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Export specialization of France and four other leading countries of the European Union between 1990 and 2009

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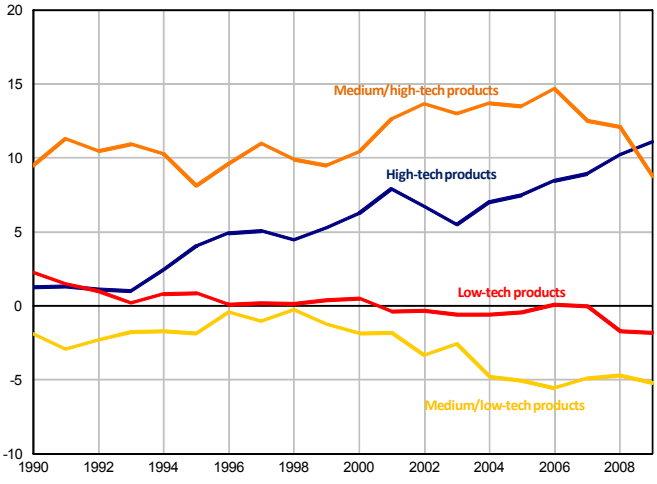
- The revealed comparative advantage (RCA) indicator estimated by CEPII (Centre d'Études Prospectives et d'Informations Internationales, a Paris-based economics institute) underscores the similar specializations of the five main European Union (EU) exporters (France, Germany, Italy, United Kingdom, and Spain). All five countries studied specialize in mechanical products and/or vehicles and-apart from Italy-all are specialized in chemicals.
- On aggregated data, Germany and Italy exhibit far more concentrated but also far greater RCAs in mechanical products than those of their chief EU competitors. Germany displays a stabler RCA composition over time than its competitors, particularly France.
- France shares an RCA in the agrifoods sector with Spain. Excluding agrifoods and energy, however, the country whose sectoral structure of exports has converged most strongly with France in recent years appears to be the United Kingdom. Moreover, since 2004, France has lost its RCA in vehicles whereas Spain and Germany have succeeded in preserving and even increasing theirs.
- Despite relatively similar specializations, the five leading EU economies post uneven export performances. Germany stands out as the exception, as its market shares in all specialization sectors distinctly exceed those of its neighbors and has been rising since the early 2000s. Only Spain has managed to preserve its market shares in the same period, while the other four countries have recorded losses.
- An analysis by product range offers grounds for qualifying the export specializations of the five major EU countries. Both France and Germany specialize in high-value-added products, but France focuses on high-technology products (aerospace and pharmaceuticals) while Germany concentrates on medium-technology products (automobiles and machinery). France and the United Kingdom exhibit very similar specialization ranges. Italy and Spain, instead, have specialized in medium/low technology products.
- Germany has chosen to favor medium-technology products, in which its RCA is the strongest. This strategy has enabled it to consolidate its international positions in the category. By contrast, France's resilience seems confined to high-technology products, a sector where it is protected by its RCAs in aerospace and pharmaceuticals.

French RCAs by product range since 1990



Sources: CHELEM, DG Trésor.

MINISTÈRE DE L'ÉCONOMIE
DES FINANCES ET DE L'INDUSTRIE

The concept of **revealed comparative advantage** (RCA) was introduced by **Béla Balassa** in 1965 and elaborated in France by CEPII. The RCA indicator measures, for a given period, the gap between the actual trade balance for a particular product and a theoretical situation in which each product would contribute to the overall trade balance in proportion to its weight in France's total trade (see box 2). On this basis, comparative advantage is revealed by a positive gap (larger surplus or smaller deficit than the theoretical value) and comparative disadvantage by a negative gap (larger deficit or smaller surplus). By identifying a country's export strengths and weaknesses, the RCA indicator makes it possible to characterize the structure of its export specialization.

Box 1: **Theories of comparative advantage**

The principle of comparative advantage was defined by Torrens and Ricardo in the nineteenth century, and later elaborated by Heckscher, Ohlin, and Samuelson. According to the classical theory of international trade, when there is difference between comparative costs observed in autarky in several countries, each country will derive an advantage from specializing in, and exporting, those goods for which it enjoys the greatest comparative advantage or the smallest comparative disadvantage. In exchange, it will import the other goods from its partners.

