Special Analysis

How to explain the recent shift in balance-of-trade trends in Europe ?

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*T*here has been a shift in balance-of-trade trends in the main European countries since 2008. Prior to the crisis the German balance of trade was continually improving, so much so that it rose from a value of almost nil in 2000 to a surplus of €171 Bn in 2007. Conversely, it deteriorated at various speeds in France, Spain, Italy and the United Kingdom, with a combined deficit for these four countries of €141 Bn in 2007. Since the crisis the surplus has stabilised in Germany, while the deterioration has been interrupted in the other countries. While the balance of trade has stabilised in France and the United Kingdom, Spain and Italy have actually recorded a surplus since 2012.

This improvement for the countries previously in deficit is most likely due to their weak domestic demand on the one hand and the depreciation of the Euro and the Pound on the other. To measure these effects, exports and imports in each of the five countries studied were modelled. In this way, for each country, we assessed the contributions of a number of explanatory variables to variations in the balance of trade: terms of trade (ratio of export prices to import prices); growth in domestic demand; growth in foreign demand; price-competitiveness; and the unexplained part of trade, interpreted as non-price competitiveness.

The main results are as follows:

- In the pre-crisis years, Germany's performance could not be explained by its trade exposure: despite its enhanced access to the emerging economies, world demand for German products was not growing any faster than that for the products of the other countries (except Spain). The performance is explained on the one hand by the apparent insensitivity of Germany's exports to price-competitiveness (and hence to the appreciation of the Euro), and on the other by the fact that, at the time, it was the only one of these countries to record non-price competitiveness gains;

- Germany's balance of trade has stopped improving since the crisis because the sharp slowdown in world demand has not been offset either by its domestic demand or by further non-price competitiveness gains;

- In Spain, the improvement in the balance of trade since mid-2008 is first and foremost due to the slump in domestic demand (-3.1% against +4.3% as an

annual average over the period 2000-2008). Non-price competitiveness gains have been substantial, while the improvement in price-competitiveness, measured by the real effective exchange rate or export prices, has so far had a secondary effect;

- In Italy, the improvement in the balance of trade has been governed by the same determinants as in Spain, but to a far lesser extent. Additionally there have not been any non-price competitiveness gains; rather, the non-price competitiveness losses have been smaller than in the past;

- In France, the smaller losses of non-price competitiveness, the slowdown in domestic demand, and improved price-competitiveness have all offset the foreign outlets slowdown;

- The United Kingdom, where the improvement has been the least marked since the crisis, stands out in two ways: the slowdown in domestic demand has been less severe; and non-price competitiveness losses have increased. Price-competitiveness, however, acted very positively thanks to the depreciation of the Pound.

All in all, the weakness of domestic demand and, to a lesser extent, the depreciation of the Euro and the Pound have played a key role in improving the balances of trade of those countries previously in deficit. But other mechanisms have come into play and to judge the sustainable nature of the improvement in balances of trade we need to identify the other factors underlying this improvement. Several mutually compatible candidates emerge: improvement in cost-competitiveness, particularly in Spain with the sharp drop in unit wage costs which has not yet been passed on to prices; a more intensive search for export markets in order to make up for the slump in domestic demand; structure effects in domestic demand which would be unfavourable for imports (most notably the drop in investment); and decline in the Chinese growth model with fewer market share gains. ■

How to explain the recent shift in balance-of-trade trends in Europe ?

In Europe the balances of trade of States in deficit have improved since the start of the crisis

The balance of trade (or commercial balance) of a country is the difference between what that economy sells and what it buys. If this balance is negative (or more accurately, if the current account is negative), this deficit has to be financed by a debt to the rest of the world. Since the 2009 recession, private financing has dried up in the economies of southern Europe, because more risk-averse investors have had their doubts about the sustainability of economies with large current account deficits. The central banks of the Eurozone countries with a trade surplus have replaced private investors in order to finance these trade deficits (this is apparent in the movements of the Target 2 balances, *see Banque de France*, 2012). Addressing commercial imbalances within the Eurozone has thus become an important issue in economic policy.

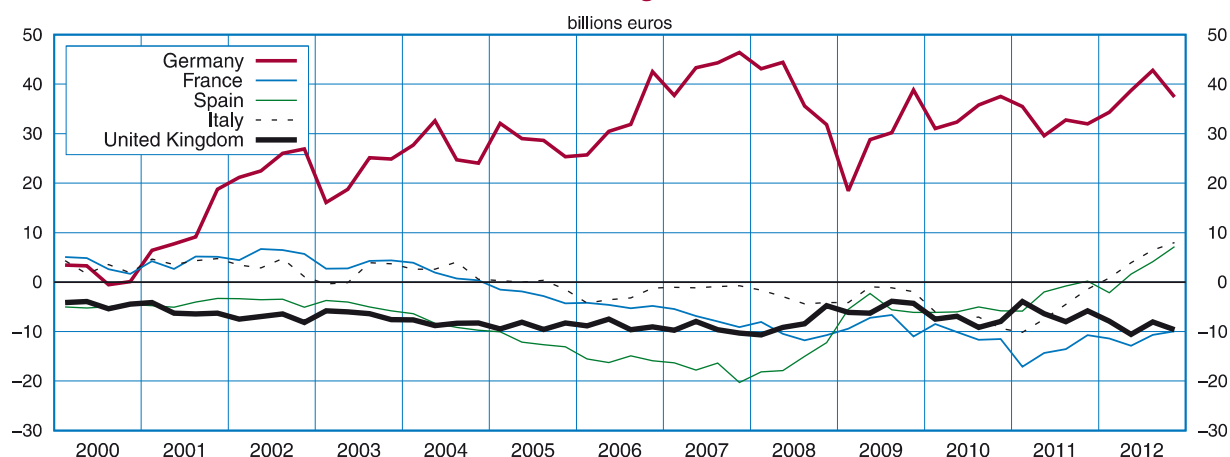*Shifts in balance of trade trends in the main European countries since mid-2008*

Growth in the balances of trade of the main European countries has undergone a major shift since the crisis *(see Graph 1a)*. Between 2000 and mid-2008, Germany's trade surplus grew larger and larger while the balance of the other countries regularly dwindled. But these trends have been reversed since the 2008 crisis. The balance of trade in Spain has improved substantially and actually returned to a surplus in 2012. It is the same with italian's one, where this recovery occurred in 2011, while the France balance of trade has stabilised since the end of 2008. The United Kingdom balance has remained in a relatively stable state of decline since the start of the 2000s. Lastly, the previously continuous improvement in the German balance of trade has been on hold since 2008.

It should also be noted that Germany suffered greatly at the end of 2008 (the quarterly balance of trade was divided by 2.5, plummeting by €25 Bn), while the balance of trade of the other major European countries changed little, except in Spain where it picked up sharply (+15 Bn in one year). For Germany this development can be explained by the dual effect of a larger drop in exports than in the other European countries, probably due to Germany's specialisation in capital goods for which demand declined sharply, and the resilience of imports.

The disequilibrium in these balances of trade can also be measured by a "coverage ratio" which is the ratio of the value of exports to that of imports[1]

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(1) In subsequent sections of the report, this ratio will be used in the main as it allows simple accounting breakdowns.

1a - Trade balance of goods and services

billions euros

Sources: Eurostat, INSEE calculations

The same shifts are observed in the balance of trade excluding energy

(see Graph 1b). When it is higher than 1 it shows a trade surplus and when it is lower it shows a deficit. Coverage ratio trends tend to be similar to those of the balances of trade.

For all these countries, energy imports, value of which is closely linked to oil prices, contribute heavily to fluctuations in the balances of trade. An analysis of customs data[2] shows that in all countries the energy bill has climbed since 2008 (except for Spain where it has ultimately remained stable), but more slowly than prior to the crisis.

For all countries, the shift since the crisis can also be observed with the balance of trade excluding energy (see Graphs 2a and 2b). However, two differences can be highlighted. First, only the United Kingdom has a trade deficit once energy is excluded. Next, in Italy the pre-crisis period was characterised by stability in the balance of trade excluding energy.

An improvement for the southern countries, mainly due to the poor economic situation in these countries along with the depreciation of the Euro

The relative improvement in the balance of trade in southern European countries partly stems from their poor economic situation (see Graph 3a), bringing down their imports (see Graph 3b). In Spain for example, domestic demand progressed by 36.7% between 2000 and mid-2008, but by the end of 2012 it had fallen by 13.9% from its mid-2008 level.

