of wood and cork», «pulp, paper, paper products, printing and publishing», «chemical, rubber, plastics and fuel products», «other non-metallic mineral products», «basic metals and fabricated metal products» machinery and equipment», «transport equipment», «other manufacturing sectors».

¹⁵ See Darracq-Pariès and Erkel-Rousse (2000) for a detailed description of the aspects to keep in mind when analysis international trade data, and, in particular, mirror flows.

Annex 2: Share of France's and Germany's main partner countries in the total of their manufacturing exports

Partner country	Share of France's export market between 1994 and 2003	Share of Germany's export market between 1994 and 2003
Germany	16,0%	
United Kingdom	9,9%	8,1%
Spain	8,6%	4,0%
Italy	8,6%	7,2%
Belgium-Lux	7,8%	5,6%
United States	7,6%	9,4%
Netherlands	4,2%	6,3%
Switzerland	3,2%	4,5%
Japan	1,8%	2,2%
Sweden	1,5%	2,2%
Portugal	1,4%	1,0%
Austria	1,1%	5,2%
China	1,1%	1,7%
Hong Kong	1,0%	0,7%
Turkey	0,9%	1,2%
Poland	0,9%	2,3%
Demark	0,9%	1,7%
Canada	0,8%	0,7%
Greece	0,8%	0,7%
Singapore	0,7%	0,7%
Korea	0,7%	0,9%
Ireland	0,7%	0,5%
Brazil	0,6%	0,9%
Taiwan	0,6%	0,8%
Czech Republic	0,5%	2,0%
Finland	0,5%	1,0%
Australia	0,5%	0,7%
Norway	0,4%	0,8%
Mexico	0,4%	0,7%
Hungary	0,4%	1,5%
Malaysia	0,4%	0,4%
Argentina	0,4%	0,2%
Thailand	0,3%	0,5%
Slovenia	0,3%	0,4%
India	0,3%	0,4%
Indonesia	0,3%	0,4%
Philippines	0,2%	0,2%
Malta	0,2%	0,1%
Slovak Republic	0,1%	0,6%
New Zealand	0,1%	0,1%
Cyprus	0,1%	0,1%
Lithuania	0,1%	0,2%
Latvia	0,0%	0,1%
Estonia	0,0%	0,1%
Iceland	0,0%	0,0%
France		10,8%
Other	12,6%	10,3%
Total	100,0%	100,0%

Source: *Bilateral STAN database (OECD 2005) authors' calculations*

Annex 3: Detailed analysis of the EU15, the CEECs and the EU25 markets

Over the past decade, France's relative market shares in the EU15 and the EU25's imports went through three phases (tables A3.1 and A3.2).

- Between 1993 and 1997, France gained market shares with respect to Germany, in all of the manufacturing sectors. The high-technology sectors (« machinery and equipment », « transport equipment », « pharmaceutical industry, chemistry ») as well as the « food products » sector are the sectors that contributed most strongly, in both areas, to the relative improvement of the French position.
- Between 1998 and 2002 however, the French situation deteriorated on the European markets. Germany regained relative market shares in almost every sector, and more particularly in the “machinery and equipment” sector and the “food products” sector.
- In 2003, France's relative market shares in the EU15 and the EU25 increased. France regained market shares relatively to Germany in most sectors, and in particular in the “food products” sector and in the “pharmaceutical industry, chemistry” sector. This reversal was more pronounced on the EU15 export market than on the EU25 market.

Table A3.1 : Contributions of each sector to the variations in France's relative market shares in the EU15 between 1993 and 2003 (on average per year)

Sector	Weight of the sector in France's exports of manufactured goods towards the EU15	Weight of the sector in Germany's exports of manufactured goods towards the EU15	Contribution of the sector to the variations in France's relative market shares in the EU15			
	1993-2003	1993-2003	1993-1997	1998-2002	2003	1998-2003
Textiles	5,2%	4,7%	0,2%	0,0%	0,4%	0,0%
Other manufactured goods	1,7%	2,1%	0,1%	-0,1%	0,0%	-0,1%
Non-metallic mineral products	1,9%	1,6%	0,1%	-0,1%	0,1%	0,0%
Wood and products of wood	0,8%	0,7%	0,0%	-0,1%	0,1%	0,0%
Metals and metal products	8,9%	9,3%	0,1%	-0,1%	0,5%	0,0%
Transport equipment	21,5%	23,6%	0,5%	-0,3%	-0,4%	-0,3%
Paper and paper products	3,5%	3,9%	0,1%	-0,2%	0,1%	-0,2%
Pharmaceuticals, Chemistry	21,3%	17,4%	0,5%	-0,1%	1,5%	0,2%
Food products	11,7%	6,1%	0,5%	-0,5%	1,4%	-0,2%
Machinery and equipment	23,5%	30,7%	0,8%	-1,3%	-0,2%	-1,1%
TOTAL	100,0%	100,0%	3,0%	-2,7%	3,4%	-1,7%