More recently, the new theory of international trade has developed an imperfect-competition approach focused on increasing returns, product differentiation (Krugman, 1980[a]), and heterogeneity of firms (Melitz, 2003[b]). These notions provide a better explanation of intra-industry trade. The latest studies (Fontagné, Gaulier, and Zignago, 2008[c]) show that the developed countries trade the same varieties of products from developed countries and emerging countries, implying a vertical differentiation between these products. Greater competition by imports from low-wage countries leads to an increase in the proportion of higher-end exports by the developed countries, which enjoy "natural" comparative advantages in high- and medium-technology products. This entails a reallocation of production to higher-quality products and hence to the most capital-intensive firms. The process also impacts the relative demand for skilled vs. unskilled labor.

a. P. Krugman (1980), "Scale Economies, Product Differentiation, and the Pattern of Trade," *American Economic Review.*
b. M. Melitz (2003), "The impact of trade on intra-industry reallocations and aggregate productivity," *Econometrica.*
c. L. Fontagné, G. Gaulier, and S. Zignago (2008), "Specialization across Varieties within Products and North-South Competition," *Economic Policy 23.*

Box 2: **RCAs calculated by CEPII**

The comparative advantage indicator answers the question "What are the strengths and weaknesses of an economy?" The CEPII RCA indicator is based on the Balassa indicator (1965):

$$B_k = \frac{X_k + M_k}{X + M}$$

with X_k, exports of product *k*, M_k imports of product *k*, *X* and *M* total exports and imports.

Instead of looking at relative export structures, as in the classic Balassa method, the analytical indicator used here starts with the trade balance and takes national market size into account.

For a product *k*, we begin by determining the ratio of the trade balance to gross domestic product (GDP) *Y*, In thousandths of points of GDP:

$$y_k = 1000 \times \frac{X_k - M_k}{Y}$$

Relative to GDP, the contribution of product k to the trade balance is defined by:

$$c_k = y_k - g_k \times y$$

gk being the share of product *k* in trade :

$$g_k = \frac{X_k + M_k}{X - M} \quad \text{et} \quad y = 1000 \times \frac{X - M}{Y}$$

Hence, replacing in c_k :

$$c_k = \frac{1000}{Y}\left[(X_k - M_k) - \frac{(X_k + M_k)(X - M)}{X + M}\right]$$

The RCA calculation measures the gap between the balance observed for a product on a given date and a theoretical balance that would apply to a country with no sectoral specialization (e.g., if a country exports 100 products, then each product represents 1% of the country's total exports, and the trade balance for each product would account for 1% of the country's total trade balance). If this gap is positive, then the country has a revealed comparative advantage for the product in question. If the gap is negative, the country has a comparative disadvantage. All the RCAs of a given country, therefore, necessarily sum to zero.

We also need to eliminate the influence of changes that are not specific to the country studied, but are due to the change in product shares at world level. With respect to a reference year *t*, each of the *X* and *M* flows is adjusted for the other years *n* by multiplying all of them by:

$$e^n = \frac{w_k^t}{w^t} \Big/ \frac{w_k^n}{w^n}$$

The RCA c'_k is thus calculated by taking into account the global weights of the reference year *t*. In *t*, the RCA coincides with the relative contribution *c*. For the other years *n*, the RCA diverges in proportion to the divergence of global trade in product *k* from the mean trend observed for all merchandise categories.

The comparative advantage is calculated at the most detailed level of the CHELEM sectoral classification, i.e., for 71 categories. The advantages by broad sector are obtained by summation.[a]

a. Example: RCAs for product categories range from –20 to +20. The highest RCA was reached for private cars in Germany in 2009 (14.2); the lowest value was recorded for crude oil in Spain in 2000 (–19.3).

Since 1990, Germany's trade balance has moved in the opposite direction to those of France, Italy, the United Kingdom, and Spain. Germany is an exception in Europe, as its trade surplus rose steeply in the early 2000s, reaching 7% of GDP in 2009.[1] By contrast, the other four nations studied saw their trade balances worsen during the same period. While Italy was able to preserve a balanced trade account, France, Spain, and the United Kingdom ran high trade deficits of 3.5%, 5.5%, and 6% of GDP respectively in 2009.

1. Germany and Italy have stronger comparative advantages than France

1.1 When a sectoral breakdown is applied, France, Germany, Italy, the United Kingdom, and Spain display broadly similar RCAs[2]

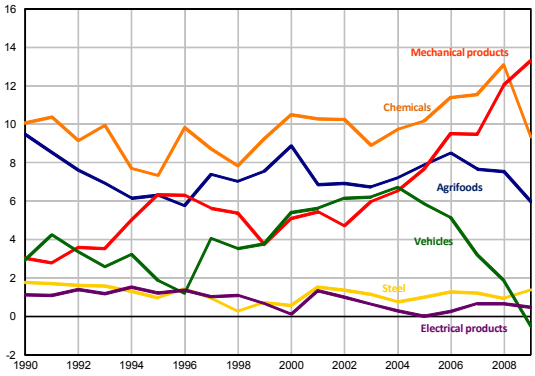
The overall export specializations of the five largest EU economies exhibit major similarities.[3] All five enjoy RCAs in **mechanical products**,[4] **vehicles** (automobiles and automobile parts), **chemical products** (including pharmaceuticals and toiletries), and **steel**. France and Spain also have an RCA in **agrifoods**.