Additionally, variations in the exchange rate of the Euro contributed to the shift in balance-of-trade trends in the Eurozone countries. While the Euro appreciated strongly between 2000 and 2008, particularly against the Dollar, it has since depreciated. The real effective exchange rates of the Eurozone countries have followed a downward trend since 2008, thereby favouring these countries' exports and slowing their imports. Similarly, in the United Kingdom the real effective exchange rate in 2012 was at a far lower level than in 2008, with the decline mainly occurring during 2008 (see Graph 4).

(2) In the report as a whole, the data used come from the annual or quarterly national accounts. However, only customs data can be used to distinguish energy and determine a balance excluding energy.

1b – Import-export coverage ratio in value
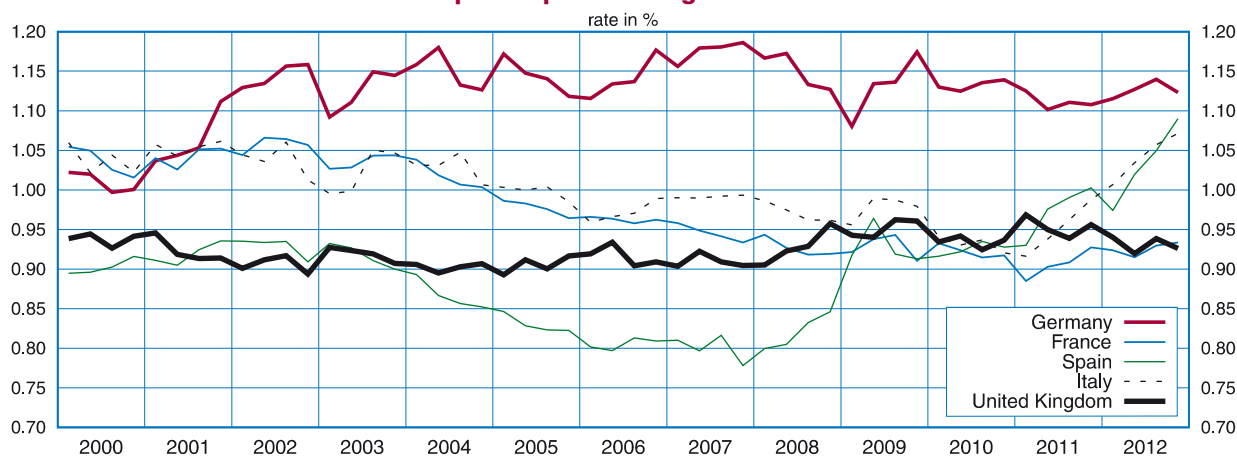
rate in %

Sources: Eurostat, INSEE calculations

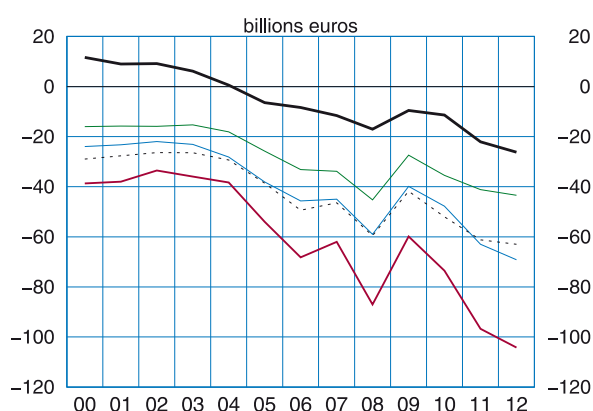# How to explain the recent shift in balance-of-trade trends in Europe ?

The momentum of exports has been uneven since 2008, but that of Spain has caught up with that of Germany

The recovery of the balance of trade in the main European countries excluding Germany since 2008 can also be explained by improved export performances. Between 2000 and 2008 Germany's market share[3] strengthened while that of the other European countries declined *(see Graph 5a)*. But since 2008 the market shares of France, Italy and Spain have stabilised (the slight decline in the UK market share has continued). And since 2009 Spain has regained market share.

The dynamism of exports has however remained rather uneven between the countries. For the last 10 years German exports have been far more dynamic than those of the other European countries. Spain's performances have improved substantially in recent years *(see Graph 5b)*: between 2008 and 2012, Spanish exports grew at a rate close to that of Germany. Italian and French exports, however, have been less dynamic.

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(3) A country's market share is defined here as the ratio in volume between the country's exports and world demand for this country's products, bearing in mind its commercial exposure.

2a - Energy bill

billions euros

Source: National Customs

2b - Trade balance excluding energy

billions euros
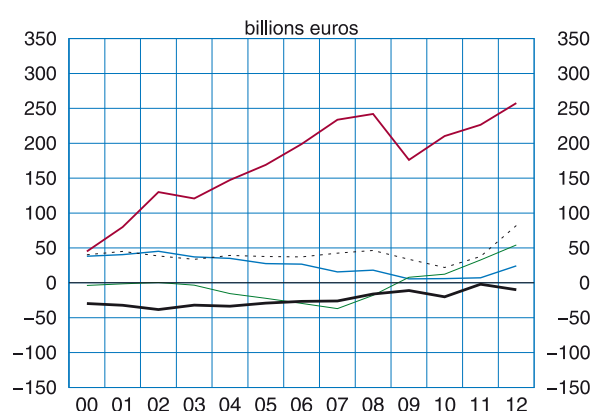
Sources: National Customs, Eurostat

Germany
France
Spain
Italy
United Kingdom

3a - GDP

base 100 in Q1 2008
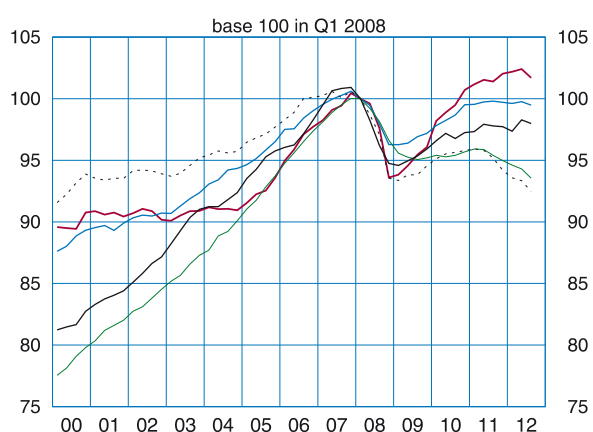
Sources: Eurostat, INSEE calculations

3b - Imports

base 100 in Q1 2008

Sources: Eurostat, INSEE calculations

A framework for analysis of the structural determinants of balance-of-trade trends

The improvement in the balances of trade of the main European countries since the 2008 crisis has two identified origins at least: a depressed economic situation, and the depreciation of these countries' currencies. But to quantify the explanatory power of these factors we need to break the balance of trade down, into foreign terms of trade on the one hand and export and import volumes on the other, and to proceed to an econometric modelling of these components.

Three determinants of the balance of trade: volume of exports, volume of imports, and terms of trade

The balance of trade of a country is the difference between the value of exports and that of imports. It is therefore possible to make an accounting breakdown of its evolution according to the variation in exports in volume, the variation in imports in volume, and the ratio between export and import prices, which represents the foreign terms of trade.

4 - Real effective exchange rate of the main European countries

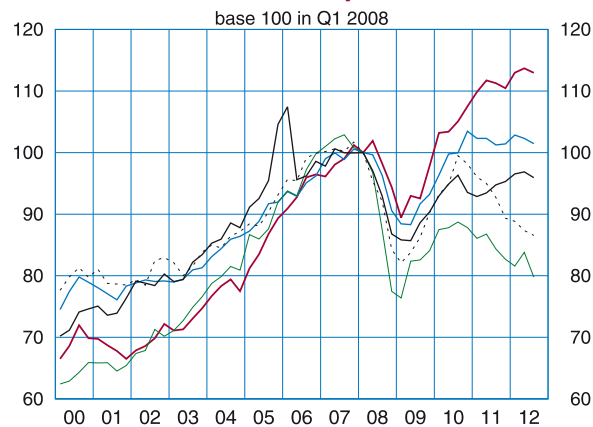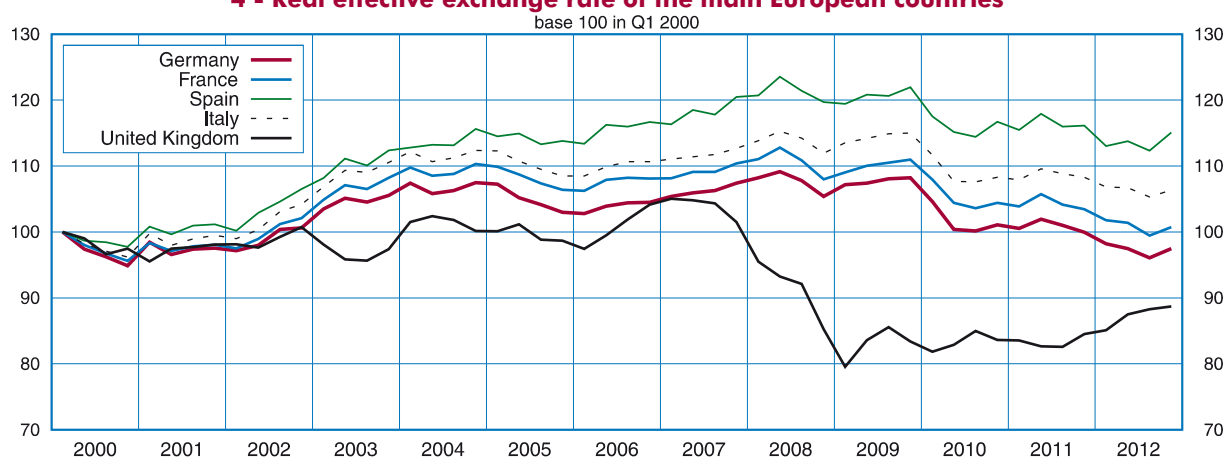Sources: DG Trésor, INSEE calculations