Source: Bilateral STAN database (OECD 2005) authors' calculations.

Table A3.2 : Contributions of each sector to the variations in France's relative market shares in the EU25 between 1993 and 2003 (on average per year)

Secteur	Weight of the sector in France's exports of manufactured goods towards the EU25	Weight of the sector in Germany's exports of manufactured goods towards the EU25	Contribution of the sector to the variations in France's relative market shares in the EU25			
			1993-2003	1993-2003	1993-1997	1998-2002
Textiles	5,3%	5,3%	0,1%	0,0%	0,3%	0,1%
Other manufactured goods	1,7%	2,1%	0,0%	-0,1%	0,0%	-0,1%
Non-metallic mineral products	1,9%	1,6%	0,0%	-0,1%	0,1%	0,0%
Wood and products of wood	0,8%	0,7%	0,0%	-0,1%	0,0%	0,0%
Metals and metal products	8,8%	9,3%	0,0%	-0,2%	0,2%	-0,1%
Transport equipment	21,5%	22,7%	0,4%	-0,3%	-0,5%	-0,3%
Paper and paper products	3,5%	3,9%	0,1%	-0,2%	0,0%	-0,2%
Pharmaceuticals, Chemistry	21,3%	17,4%	0,4%	-0,1%	1,4%	0,1%
Food products	11,5%	5,8%	0,4%	-0,4%	1,3%	-0,1%
Machinery and equipment	23,9%	31,2%	0,5%	-1,3%	-1,0%	-1,2%
TOTAL	100,0%	100,0%	1,9%	-2,7%	1,9%	-1,9%

Source: Bilateral STAN database (OECD 2005) authors' calculations.

France's relative market shares in the Central and Eastern European Countries' (CEEC) imports increased over the 1993-2002 period (table A3.3). The "transport equipment" sector, and, to a lesser extent, the "chemical, plastic, pharmaceutical" sector contributed the most to this favourable trend. Between 1998 and 2002, the textiles sector and the "machinery and equipment" sectors also contributed positively to the variations in France's relative market shares. The year 2003 marked a reversal in this pattern. The "machinery and equipment" sector contributed the most to the global decrease in France's relative market shares (by -5.4 points on average per year) and, to a lesser extent, the "metals and metal products" sector (by -1.0 point on average per year) and the textile sector (by -0.7 point on average per year).

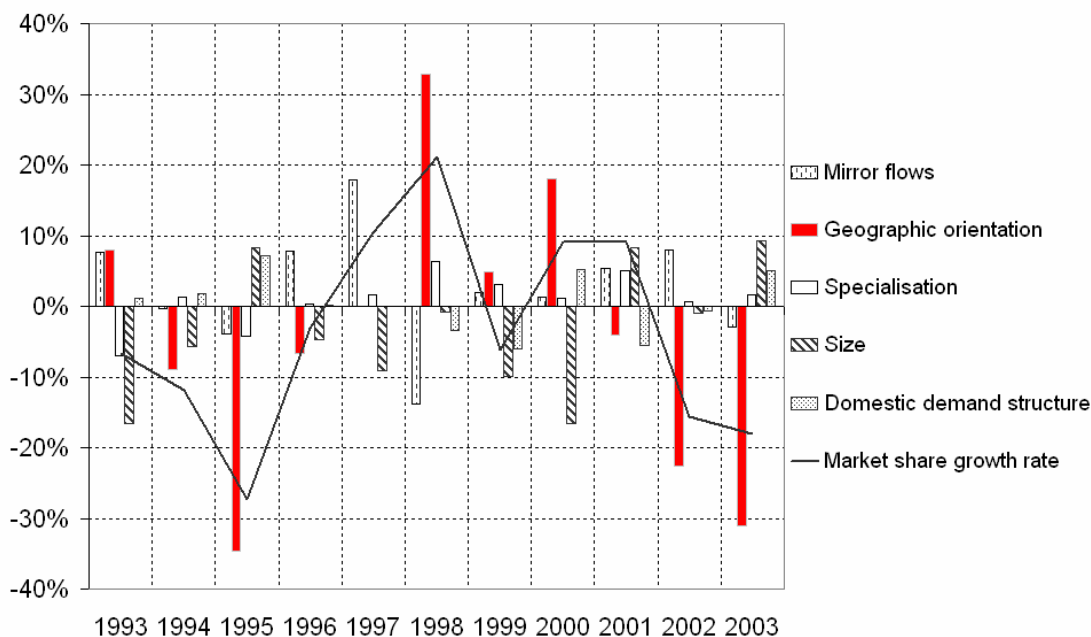
Table A3.3 : C Contributions of each sector to the variations in France's relative market shares in Hungary, Poland, the Czech Republic and Slovakia between 1993 and 2003 (on average per year)