France's RCA indicators (see chart 1) **in chemicals, mechanical products**, and **agrifoods** far exceed those in **steel, electrical products**, and even **automobiles**, but have moved differently since 2004.

- **Chemicals**, France's main specialization sector since 1981, declined to second place in 2009 owing to the crisis, which caused a sharp contraction in the sectoral trade balance. Within the category, **pharmaceuticals** and **toiletries** remain among the chief RCAs at a detailed sector level.
- The RCA in mechanical products has been moving steadily upward since the early 2000s thanks to the substantial rise, within the sector, of the RCA in **aerospace**, whose exports proved highly resilient during the crisis.
- The **vehicle** sector started trending down in 2004 and was hit by the unprecedented 30% drop in auto sales between 2008 and 2009. The sector, which had enjoyed an RCA of more than 6 in 2004, turned into a comparative disadvantage for France in 2009, becoming the country's sixth export specialization sector.
- In 2006, **agrifoods** was overtaken by **mechanical products** as France's second-ranking export specialization sector. However, the French RCA in agrifoods has remained fairly stable for the past twenty years despite a slippage in 2009 as slacker world demand eroded French agrifoods exports. Historically, agrifoods has been one of France's strengths in the international market, notably thanks to an excellent global performance in **beverages** (France's second export specialization product) and in particular in **wines and spirits**, a category in which French products enjoy a high reputation.

It is important to note that France's main RCAs were relatively well balanced in the early 2000s. In the past ten years, the structure of French export specialization has shifted considerably to the sole benefit of **aerospace**, which concentrated more than one-quarter of France's total RCAs in 2009.

Chart 1: France's six RCAs (contribution to trade balance in thousandths of points of GDP)



Sources: CHELEM, DG Trésor.

By comparison, German RCAs are more sharply defined and more stable over time. **Vehicles** (particularly **private cars**, Germany's top specialization product, providing the greatest comparative advantage at the most detailed sector level) and **mechanical products** (**specialized machinery** and **motors**) have been by far the leading German export specializations since the late 1990s. Moreover, their RCAs have accelerated since 2003, in step with German competitiveness gains. After declining in the 1990s in the wake of reunification, German competitiveness was restored by the wage-restraint policy implemented in the 2000s. This shift has helped Germany to achieve an export performance unmatched among the major eurozone countries.

Italy has more balanced RCAs in **hardware goods, specialized machinery**, and **motors**, with indicators ranging between 7 and 8 in 2009. The export specialization of the United Kingdom resembles that of France-with strengths in **pharmaceuticals** and **aerospace**-although it seems less pronounced. Spain has a very strong specialization in private cars, which largely outrank **other agricultural products** and **utility vehicles**. Overall, **vehicle manufacturing** is the main RCA of Spanish industry.

The five leading EU economies also display very similar comparative disadvantages. Apart from the United Kingdom, all suffer from a considerable comparative disadvantage in **energy**. The other four countries have an energy bill running between 2% and 3.5% of GDP in 2010.[5] France, Italy, and Spain post comparable values of around −20, but Germany, which exports virtually no energy, has an even lower indicator of approximately -30.

(1) Sources: CHELEM, IMF, DG Trésor calculations.

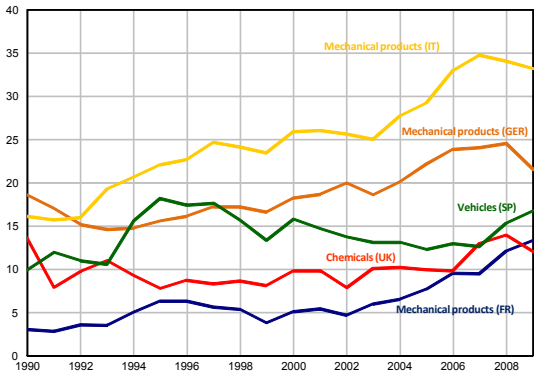
(2) See the CEPII website: http://www.cepii.fr/francgraph/bdd/chelem/cominter/cin71prod.htm.

(3) See P. Artus and L. Fontagné (2006), *Évolution récente du commerce extérieur français* and L. Fontagné and G. Gaulier (2008), *Performances à l'export de la France et de l'Allemagne*, reports by the Conseil d'Analyse Économique.

(4) The "mechanical products" category includes metal structures, hardware goods, motors, farming equipment, machine tools, construction equipment, specialized machinery, weaponry, ships and boats, and aerospace.

(5) Sources: Eurostat, DG Trésor calculations.