5a - Market share
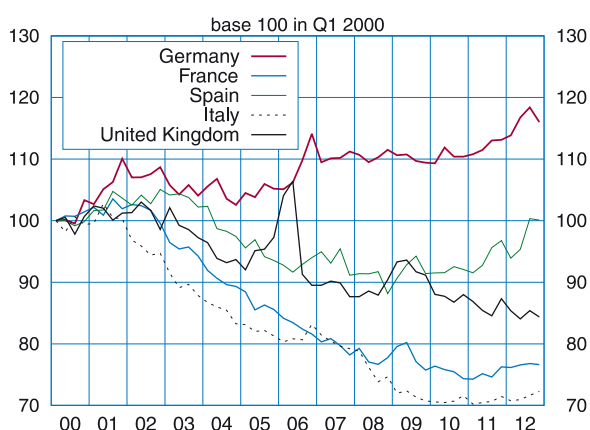
Sources: DG Trésor, Eurostat, INSEE calculations

5b - Exports
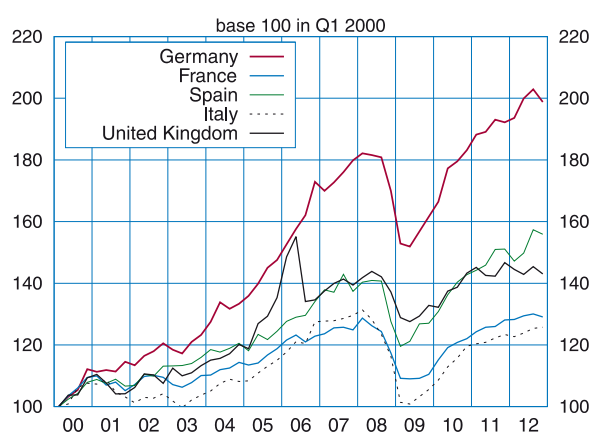
Sources: Eurostat, INSEE calculations

How to explain the recent shift in balance-of-trade trends in Europe ?

The balance of trade of a country is given by:

BC=px*X - pm*M

with:
BC: balance of trade in value;
px: export prices;
X: exports in volume;
pm: import prices;
M: imports in volume.

This equation can easily be converted into:

$$\Delta[Ln\ (1+BC/(pm*M))] = \Delta\ [ln\ (px/pm)] + \Delta\ ln(X) - \Delta\ ln(M)$$

where Δ corresponds to the differentiation operator.

The expression $\Delta[Ln\ (1+BC/(pm*M))]$ gives the change in the coverage ratio. In the next part of this report we comment on the movements in this coverage ratio.

The second term of equality corresponds to a breakdown of the changes to the coverage ratio into three elements:

- $\Delta\ [ln\ (px/pm)]$: changes in the foreign terms of trade
- $\Delta\ ln(X)$: changes in exports in volume
- $\Delta\ ln(M)$: changes in imports in volume

Changes in exports and imports in volume can then be modelled according to their usual determinants, in the form of an error correction equation describing the short-term adjustment around a long-term target *(see Box 1)*.

Two macroeconomic determinants of exports: foreign demand and competitiveness

A country's exports in volume are mainly determined by foreign demand for its products and by the country's price-competitiveness. They are also affected by linear trends showing the ability of countries to profit from the development of foreign trade throughout the estimation period of the equations.

Foreign demand for a country's products is built by aggregating the imports of trading partners, weighted according to their share in the exports of the country under consideration. It therefore depends both on the geographical orientation of the exports and on the dynamism of demand in the partner countries. Competitiveness depends on the exchange rate, but not only that; other factors have to be taken into account, particularly producer prices and production costs, via unit wage costs[4]. Three indicators are used in this report *(see Box 2)*. First, the real effective exchange rate (REER) and export price-competitiveness are an aggregation of the bilateral terms of trade deflated respectively by the ratio between the country's consumer prices and those of its partners, and by the export price ratio between the country and its partners. Next, the cost-competitiveness indicator is constructed as the ratio between wage costs in the country's economy as a whole and its trading partners.

In the economic literature there is no consensus on what is the right choice of competitiveness indicator.

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(4) These indicate the wage cost to produce a unit in the country.

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Box 1- Econometric estimations for import and export equations

The equations used to measure international trade in this document are estimations constructed using the error correction model (ECM), on the basis of integrated variables of a similar nature (subjected to the usual tests: *Dickey-Fuller, Elliott-Rothenberg-Stock and Kwiatkowski-Phillips-Schmidt-Shin*). This involves nonlinear *Stock*'s one-step estimation (1987). Given the limited number of observations available, this methodology is preferable to a two-step *Stock* and *Watson* estimation (1993).

The method yields an estimation based on ordinary least squares (OLS), in which short and long run factors (restoring force) are estimated jointly.

The variation in variable y is estimated on the basis of the variations observed in variable x, as well as delayed variations in variable y (short term). The long run relationship between y and explanatory variable x is estimated simultaneously.

$$\Delta y_t = a + b_o \Delta x_t + \sum_{l=1}^{p} b_i \Delta x_{t-i} + \sum_{i=1}^{q} d_i \Delta y_{t-i} - \lambda \left(y_{t-1} - \beta x_{t-1} \right) + \varepsilon_t$$

where:

- variables in lower case are logarithms,
- Δ corresponds to the differentiation operator,
- λ corresponds to the coefficient of the restoring force,
- ε corresponds to the residual of the equation (white Gaussian noise).

Concretely, the equation takes the form:

$$\Delta y_t = a + b_o \Delta x_t + \sum_{l=1}^{p} b_i \Delta x_{t-i} + \sum_{i=1}^{q} d_i \Delta y_{t-i} - \lambda y_{t-1} - \theta x_{t-1} + \varepsilon_t$$

Long run:

The significance of the coefficient λ (restoring force) is tested by comparing the p-value to the values given in the tables developed by *Ericsson* and *MacKinnon* (2002). However, the tests on the θ are not interpretable.

The *Ericsson* and *MacKinnon* test was accepted in the majority of cases with a threshold of 5%, and with a 10% threshold for the rest: the cointegration hypothesis was thus considered to be systematically valid.

The standard hypotheses regarding normal errors (*Jarque-Berra* test), homosceasticity (*White* test) and serial correlation in residuals (*Lagrange* multiplier test) were also verified.

Short run:

To select the most pertinent short run variables, we used the "stepwise" selection procedure with a threshold of 1% on the p-value. A variable is thus retained if its coefficient has at least a 99% chance of explaining the endogenous variable. These parameters reveal a normal distribution, and the standard tests are therefore applicable (p-value, t-student etc.).

Estimating exports using the REER

Variables:

The export equations used in this document give us a model of the relationship between a country's exports (in volume) and a set of standard explanatory variables: world demand for products from this country originating in the world's biggest economies (restricted to 1, *see below*), a competitiveness index and, where relevant, a trend curve reflecting the underlying loss or gain of market share at international level.

World demand for a country's products is constructed as a weighted average of the imports of 45 countries (source: Trésor). The competitiveness index used here is the real effective exchange rate (REER), but other indices are also tested *(see Box 4)*.