Sector	Weight of the sector in France's exports of manufactured goods towards the 4 CEECs	Weight of the sector in Germany's exports of manufactured goods towards the 4 CEECs	Contribution of the sector to the variations in France's relative market shares in the 4 CEECs			
			1993-2003	1993-2003	1993-1997	1998-2002
Textiles	7,0%	10,1%	-1,1%	0,6%	-0,7%	0,4%
Other manufactured goods	1,7%	2,0%	-0,1%	0,1%	0,0%	0,1%
Non-metallic mineral products	2,8%	2,0%	0,1%	-0,1%	0,2%	0,0%
Wood and products of wood	0,3%	0,7%	-0,2%	0,0%	-0,2%	0,0%
Metals and metal products	6,4%	9,9%	-1,0%	-0,4%	-1,0%	-0,5%
Transport equipment	17,2%	14,5%	2,0%	0,5%	-0,1%	0,4%
Paper and paper products	2,6%	3,9%	-0,3%	-0,2%	-0,4%	-0,3%
Pharmaceuticals, Chemistry	24,7%	17,1%	2,2%	1,5%	2,1%	1,6%
Food products	5,0%	3,7%	1,3%	-0,2%	-0,1%	-0,2%
Machinery and equipment	32,4%	36,1%	-1,2%	1,1%	-5,4%	0,0%
TOTAL	100,0%	100,0%	1,7%	3,0%	-5,5%	1,6%

Source: Bilateral STAN database (OECD 2005) authors' calculations.

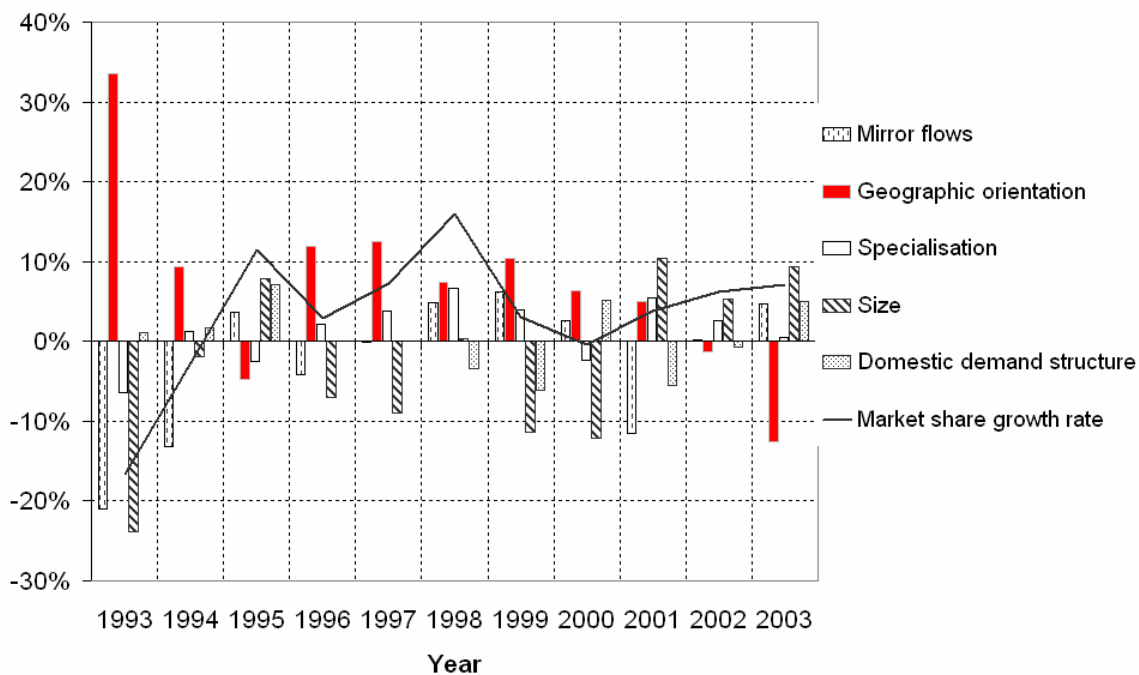
Annex 4: Analysis of French and German exports towards the United States in the « transport equipment » sector