Chart 2: Top-ranking RCA for each country studied (contribution to trade balance in thousandths of points of GDP)



Sources: CHELEM, DG Trésor.

France, Germany, and the United Kingdom also have a strong comparative disadvantage in the **textile** sector, which is having trouble resisting competition from countries with low production costs. In Italy, by contrast, it remains the second RCA. Germany, Italy, and the United Kingdom have a comparative disadvantage in **agrifoods**, whereas it represents a strong export specialization for France and Spain.

1.2 The sectors in which countries enjoy RCAs are the ones where they hold their largest global-market shares in nominal terms

There is a link between a country's RCA and market share, but it is complex. An RCA is indeed an asset for achieving good export performance, but it is not an indicator of that performance. There are two main reasons for this. First, the RCA calculation does not take into account international competitors' performance in the global market. Second, conversely, the determination of market share does not incorporate the import data for the country studied.[6] It can be argued, however, that a rising RCA helps to protect market share and that if market share increases, the RCA tends to rise as well. On the other hand, it is impossible to identify a direct causal link between the two indicators. As a complement to sectoral specialization, we therefore need to examine the changes in global-market share to determine each country's export performance by product.

Generally speaking, there are major differences in level terms between the global-market shares by sector of the five main EU economies. German market shares are far larger than those of the other four countries, exceeding 15% for the two sectors with the largest RCAs. By contrast, the market shares for the strongest French, Italian, and British sectors are relatively similar, ranging between 6% and 8%. Spain is in far a weaker position than its chief EU competitors, as its market share fails to exceed 6% in any sector.

On a trend basis, **all five countries, except Germany and Spain, saw a continuous decline in their market shares during the period examined**. Most developed countries have suffered a steady erosion of their global-market shares since the early 1990s due to the increasing presence of the emerging economies in world trade. The key development has been the accession of China-which joined the WTO in 2001-to the top rank of exporters since 2009. Moreover, most of the leading eurozone countries, including France, have lost real global-market shares between 2002 and 2008 relative to other OECD countries. This pattern is partly due to their worsening price competitiveness, a result of the euro's nearly uninterrupted appreciation during the period.

In France, the market shares of the two main RCAs-**agrifoods** and **chemicals**-followed highly consistent trends, easing from 9% to around 6% between 1990 and 2009. This matches the trend in France's overall market share, which declined from 6% to around 4% in the same period. By contrast, the French position in **mechanical products** proved more resilient and even consolidated between 2008 and 2009. One of the main factors was the steep rise in the RCA for the category since 2007, driven by the excellent performance of **aerospace**, whose market share climbed from 14% in 2000 to 27% in 2009. The steep fall in the RCA indicator for the **vehicle** sector caused a sharp contraction in market share from 7.5% in 2004 to 5.5% in 2008. France's position in the sector appears to have stabilized at the end of the period at a level comparable to that of agrifoods, chemicals, and mechanical products.

Spain has preserved market share in its main RCAs in the past twenty years despite a mild decline in the top two-**vehicles** and **agrifoods**-between 2003 and 2008. However, Spanish market share in **automobiles** jumped in 2009, owing to a swift export rebound at the end of the economic crisis.

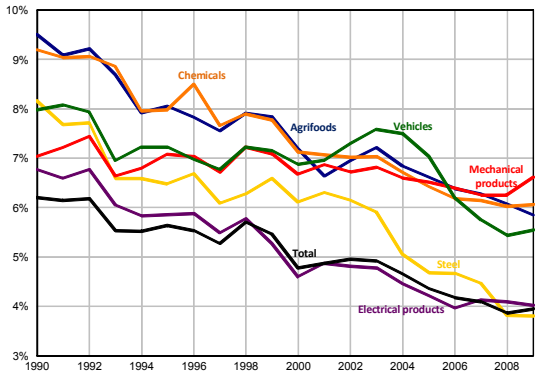
Italian and British positions recorded similar downtrends in the period studied. The decline seems to have affected all sectors in which Italy and the United Kingdom have RCAs. It should also be emphasized that United Kingdom market shares are now equivalent to Spain's.

Germany is the only one of the five countries to have consolidated its positions in sectors where it enjoys the strongest RCAs. This is especially true for vehicles and mechanical products, which have been trending up since the early 2000s. As noted earlier, Germany's implementation of rigorous wage restraint and looser labor-market regulations during this period enabled it to restore its cost competitiveness, which had been severely undermined in the 1990s because of reunification.

(6) Example: Germany has a revealed comparative disadvantage in high-technology products but its market share in this category is growing. The disadvantage is "domestic" and is due to the country's very strong specialization in medium-technology products such as automobiles and machinery. By contrast, in the international market, German high-technology products are competitive, and market share is rising.