	Estimation period	Threshold value	t-stat McKinnon	Test result	Threshold	RMSE	R2-a	Restoring force	Δdm	Δx_{-2}	$\Delta reer_{-2}$	$\Delta reer$	reer	TREND
France	**1995/2007**	-4.0	-3.8	no	5%	0.009	0.7	-0.2	0.9				-1.1	-0.007
		-3.7	-3.8	yes	10%									
Spain	**1992/2007Q3**	-4.0	-3.4	no	5%	0.015	0.5	-0.2	0.8	-0.3			-1.0	0.000
		-3.7	-3.4	about	10%									
Germany	**1995/2007**	-4.0	-3.7	no	5%	0.016	0.3	-0.4	0.6				-0.1	0.002
		-3.7	-3.7	yes	10%									
Italy	**1991Q4/2007**	-4.0	-4.2	yes	5%	0.015	0.5	-0.2	0.8			-0.3	-0.6	-0.008
		-3.7	-4.2	yes	10%									
United Kingdom	**1991Q4/2005**	-4.0	-4.7	yes	5%	0.015	0.4	-0.4	0.8		0.2		-0.5	-0.002
		-3.7	-4.7	yes	10%									

Sources : National customs, INSEE calculations

Estimation period:

It was decided to calculate these estimates from the early 1990s up until the onset of the financial crisis in 2008. Depending on the results of our tests, the estimation periods may vary from one equation to another (for Germany in particular, where the early 1990s were affected by the reunification of the country).

Long run (LT):
$x = c + 1*dm + a*reer + b*TREND$

Short run:
$\Delta x = b + d_i*\Delta dm_{-i} + e_i*\Delta reer_{-i} + f_i*\Delta x_{-i} - r*LT_{-1}$

where:

- x corresponds to a series of export data expressed in a logarithm,
- dm corresponds to the data series "world demand for this country's products" expressed in a logarithm,
- REER corresponds to a logarithmic expression of the country's real effective exchange rate data,

For purposes of comparison with other methodologies, readers may wish to refer to the *DESE Working Paper* published by the INSEE in 2010.

Estimating imports using REER

Variables:

The import equations used in this document give us a model of the relationship between a country's imports (by volume) and a raft of standard explanatory variables: domestic demand (including inventory), exports, a competitiveness index (REER) and a linear trend. The total elasticity of internal demand and exports is fixed at 1 (see *Armington* (1969), explained in the *Conjoncture in France* report for June 2008).

For Spain, the final estimation does not take REER into account, because the results obtained were not coherent with the effects predicted.

Long run (LT):
$m = d + a*ds + a'*x + b*reer + c*TREND$

Short run:

$\Delta m = b + e_i*\Delta ds_{-i} + f_i*\Delta x_{-i} + g_i*reer_{-i} - r*LT_{-1}$

where:
- ds corresponds to the internal demand data series (including investory).■

	Estimation period	Threshold value	t-stat McKinnon	Test result	Threshold	RMSE	R2-a	Restoring force	Δx	Δds	reer	ds	x	TREND
France	**1980Q3/2011Q4**	-4.2	-3.9	no	5%	0.008	0.81	-0.1	0.4	2.1	0.0	0.6	0.4	0.005
		-3.9	-3.9	yes	10%									
Spain	**1995Q2/2007**	-4.2	-4.0	no	5%	0.007	0.91	-0.2	0.7	2.7	-	0.7	0.3	0.007
		-3.9	-4.0	yes	10%									
Germany	**1991Q2/2012Q3**	-4.2	-3.5	no	5%	0.011	0.74	-0.2	0.5	1.4	0.0	0.4	0.6	0.003
		-3.9	-3.5	no	10%									
Italy	**1993/2007**	-4.2	-3.7	no	5%	0.011	0.78	-0.2	0.5	2.5	0.0	0.5	0.5	0.006
		-3.9	-3.7	about	10%									
United Kingdom	**1991Q1/2005Q1**	-4.2	-3.8	no	5%	0.009	0.74	-0.3	0.6	1.7	0.4	0.5	0.5	0.004
		-3.9	-3.8	about	10%									

Source : INSEE calculations

How to explain the recent shift in balance-of-trade trends in Europe ?

Box 2 - Competitiveness indicators

A country's export price-competitiveness can be measured using two indicators: the real effective exchange rate (REER) and export competitiveness. Macroeconomic theory also suggests that a cost competitiveness indicator may be useful when modelling export data.

The indicators

Real effective exchange rate

Real effective exchange rate is an index which tracks the evolution of an economy's exchange rate. It is based on the exchange rates observed between the country and its trading partners, weighted to reflect the relative importance of these partners for the country's external trade.

REER=NEER*IPR

with:

$$NEER = \prod_{i}^{n}(e_i)^{xi} \text{, nominal effective exchange rate}$$

such that:

n = 42
e_i: bilateral exchange rate between the country's national currency and foreign currency (i)

x_i: weight of a country (i) in the weighting system

$$IPR = IP_R / \prod_{i=1}^{n}(IP_i)^{xi}$$

IP_R: reference country price index

IP_i: national price index (i)

The consumer prices in these partner countries thus have a deflationary effect on the NEER. A relative increase in prices in the reference country in relation to other countries, or a rise in the value of the domestic currency, corresponds to a rise in the real effective exchange rate. When the REER rises, the country's export competitiveness is reduced.

Export competitiveness indicator

$$IPR = IP_R / \prod_{i=1}^{n}(IP_i)^{yi} \text{, relative price index}$$

IP_i: country's export price index (i)

IP_R: export price index of the country of reference

y_i: country's weight (i) in the weighting system

This indicator corresponds to the relationship between the reference country's export prices and the weighted export prices of other countries. When the reference country's export prices shrink, the indicator is reduced and the country's competitiveness is increased.

Cost competitiveness indicator

REER=NEER*IC

Such that:

$$NEER = \prod_{i=1}^{N}(e_i)^{wi} \text{, bilateral nominal effective exchange rate}$$

between the Euro and partner countries,

w_i: country's weight (i) in the weighting system

$$IC = C / \prod_{i=1}^{N}(C_i)^{WI}$$

C_i: country's unit labour cost (i)

Unit labour costs thus have a deflationary effect on the REER. A relative increase in costs in the reference country in relation to costs elsewhere, or an appreciation of the domestic currency, will cause the indicator to rise. When the indicator rises, the country's export competitiveness diminishes. ■

How to explain the recent shift in balance-of-trade trends in Europe ?

Each of the possible competitiveness indicators has its drawbacks...

The export price-competitiveness indicator has several drawbacks. The series of export deflators are often highly volatile, subjected to numerous revisions and only available after a certain time lag. Additionally they are constructed relatively heterogeneously across countries, most notably because they do not include "quality effects" which may then be integrated differently according to the practices of the national accountants. Lastly, export prices do not necessarily provide an accurate view of price-competitiveness: they are constructed only with the prices of exports actually made, and do not include potential exports. Therefore, a configuration whereby export prices fall does not necessarily mean that the country's price-competitiveness has improved, and may on the contrary express a decline in low-end products due to a loss of competitiveness among midrange and premium products (see for example Eudeline J. F., Sklénard G., Zakhartchouk A., 2012).

As regards the present scope of study, the cost-competitiveness indicator is complementary to export price-competitiveness. Indeed it offers the advantage of including not just the exports actually made, and also allows the inclusion of the competitiveness gains that do not come through prices. So for products whose prices are more or less standardised a company can decide, as Ford did for the production of the new Mondeo, to set up in a country with better cost-competitiveness (Spain rather than Belgium). In the host country this choice will lead to extra margins, but not necessarily lower export prices. There are however drawbacks: the cost-competitiveness indicator covers all output, not just exports, and price strategies may differ for domestic and foreign markets. Furthermore, if it is restricted to the sectors exposed it does not account for the impact of intermediate consumptions which may influence the competitiveness of these sectors. For example, the competitiveness of German industry partly stems from the low cost of intermediate service consumptions. The indicator is also subjected to numerous revisions. Lastly, the various models built for this report suggest that it is difficult to systematically show the impact of cost-competitiveness, especially as it is available for a shorter period than the other two indicators. Other studies also seem to indicate a weaker performance by this indicator (Espinoza A., 2006).

... the Real Effective Exchange Rate offers the advantage of being quickly available and robust.

Conversely, the REER is available almost in real time, a distinct advantage from the forecaster's point of view; it uses the exchange rate and consumer prices and therefore does not undergo much in the way of revision over time, is easily and readily available each month and is relatively homogenous in construction from one country to the next. Additionally, since wages and prices are formed jointly, this indicator contains information about wage costs. As regards the present scope of study, it nonetheless presents as many drawbacks as the cost-competitiveness indicator without offering the advantage of being situated at the primary source of a country's competitiveness.