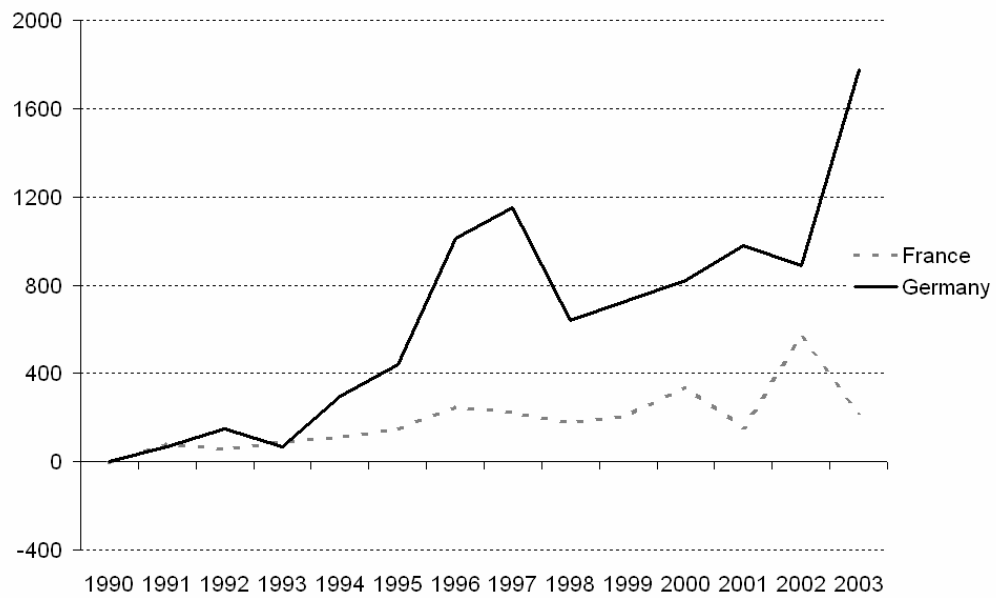
Graph A4.1 : Variations in France's market shares on the American market in the « transport equipment » sector



Source: Bilateral STAN database (OECD 2005) authors' calculations.

Graph A4.2 : Variations in Germany's market shares on the American market in the « transport equipment » sector



Annex 5: Foreign direct investment flows towards China

Source: OEDC 2005. Units: billions of US dollars.

Annex 6: Measuring the nature (intra-industry or inter-industry) of trade flows

In order to evaluate the nature (intra-industry or inter-industry) of trade flows between France and Germany on the one hand and a number of partner countries on the other hand, economists usually use specialisation indicators. For a detailed description of these indicators, see Erkel-Rousse (2000).

Let $X_k^{i \rightarrow j}$ et $M_k^{j \rightarrow i}$ respectively stand for the exports and imports of country i towards/from country j in the sector k . The Greenaway Milner indicator (1982), $I^{i,j}$, is defined as:

$$I^{i,j} = 1 - \frac{\sum_k |X_k^{i \rightarrow j} - M_k^{j \rightarrow i}|}{\sum_k (X_k^{i \rightarrow j} + M_k^{j \rightarrow i})}$$

If the trade flows between two countries are balanced for each sector, the indicator is worth 1. Trade flows are exclusively intra-industry. If, on the other hand, each country completely specialises in the sectors for which it presents a comparative advantage in terms of factor endowment, the indicator is worth 0. Trade flows are exclusively inter-industry. Between these two extremes, the indicator gives an indication on the more or less intra-industry nature of the trade flows between two countries.