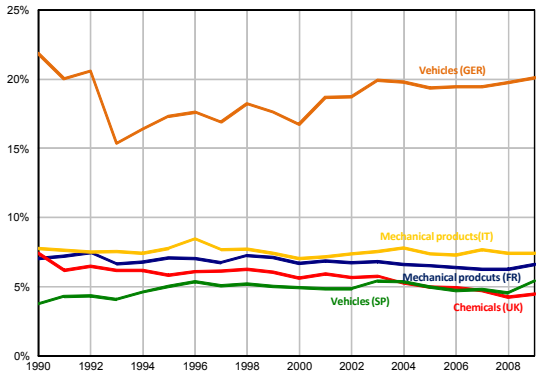
Chart 3: Market share of five countries studied by RCA sector[7]

French market share in its six main RCAs



Sources: CHELEM, DG Trésor.

Top-ranking market share for each country studied



Sources: CHELEM, DG Trésor.

2. France derives its main RCAs from high-technology products

To better assess the export specializations of the five main EU economies, CEPII has developed data by product range, classified as follows:

Table 1: Breakdown by product range (CEPII)

High-technology products	Medical and precision optical instruments Pharmaceuticals Radio, TV, and communication equipment Information-technology (IT) equipment Aerospace
Medium-technology products	Other rail and transportation equipment Motor vehicles, trailers Electrical equipment and appliances Machinery Chemical products (other than pharmaceuticals)
Medium-low technology products	Rubber and plastic goods Ships and boats Metalworking, primary processing of non-ferrous metals Other non-metal mineral products Other manufactured and recovered products Metal structures other than machinery Steel products, primary processing of steel Coke, oil byproducts, nuclear
Low technology products	Paper, cardboard, publishing Textiles, apparel, leather products, footwear Food products, beverages, tobacco Wood (other than furniture), basketwork

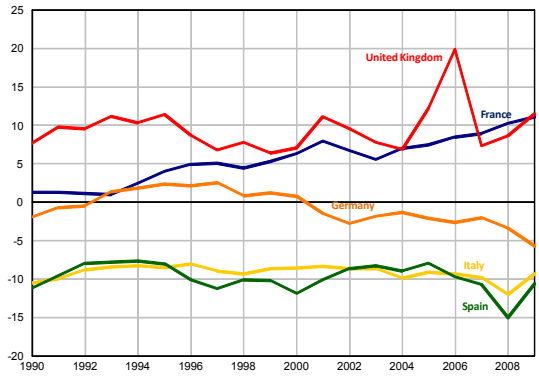
Source: CHELEM.

CEPII has relied on the theory elaborated by A. Loschky[8] to construct these categories using a criterion of direct and indirect R&D intensity. Within each category, however, products may belong to different quality ranges. For example, as regards automobiles, Germany is more specialized in the high end and France in midrange models.

2.1 French export specialization in high-technology products endures

France and the United Kingdom have the greatest RCAs in **high-technology products**, with high value added. While the British RCA remained stable during the 1990-2009 period (apart from a peak in 2006), France's RCA rose steadily from 1 to over 10. This robust French specialization relies heavily on two of the country's flagship export industries: **aerospace** and **pharmaceuticals**.

Chart 4: RCAs of five countries studied in high-technology products



Sources: CHELEM, DG Trésor.

By contrast, Germany's RCA in high-technology products has been declining since 1997. It even turned negative in 2001, partly because of a disappointing performance in IT and communication equipment. Spain and Italy post negative values in this category, with very similar comparative disadvantages of around -10.

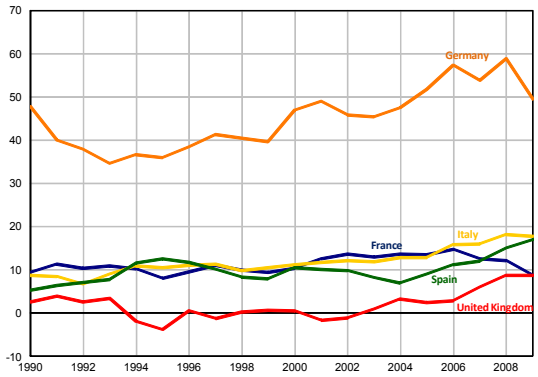
Medium-technology products are largely dominated by Germany, whose RCA exceeds 50 versus under 20 for all its EU competitors. This product range is totally consistent with the German industrial specialization in **machinery**, **vehicles**, and **producer durables**-which explains the country's commanding position in the sector.

France, Italy, and Spain posted fairly similar RCAs in medium-technology products until 2006. That year, France began to slip, mainly because of a loss of RCA in **automobiles**, whereas Spain and Italy scored gains thanks to vehicles and machinery respectively. The United Kingdom has moved on the opposite path to France's. Its RCA rose in a linear pattern starting in the early 2000s (chiefly thanks to chemical products and machinery) and caught up with that of France at around 10 in 2009.