Lastly, the use of the REER as an indicator of competitiveness was preferred in this report because of the greater number of countries covered by it and due to its earlier availability. However, robustness tests with the other two indicators were systematically used.

Three macroeconomic determinants of imports: domestic demand, exports, and competitiveness

A country's imports in volume are mainly determined by domestic demand, exports[5] and competitiveness. As well as correcting for import demand and for competitiveness, it is also necessary to introduce linear trends translating the trend increase in the penetration of foreign goods on the domestic market.

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(5) Indeed, the content of imports in exports can be high, most notably via "re-exports".

A country's domestic demand is constructed by aggregating private consumption, public consumption, total investment and inventory change. This aggregation then constitutes the demand for imports destined for national consumption. As with the export equations, competitiveness depends on the exchange rate, and the REER is used as the competitiveness indicator.

The drivers of restored equilibrium in European balances of trade

The results of the breakdown of variations in the coverage ratio are presented for the five principal European countries and for two sub-periods: from Q1 2000 to Q2 2008 inclusive and from Q3 2008 to Q4 2012[6] *(see Table 1)*.

With the exception of Spain and the United Kingdom, foreign terms of trade have weighed less heavily on the balances of trade since 2008

It appears that export- and import-related price effects, i.e. foreign terms of trade, have, on average, been relatively smaller in scale than the changes in volume of exports and imports.

Since mid-2008, with the exception of France, foreign terms of trade have contributed negatively to the variation in the balances of trade in all European countries. However, for France, Germany and Italy, foreign terms of trade have been less influential since mid-2008 than they were before. So the negative effects of the depreciation of the Euro have been offset by the stabilisation of oil prices over the period, after a substantial rise between 2000 and mid-2008.

(6) The choice of this breakdown was dictated by the trends in world trade, which came to a standstill in summer 2008.

Table 1

**Summary of the contributions to variations in the coverage ratio
(growth rates and contributions calculated as an annualised rate)**

	Coverage ratio (1)	Terms of foreign trade (2)	Change of exports (3)	Contributions to changes in exports				(-) changes in imports (4)	(-) Contributions to changes in imports				
				Word demand	REER	Trend	Residual		Domestic demand	Exports	REER	Trend	Résidual
Germay													
2000/2008Q2	1.4	-0.5	7.4	6.5	0.0	0.8	0.1	-5.5	-0.1	-4.8	0.0	-1.1	0.4
2008Q3/2012	-1.0	-0.3	2.0	0.3	0.1	0.8	0.8	-2.7	0.0	-1.4	0.0	-1.1	-0.2
Spain													
2000/2008Q2	-1.5	0.3	4.3	5.9	-1.7	0.4	-0.6	-6.1	-1.8	-1.9	-	-3.4	0.7
2008Q3/2012	6.7	-0.5	2.2	0.6	0.3	0.4	0.9	5.0	6.4	-1.0	-	-3.3	2.9
France													
2000/2008Q2	-1.7	-0.4	3.1	6.9	-0.9	-2.7	-0.9	-4.4	-0.8	-1.5	0.0	-1.9	-0.3
2008Q3/2012	0.2	0.0	0.5	0.5	1.4	-2.7	1.2	-0.3	1.7	-0.2	0.0	-1.9	0.0
Italy													
2000/2008Q2	-1.0	-0.8	3.4	6.6	-0.7	-3.0	0.5	-3.6	0.0	-1.9	0.0	-2.2	0.4
2008Q3/2012	2.1	-0.5	-0.7	0.6	0.8	-3.0	1.0	3.3	3.5	0.4	0.0	-2.2	1.6
United Kingdom													
2000/2008Q2	-0.3	-0.1	4.4	6.1	-0.3	-0.6	-0.8	-4.6	-0.8	-2.3	-0.2	-1.8	0.8
2008Q3/2012	0.1	-0.8	-0.1	0.9	2.0	-0.6	-2.4	1.0	0.1	0.1	1.2	-1.8	1.3

Source: INSEE calculations

(2) Ratio of export prices on import prices

(1) = (2) + (3) + (4)

How to read T1: The table presents an accounting breakdown of the annual variations in the coverage ratio according to foreign terms of trade, growth in exports in volume and variations in imports in volume. Contributions to exports and imports are dynamic contributions resulting from econometric modelling. These breakdowns are accurate in accounting terms when the period observed is sufficiently far away from the estimation period. However, these breakdowns may be partial at the start of the estimation period. For example, this is the case of the breakdown of France exports over the period 2000-2008.

How to explain the recent shift in balance-of-trade trends in Europe ?

In Spain and the United Kingdom, foreign terms of trade have been more unfavourable since 2008 than beforehand. All else being equal, they have contributed 0.8 points of the annual decline in the coverage ratio. Two factors specific to the Spanish economy may explain this: on the one hand, inflation has fallen since 2008, thus slowing export prices; and on the other hand, since 2008 Spain has seen a sharper rise in imported energy prices than the other European countries (see Jegou N. and Testas A., 2013). In the United Kingdom, the deterioration in foreign terms of trade can be explained by the sharp depreciation of the Pound.

In the next part of this report the factors linked to variations in exports and imports in volume are now addressed. They are of several types: first, domestic and foreign demand-related contributions, then those linked to competitiveness, and last the factors linked to trend growth in market share and to the gap between the expected performances and the recent performances of the different economies.

In Spain the difference in cycle with its partners has contributed to improving the balance of trade

The economic situation since the crisis has been characterised by a slowdown in world demand which has depressed exports from European countries, and by a downturn in their domestic demand which has depressed their imports. These various effects have been quantified (see Table 1).

The fall in domestic demand in volume has contributed to an 8.2 points annual improvement in the coverage ratio in Spain

Imports are linked to both domestic demand and exports, most notably through the intermediate consumptions incorporated into exports, and the share of these factors differs from country to country. For Italy and the United Kingdom, the weights of these two components in determining long-term imports are evenly balanced (see Box 1). However, for France and Spain the elasticity of imports to domestic demand is greater than that of imports to exports. As regards Germany, elasticity to exports is greater than that to domestic demand because imports are closely linked to exports due to the intermediate consumptions incorporated into them, while domestic demand has been contained over the last 10 years.

The decline in domestic demand since mid-2008 has contributed strongly to the recovery of the balance of trade in Spain (+8.2 points, see Table 1). Indeed, Spain has seen a combination of a sharp slowdown in domestic demand and high elasticity of imports to domestic demand. In France and in Italy, the balance of trade has also picked up significantly through this channel, although to a far lesser extent (+2.5 points and +3.5 points): domestic demand has not slowed so much in France, and import elasticity to domestic demand is weaker in Italy. In the United Kingdom the slowdown in domestic demand has been so slight that it has only contributed 0.9 points to the pick-up in the coverage ratio.

The impact of the downturn in foreign demand since mid-2008 is very homogenous across the main European countries

For the five principal European countries foreign demand was, on average, far less dynamic between mid-2008 and 2012 than between 2000 and mid-2008, thereby slowing the recovery of balances of trade. From mid-2008, the lack of dynamism in demand from the advanced economies was partially offset by demand from the emerging countries, which became the main driver of demand for European products (see Table 2). All in all, the impact of the slowdown in foreign demand on the coverage ratio has been between -5.2 points for the United Kingdom and -6.4 points for France (see Table 1).

Foreign demand for the products of these countries shows the geographical orientation of their exports and therefore does not follow a similar trend *(see Graph 6)*. Since 2000 demand from the emerging countries for German products has contributed more than their demand for products of the other countries studied here. In 2000 the share of Asia excluding Japan in German exports represented 11%, while in 2012 this figure stood at 22%. Over the same period the share of French exports to Asia increased by 6 points, while those from Italy, the United Kingdom and Spain only grew by 5, 4 and 3 points, respectively. However, this better geographical orientation has not led to more dynamic growth in foreign demand for German products, mainly because Germany has not benefited so much from the vitality of domestic demand within the Eurozone. Of the four other countries studied, only Spain has experienced significantly less dynamic world demand, including before the 2008 crisis, because its exports are not particular oriented toward Asia. The share of Spanish exports to Asia out of all exports is less than 10%, compared with at least 15% in the other principal European countries *(see Table 3)*.

Since 2009 demand from the developed countries for German products has slowed more sharply than the other European countries, the flipside of its better macroeconomic situation. So despite its favourable geographical orientation, total demand for German products has been no more dynamic since 2009 than demand for the products of the other European countries, once again with the exception of Spain.