(7) The CHELEM is harmonized, i.e., exports by country *i* to country *j* are always equal to imports by country *j* from country *i*. Therefore, the nominal market share of country *i* in product *k* is defined as the ratio of exports of product *k* by country *i* to world exports of product *k*.

(8) A. Loschky (2008), "Reviewing the nomenclature for high-technology trade - The structural approach", OCDE, September. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=STD/SES/WPTGS(2008)9&docLanguage=En.

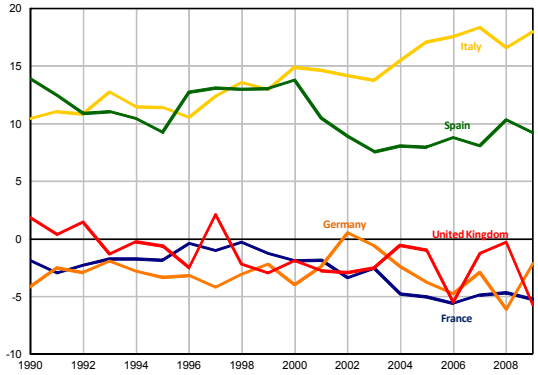
Chart 5: RCAs of five countries studied in medium-technology products



Sources: CHELEM, DG Trésor.

The pattern of export specializations of the five countries studied is reversed in **medium/low-technology products**. This category is largely dominated by Spain-despite a slippage from 2000 on-and even more so by Italy, whereas France, Germany, and the United Kingdom have a comparative disadvantage. Italy's RCA in this range rose steadily since the mid-1990s, from around 10 in 1996 to 18 in 2009, driven by its specialization in **hardware goods**, its leading RCA.

Chart 6: RCAs of five countries studied in medium/low-technology products

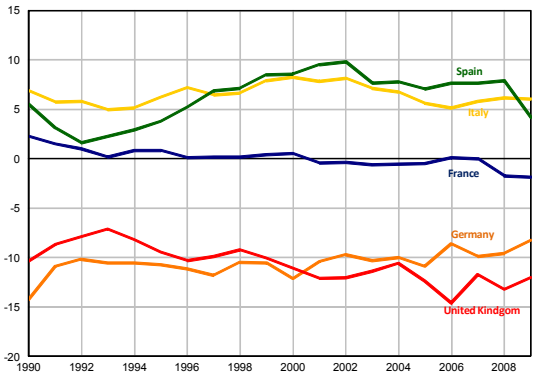


Sources: CHELEM, DG Trésor.

France's RCA in this category declined continuously between the late 1990s and 2006. It then stabilized at around −5, a value comparable to that of the United Kingdom (−5 in 2009) and Germany (−2.5).

As in the previous category, Italy and Spain possess the strongest RCAs in **low-technology products**, exceeding 5 since the late 1990s. Spain relies mainly on **food products**, which provided its second-ranking RCA in 2009. For France, the indicator is neutral (at barely under 0) and stable for the 1990-2009 period. The country compensates its disadvantage in textiles by a significant RCA in **food products** and **beverages**. Both Germany and the United Kingdom have a comparative disadvantage of around -10 in this range.

Chart 7: RCAs of five countries studied in low-technology products



Sources: CHELEM, DG Trésor.

This analysis by product range provides a more nuanced view of the export specializations of the five leading EU economies. Our results clearly show that France and Germany-whose exports, according to economic studies,[9] display similar sectoral structures-are not, in fact, specialized in exactly the same product ranges. France's strength is concentrated in **high-technology products** with high value added (notably thanks to its RCA in aerospace and pharmaceuticals). Germany, on the other hand, specializes chiefly in **products with slightly lower technology content** but in which it enjoys a commanding RCA (essentially automobiles and specialized machinery).

The evidence suggests that the sectoral structure of United Kingdom exports has gradually converged toward that of France, particularly in the high-technology product segment, with both countries becoming more specialized in pharmaceuticals and aerospace. The main divergence between the two exporting industries stems from France's RCA in agrifoods, some of whose categories such as agricultural products and beverages are classified as low-technology products.

2.2 Changes in market share reflect national profiles

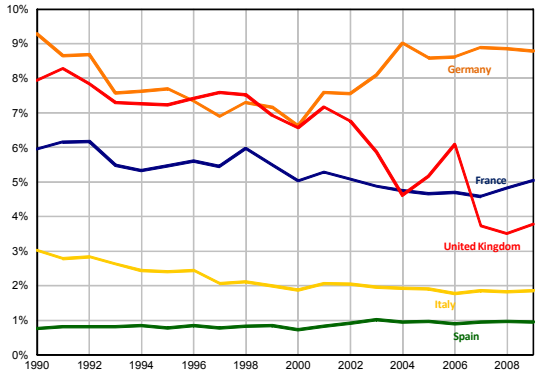
Since the early 2000s, Germany has increased its market share in high-technology products[10] despite a comparative disadvantage in this product range. After declining between 1990 and 2000, Germany's share grew rapidly from around 6.5% in 2000 to nearly 9% in 2009, i.e., in an opposite direction to its RCA.

By contrast, the British market share in this product range started trending down in the early 2000s, moving from 7% in 2001 to under 4% in 2009. **France benefited from its RCA in the category to keep its market share stable at 5-6%**. Its share has actually increased since 2007, enabling France to overtake the United Kingdom and rank second in Europe behind Germany. Italy and Spain have smaller market shares, in keeping with their comparative disadvantage in high technology.

(9) P. Artus and L. Fontagné (2006), *Évolution récente du commerce extérieur français*, report by the Conseil d'Analyse Économique; G. Le Blanc (2007), *La France souffre-t-elle d'une mauvaise spécialisation industrielle?*, report by the Cercle de l'Industrie.

(10) This specificity had already been identified in L. Fontagné and G. Gaulier (2008), *Performances à l'export de la France et de l'Allemagne*, report by the Conseil d'Analyse Économique.

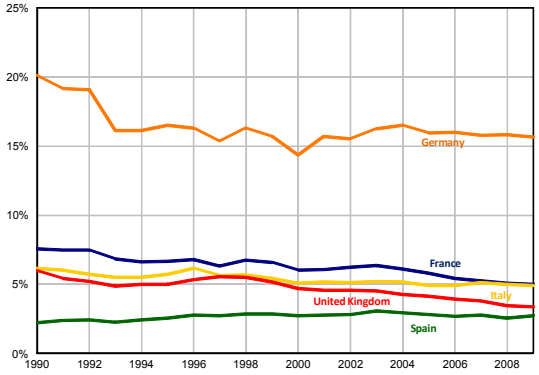
Chart 8: Market share of five countries studied in high-technology products



Sources: CHELEM, DG Trésor.

Consistently with its RCA, Germany's market share is far larger than that of its European competitors in **medium-technology products**, having climbed to a remarkably stable level of over 15% since the early 1990s versus 5% for France and Italy. By devoting most of its know-how to **automobiles** and **mechanical products**, Germany has succeeded in preserving and even consolidating its export positions despite the rise of the major emerging countries in global trade.

Chart 9: Market share of five countries studied in medium-technology products



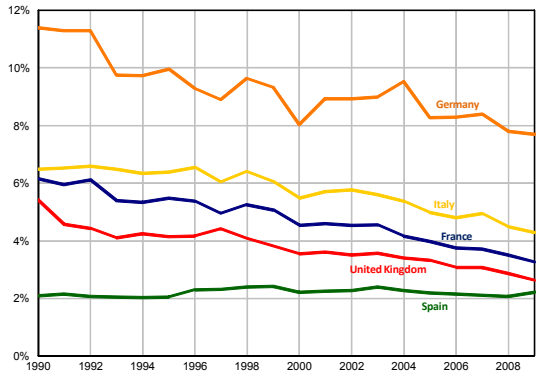
Sources: CHELEM, DG Trésor.

In trend terms, the only countries whose positions have weakened in recent years are France and the United Kingdom. Italy has kept its market share at 5%. Spain has scored a mild gain since 1990, reaching 3% and thus drawing closer to the British position.

The segment in which **the five EU countries studied have suffered the greatest loss of market share is medium-low technology products.** The downtrend concerns all five economies, although Germany substantially outranks its competitors in absolute terms. However, Germany recorded the steepest loss in the period examined, with a drop in market share from 11.5% in 1990 to under 8% in 2009. The erosion of German exports in this product range reflects the gradual transfer of production resources to export sectors with higher technological content.

Italy's market share exceeds that of France in medium-low technology products, consistently with the greater Italian specialization in this product range. However, despite the robust increase in its RCA indicator since the early 2000s, Italy has failed to stem the erosion of its market share. The only country whose market share remained stable in the period studied is Spain, albeit at a lower level than that of its EU competitors.

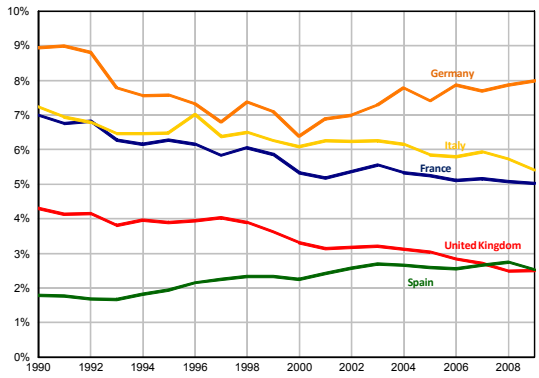
Chart 10: Market share of five countries studied in medium/low-technology products



Sources: CHELEM, DG Trésor.