Table 2

annualised rate **2000-2008Q2**	**France**	**Italy**	**Germany**	**Spain**	**United Kingdom**
Variations in world demand	6.4	6.8	6.5	5.7	6.3
Contribution to advanced economies	4.4	4.5	3.8	4.2	4.5
Contribution to emerging economies	1.9	2.3	2.8	1.5	1.8

annualised rate **2008Q3-2012**	**France**	**Italye**	**Germany**	**Spain**	**United Kingdom**
Variations in world demand	0.9	1.0	0.9	0.4	1.2
Contribution to advanced economies	0.1	0.0	-0.3	-0.2	0.4
Contribution to emerging economies	0.8	1.0	1.2	0.6	0.8

Sources: Trésor, INSEE calculations

6 - World demand for european products
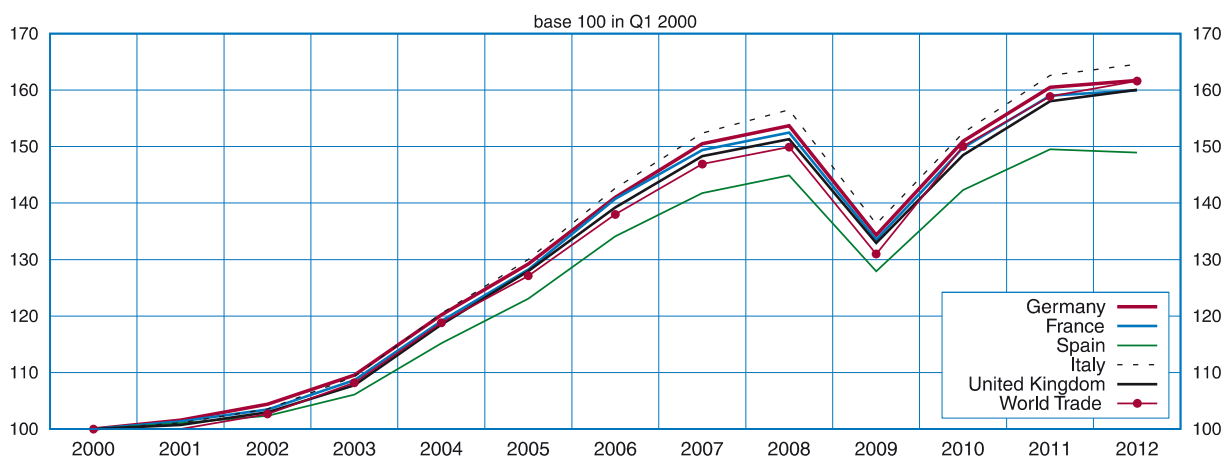
Sources: DG Trésor, Centraal Plan Bureau

How to explain the recent shift in balance-of-trade trends in Europe ?

Improved price-competitiveness has contributed strongly to restoring equilibrium in the Spanish, French and British balances of trade.

Differentiated impact of competitiveness, both short and long term

The sensitivity of exports and imports to the real effective exchange rate varies from country to country *(see Box 1)*. France and Spain seem to be the most sensitive to a variation in the REER: in the long run a 1% rise in the effective exchange rate causes an equivalent drop in exports in these two countries. Conversely, German exports turn out to be almost insensitive to the REER: a 1% rise in the effective exchange rate leads to a drop of just 0.1% in German exports in the long run. So depending on the sensitivity of the countries' exports to variations in the REER, and all else being equal, this rate will have a more or less lasting effect on exports *(see Box 3)*. As for imports, no significant impact of the REER has been evidenced except in the United Kingdom.

The depreciation of the Euro since 2008 has sustained French, Spanish and Italian exports

From 2000 to mid-2008 growth in the REER hampered the growth of French, Spanish and Italian exports (by respectively 0.9, 1.7 and 0.7 points per year). Conversely, the impact was nil in Germany. But from mid-2008, the depreciation of the Euro and the decline in the REER contributed to growth in exports in France (+1.4 points on average per year), Spain (+0.3 points) and Italy (+0.8 points). Exports from the United Kingdom have also benefited from the depreciation of the Pound since 2008.

Improved Spanish cost-competitiveness has sustained equilibrium in the country's balance of trade

Growth in exports can be modelled with other competitiveness indicators; an export price-competitiveness indicator and a cost-competitiveness indicator *(see Box 4)*. The results are globally the same. In particular, the common finding from tests on these models is the low sensitivity of German exports to the competitiveness indicators. So the strong non-price competitiveness of Germany, a price maker on the world market, is a robust finding.

It should however be noted that the export price-competitiveness indicator tends to smooth the impacts of the exchange rate when industrial companies absorb part of its variations into their margins. Additionally, the positive effect of the Euro depreciation since 2008 is not so marked with this model. Also, in Spain cost-competitiveness has seemed to stimulate exports more than the REER since 2008.

Table 3

Total exports share (%)	2000				2012			
	China	Japan	Rest of Asia	Total	China	Japan	Rest of Asia	Total
France	1	2	7	10	3	2	11	16
Germany	2	2	9	13	6	1	16	23
Italy	1	2	9	12	3	1	12	16
Spain	1	1	4	6	2	1	6	9
United-Kingdom	1	2	8	11	3	2	10	15

*Sources: National customs, INSEE calculations*

How to explain the recent shift in balance-of-trade trends in Europe ?

Box 3 - Export reaction functions when faced with exchange rate shocks

In order to evaluate the influence exerted on exports by variations in the REER over time, econometric models are used to identify the reaction functions of exports to the shock of a 10% drop in REER at a given date (t).

Firstly we can see that, following the shock, over the long term exports will converge at a level which reflects long term elasticity *(see Graph)*: this is noticeably stronger in France and Spain than in Germany.

The speed of this convergence varies between countries. Thus Germany's exports will converge more rapidly at this new level: after a year the REER shock is more or less absorbed. Exports from the UK and Italy absorb the shock within three years. France and Spain, on the other hand, take 5 years to fully absorb the exchange rate shock, and in these latter countries the effects of depreciation of the Euro (and thus of REER) are felt for longer.■

Functions of reactions to a REER shock

changes in %
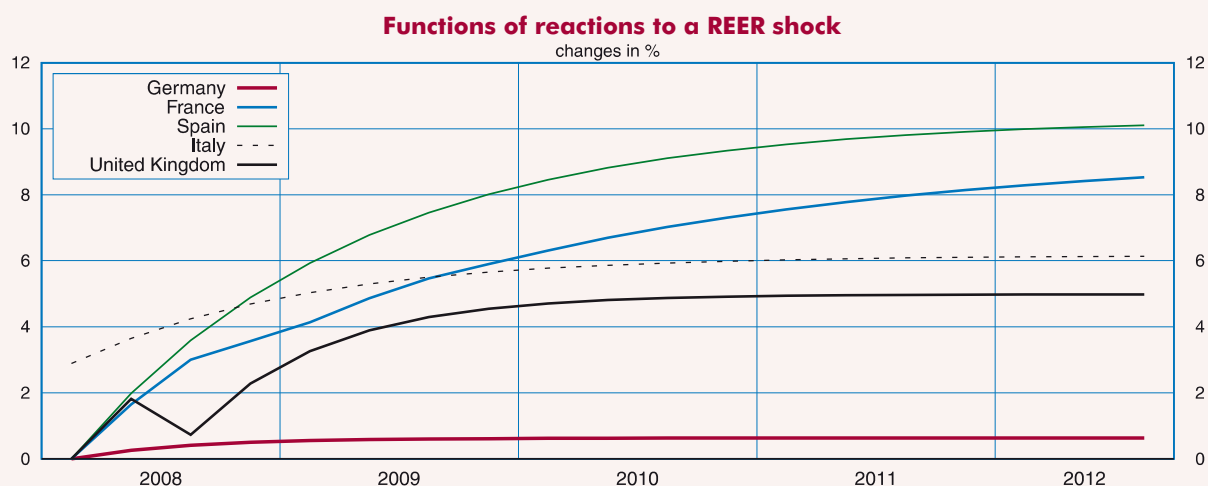
Sources: Eurostat, DG Trésor, INSEE calculations

Box 4 - Modelling exports using other competitiveness indicators

Throughout this document, price-competitiveness is modelled using the real effective exchange rate. Other competitiveness indicators may be used to test the robustness of these findings, such as export price-competitiveness and cost competitiveness *(see Box 2)*.

Export price-competitiveness

The export price-competitiveness index highlights the differences since 2000 between Germany and France on the one hand (where competitiveness has risen by 10% since 2000), and Spain and Italy on the other hand (where competitiveness is now weaker than it was in 2000, despite improving since 2009). Finally, competitiveness in the United Kingdom has risen by 20% since 2000, particularly since the depreciation of the Pound in 2008 *(see Graph 1)*.
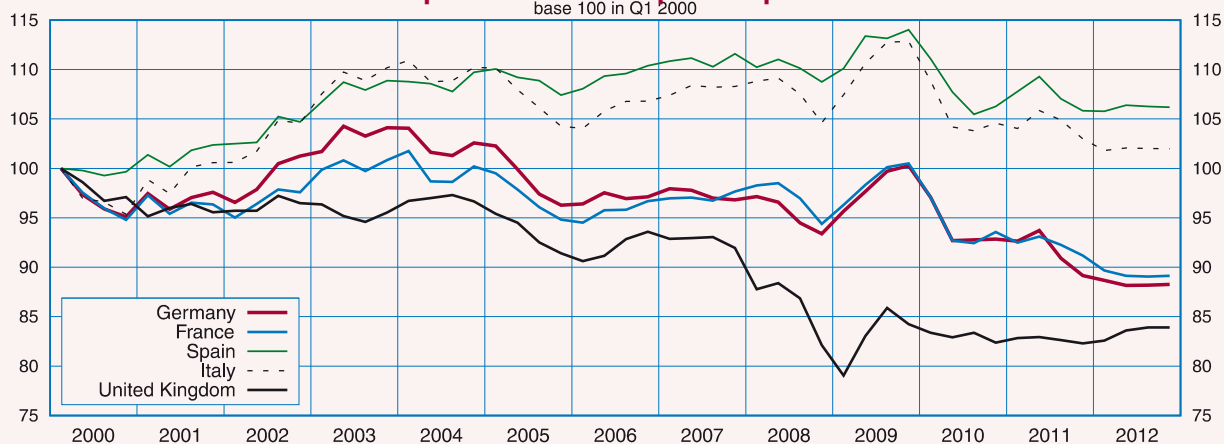
This model also reveals that German exports are almost immune to changes in export price-competitiveness. These export performance results are similar to those obtained using the real effective exchange rate method.
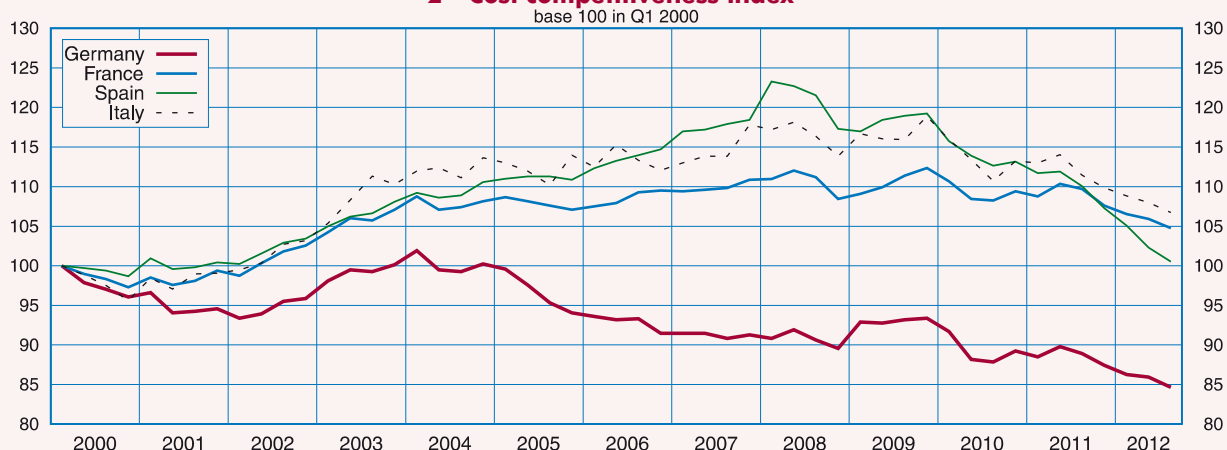
Cost competitiveness

The cost competitiveness indicator is quite different: Germany has seen by far the most substantial increase in competitiveness since 2000. As for Spain and Italy, since the onset of the financial crisis they have caught up some of the gap which had opened up between them and France in the years leading up to 2008. This model also suggests that German exports are largely impervious to changes in CSU. Logically, cost competitiveness has played a greater role than REER in boosting exports from Spain and Italy since the start of the crisis.■

How to explain the recent shift in balance-of-trade trends in Europe ?

1 - European countries's export competitivenes
base 100 in Q1 2000

Legend: Germany, France, Spain, Italy, United Kingdom

Source: INSEE

2 - Cost competitiveness index*
base 100 in Q1 2000

Legend: Germany, France, Spain, Italy

Source: European Central Bank

* The cost competitiveness index of ECB is only available for countries in the Eurozone

Estimated exports with indicators of cost competitiveness

		Threshold value	t-stat McKinnon	Test result	Threshold	RMSE	R2-a	Restoring force	Δdm	Δdm(-1)	csu	TREND
France	1996Q4/2007Q3	-4.0	-3.7	non	5%	0.009	0.67	-0.2	0.9		-0.8	-0.006
		-3.7	-3.7	oui	10%							
Spain	1995Q3/2009Q3	-4.0	-3.7	non	5%	0.014	0.69	-0.3	1.1	-0.3	-0.7	0.000
		-3.7	-3.7	oui	10%							
Germany	1995Q2/2007	-4.0	-3.8	oui	5%	0.016	0.35	-0.4	0.6		-0.1	0.001
		-3.7	-3.8	oui	10%							
Italy	1998Q3/2011Q1	-4.0	-4.0	oui	5%	0.014	0.79	-0.4	1.0		-0.5	-0.007
		-3.7	-4.0	oui	10%							

Source: INSEE calculations

How to explain the recent shift in balance-of-trade trends in Europe ?

Since mid-2008 non-price competitiveness[7] trends have been more positive in Spain and France, and to a lesser extent Italy.

Trend losses of market share have penalised the balance of trade in France, in Italy and in Spain

Over the estimation period, the modelling of exports also highlights linear trends indicating the dynamism of exports in a country in relation to demand for its goods, at a given competitiveness level. These trends thus show gains or regular losses of market share over a given period. For Germany, the model indicates a trend gain in export market share *(see Box 1)* from the mid 1990s up to the crisis. Conversely, the Italian and French export models reveal substantial trend losses of market share over the same period. In Spain there was neither a trend gain nor a trend loss of export market share over the period 1992-2007[8].

Similarly, the modelling of import equations pinpoints trends indicating access to and losses of market share in domestic demand. Some of these trends have similar profiles to those of exports: weak for Germany and much stronger for Italy and France. But it is in Spain that the linear trend of growth in imports, and hence losses of market share on the domestic market, is strongest.

These trends therefore indicate a "spontaneous" evolution of the balances of trade, at given demand and price-competitiveness or cost-competitiveness conditions. In France, Italy and Spain these variations are particularly unfavourable, since the coverage ratio has shown a trend deterioration in the order of one point per quarter *(see Table 1)*. For Germany however, the trend deterioration has been virtually nil.

But since 2008 the export performances of Spain and France have been better...

However, the econometric models have shown a divergence in recent years between observed exports and imports and those simulated with econometric equations. This might suggest that these market share deterioration trends have eased. Since mid-2008 exports have been more dynamic in France, Italy, Spain and Germany than predicted by the model. This has been seen in the positive residuals over the recent period *(see Table 1)*. In Spain and in France, this comes after the pre-crisis years in which the residuals were negative, to the extent that for these two countries this dynamism appears to indicate respectively non-price competitiveness gains and less extensive losses of non-price competitiveness. Conversely, exports from the United Kingdom have been less dynamic than expected since the crisis.

...and imports weaker than expected in Spain and in Italy

Additionally, as with the export equations above, econometric estimations overestimate the dynamism of imports over the recent period for Spain, Italy and to a lesser extent the United Kingdom *(see Table 1)*. In contrast the residuals in the German and French import equations are almost nil on average over the recent period.

(7) Here, non-price competitiveness is assimilated with the growth in foreign trade which is unexplained by variations in demand and in price-competitiveness. This point is analysed in detail later in the report.
(8) The case of Spain is probably particular. Spain's market shares grew until the 2000s, after which they slipped back, which likely corresponds to a catch-up phase followed by a domestic boom in the Spanish economy.

How to explain the recent shift in balance-of-trade trends in Europe ?

Forecast: will the improvement in European balances of trade last?

Country by country summary

The analysis carried out above has pinpointed the trends underlying the recent variations in European balances of trade.