In **low-technology products**, Spain's market share is the only one to have expanded steadily throughout the period, even overtaking that of the United Kingdom in 2008 to settle at just under 3%. After declining throughout the 1990s, Germany's market share grew from around 6.5% in 2000 to 8% in 2009, an uptrend exactly symmetrical with that of its RCA in this product range. French and Italian market shares followed similar downtrends, although their RCA indicators remained stable in the period.

Chart 11: Market share of five countries studied in low-technology products



Sources: CHELEM, DG Trésor.

More generally, **we can explain the decline in EU market share in products with low or medium/low technological content by the market entry of large emerging exporters** with strong RCAs in these product ranges. This is especially true of China, whose market share climbed from around 3% in 1990 to 13% in 2009, pulling well ahead of all EU positions in low- or medium/low-technology products.

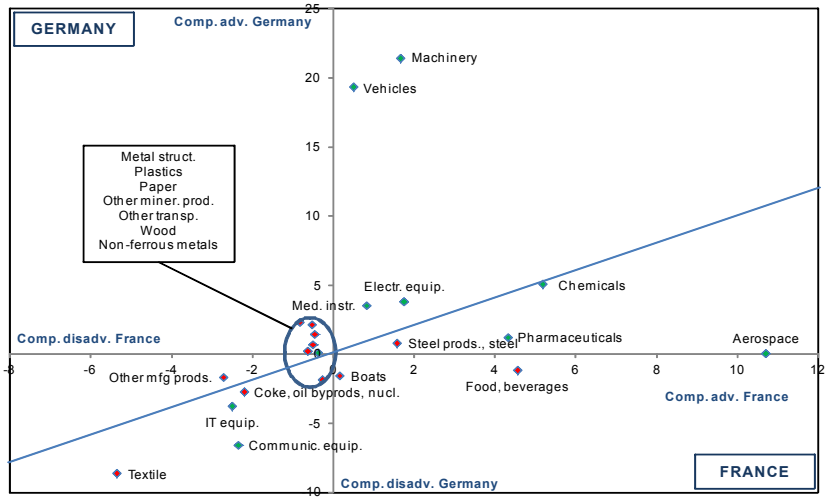
3. A more detailed breakdown reveals the specific national profiles of France and Germany: a matrix representation

The four product ranges break down into 22 sub-categories that we can represent on a matrix comparing the French and German RCA indicators.

This model allows us to compare France's export structures with those of its other three main EU competitors: Italy, the United Kingdom, and Spain. We can thus measure the divergences in the overall sectoral structures of France

and its competitors by calculating the dispersion of points around the bisector.[11] The results suggest that in 2009, the United Kingdom, in terms of RCAs, possessed the sectoral trade structure most similar on average to that of France, even more so than Germany. The RCAs of Spain and Italy exhibit a greater divergence from those of France.

Chart 12: Matrix of French and German RCAs in 2009



Sources: CHELEM, DG Trésor.

How to read this chart: For each point in the matrix, the x value corresponds to the RCA of a product in France, and the y value to that of the RCA for the same product in Germany. The bisector separates the sub-categories where France has the greater RCA from those where Germany has the greater RCA. High- and medium/high-technology products are shown in green. Low- and medium/low-technology products are shown in red.
Example: the "aerospace" sub-category (French RCA = 11; German RCA = 0) lies on the French side and is shown in green.

The observed changes in RCA afford a better understanding of the export specializations of the five largest EU economies. Despite their similarities, the sectoral structures of German and French exports display divergences, particularly in their specialization by product range. Germany concentrates on high- and medium/high-technology products (automobiles and machinery), where it enjoys a very substantial RCA. This strategy, which entails a gradual withdrawal from low-technology products, has enabled Germany to withstand the rise of the major emerging countries and consolidate its market share in high- and medium/high-technology products. By contrast, France is holding its ground only in high-technology products, where it is protected by its RCAs in aerospace and pharmaceuticals. By contrast, it is losing market share in all other categories, notably low- and medium/low-technology products.

Martin FORTES

(11) Our aim here is to calculate the interquartile gap in order to measure the dispersion of the point cloud.

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Direction Générale du Trésor
139, rue de Bercy
75575 Paris CEDEX 12

Publication manager:
Claire Waysand

Editor in chief:
Jean-Philippe Vincent
+33 (0)1 44 87 18 51
tresor-eco@dgtresor.gouv.fr

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