Cyclical stabilisation of the balance of trade in Germany

In Germany variations in the balance of trade since the crisis have been in line with its usual determinants. In particular, nothing indicates that the trend of market share gains for German exporters has wavered. So if the balance of trade has not improved, it is simply because of the slowdown in world demand.

Slump in domestic demand in Spain...

Spain has also been penalised by the downturn in world trade, but other factors have replaced it. First, the sharp drop in domestic demand has slowed imports substantially (contribution of -8.2 points per year). Next, exports have grown more than past behaviour would lead one to expect while imports have dropped more sharply than forecast. These two effects have led to gains in market share over the recent period, over and above the real exchange rate gains, which have been globally weak due to the high level of inflation in Spain.

...and in Italy

In Italy the mechanisms are similar but the scale smaller: the fall in domestic demand has been less severe and the "outperformance" of usual behaviour less marked.

In France, no factor stands out

In France the drop in domestic demand has been much less dramatic than in Italy and Spain. The stabilisation of the balance of trade has thus come both from the more significant than expected improvement in "non-price" performance and from the improvement in price-competitiveness.

In the United Kingdom, little in the way of improvement

The United Kingdom appears to differ from the other European countries. The improvement in the balance of trade has not been marked. Although the British economy has greatly profited from an improvement in its price-competitiveness, two factors have prevented the trade balance from recovering. On the one hand British domestic demand has held up well since 2008. On the other, export performances have been disappointing compared with pre-crisis behaviour.

Why the recent "outperformance" in Spain, Italy and France?

Various possible explanations for the recent «outperformance» by Spain, France and Italy

In Spain, France and Italy the expected determinants of the recovery of balances of trade were present, with the slowdown in domestic demand and improved price-competitiveness, in particular bearing in mind the depreciation of the Euro. But this recovery is also closely linked to the fact that the countries have "outperformed" previous behaviours, up to now assimilated with an improvement (or lesser deterioration) in non-price competitiveness.

The difficulties measuring competitiveness

In the second part we addressed the difficulty of modelling the countries' price-competitiveness, with each indicator having its own drawbacks. The relatively small contribution of price-competitiveness to the improvement in European balances of trade may show the limits of the indicators used. Spain in particular has since the crisis presented the characteristics of still-high inflation and falling unit wage costs (*see Jegou N. and Testas A. (2013)*) bearing in mind the economic situation. Replacing the REER by a cost-competitiveness indicator results in a contribution of more than 1.5 points by competitiveness, and symmetrically reduces the contribution of non-price competitiveness by 1.5 points. However, it is difficult to say which is the best indicator: since the cost-competitiveness indicator is available for a very short time (shorter than the real effective exchange rate), it is not possible to choose between the two at present.

How to explain the recent shift in balance-of-trade trends in Europe ?

A pick-up in non-price competitiveness...

Going beyond the improvement in competitiveness, why would the European economies suddenly perform better in exports and on their domestic markets? The improvement in their non-price competitiveness is certainly one of the objectives of economic policies aiming to improve balances of trade in Europe (see *Gallois Report*, 2012); among other things, the extent of this non-price competitiveness in the export performances of Germany relative to its neighbours has been documented in the economic literature (see *COE-REXECODE*, 2012).

However, the hypothesis of a simultaneous improvement in non-price competitiveness in Spain, Italy, and France after the 2008 crisis may seem *ad hoc* and incidentally is not documented.

*...because exports replaced domestic demand...*

In the usual modelling of exports as used in this report, it is implicitly assumed that they are not at all dependent on domestic demand (other than the indirect effect on wage costs). But one might imagine that when domestic demand is very robust, as was the case in Spain prior to the crisis, the priority of companies is not to seek export markets, and conversely, that these companies are today prospecting foreign markets much more intensively due to the slump in domestic demand and in the production capacity utilisation rate. In such cases exports may grow, at given levels of outlet growth and competitiveness, more rapidly than before the crisis.

...thanks to a rebalancing of world trade...

It also cannot be ruled out that the crisis coincided with, or accelerated, a certain rebalancing of world trade. The 2000s were marked by the commercial expansion of China, with large gains in market share: over the period its exports grew far faster than world demand. This trend appears to have been interrupted in recent years *(see Graph 7)* and is one of the factors of the trend decline in the Chinese economy. It is therefore possible that the change in the Chinese growth regime benefits to European exporters.

...or because of domestic structural effects not included in the models?

Lastly, in economies in which significant structural changes are underway, it could be that the residuals in the equations show these structure effects, particularly import behaviour. For example, in all countries the slump in investment has been far greater than that in household consumption. But generally the import content of investment is greater than that of household consumption (see *Conjoncture in France*, June 2002). In this case the residuals in the imports equation would not indicate better non-price competitiveness on the domestic market, but instead simply the fact that the domestic demand variable alone does not capture the

7 - Weight of export in the world
change in %
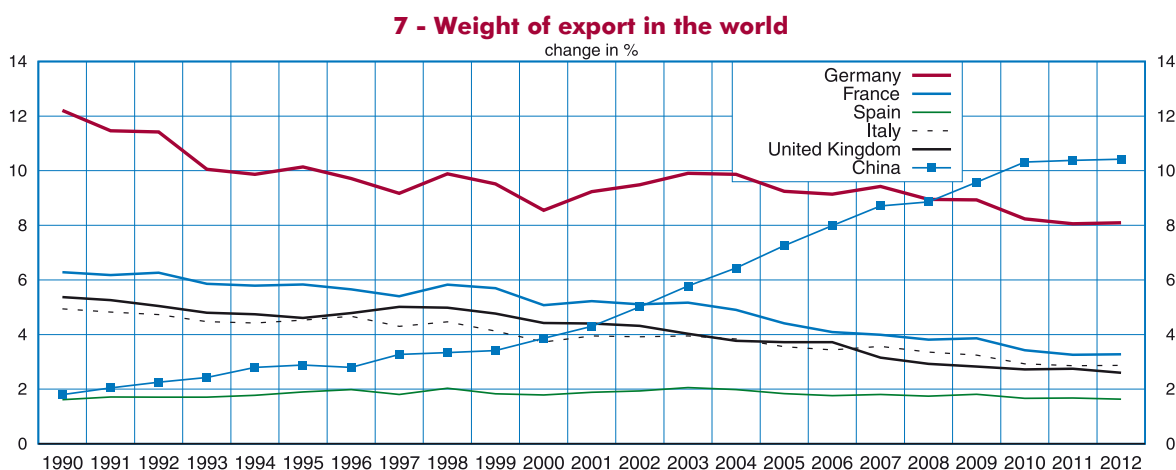
Sources: World Trade Organization, INSEE calculations

consequences of the deformation of the demand structure on imports[9]. Similarly, faced with a large-scale household purchasing power shock, structural changes that come into play in the capital goods basket may alter the link between aggregated consumption and imports.

What prospects for the balances of trade in Europe?

The sustainability of the recovery of these balances of trade also, and crucially, depends on the sustainability of these better performances, at given levels of price-competitiveness and demand. Simple forecasting exercises show this.

In Spain and Italy, the balance of trade is in surplus, i.e. the coverage ratio is higher than 1. According to our estimates *(see Table 1)*, if domestic demand in each of these two countries returned to its pre-crisis level, all else being equal the coverage ratio would only fall by 1.5 points per year. World demand for these countries' products, which has been virtually stable since 2008, would then only have to grow modestly, at a pace well below that prior to the crisis, for these countries' coverage ratio to stabilise. However, this reasoning assumes that the apparent trend shift since 2008 will continue, which is improbable in Spain's case. Indeed we have seen that this shift originated from a sharp improvement in cost-competitiveness, which is evidently not sustainable at this rhythm, and probably also from the efforts to reorient sales towards foreign markets, efforts that would slacken if domestic demand picked up again.

In France the balance of trade is still largely in deficit (approximately equivalent to the energy bill), but has stabilised since 2008. According to our estimates, if domestic demand were to return to its pre-crisis rate, all else being equal the coverage ratio would fall back once again, by 2.5 points per year. Additionally the real effective exchange rate has contributed significantly (+1.4 points per year) to improving the coverage ratio since 2008, and this cannot be extrapolated. Under the central assumption of a stabilised real effective exchange rate, world demand for French products would have to return to its pre-crisis level for the coverage ratio to remain stable. This reasoning once again assumes that the trend shift underway since 2008 will continue.■

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(9) The calculation of the imports equations by breaking down the various items of domestic demand modifies the diagnostic for Spain: imports become more dynamic than expected.

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