

# The French trade deficit in manufactured goods: a breakdown according to the different items of final demand

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*Since 2003 the French trade balance has deteriorated substantially, due in particular to manufactured goods. In 2017 it reached its lowest level since 2011: a deficit of almost €60 billion for trade in goods, worsening by €6.7 billion compared to 2016 for trade in manufactured goods. The examination of the French trade balance provided here concentrates on manufactured goods and aims to break down this balance according to the items of demand. More precisely, it aims to reallocate to each of these items its content in terms of imports of manufactured goods. The latter may be used as intermediate consumptions or as final goods, for the purpose of meeting the domestic demand of the institutional sectors (households, enterprises, general government) or to serve foreign demand (exports).*

*A time series analysis of the manufacturing trade deficit shows that the import content of domestic demand is growing faster than manufacturing exports net of imports, in particular those used to produce them. The breakdown of the import content of domestic demand also shows different developments according to the institutional sectors: although corporate investment is more sensitive to the vagaries of the economic cycle, it contributed less to the widening trade deficit in manufacturing than household consumption or general government consumption. Finally, the manufacturing deficit also varies according to the sub-items considered: the balances of certain sectors like transport equipment are in surplus, whereas others show a considerable deficit due to limited production capacity in these sectors and brisk domestic demand.*

# The French trade deficit in manufactured goods: a breakdown according to the different items of final demand

**In surplus in the 1990s, the French trade balance has deteriorated substantially, due in particular to manufactured goods**

*The energy component of the French trade balance has a structural deficit*

*The manufacturing trade balance deteriorated further in 2017, in spite of the upswing*

The variations in the French trade balance are mainly the result of the energy component and trade in manufactured goods (Graph 1).

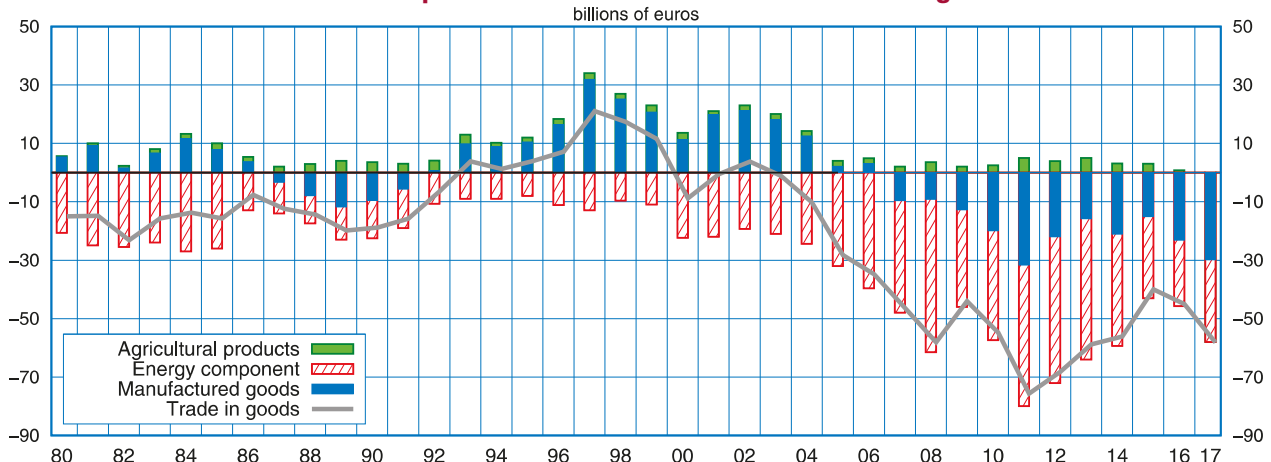
On the one hand, the energy component, subjected to the volatility of oil prices, has always had a significant negative effect on the trade balance. The energy deficit has worsened since the beginning of the 2000s due to the multiplication by four of the price of the oil barrel. After a lull between 2014 and 2016 due to worldwide overproduction, the energy bill was high again in 2017. Indeed, in spite of a rebound in energy exports in real terms (+19.0% after -12.2% in 2016), the rise in oil prices (from €40 a barrel on average in 2016 to €49 in 2017) exacerbated the energy trade balance, which reached -€28.3 billion in 2017 after -€22.5 billion in 2016<sup>1</sup>.

On the other hand, trade in manufactured goods also had a negative effect on the French trade balance. This balance is also affected by the volatility of oil prices (via refined petroleum products), but trade excluding the energy component also deteriorated between 2007 (-€6.0 billion) and 2017 (-€22.1 billion). More precisely, the manufacturing trade balance has worsened since the 2000s, and this can be seen not only during recessions or economic slowdowns, but also during periods of expansion.

Furthermore, agricultural trade, which normally makes a positive contribution to goods as a whole, was neutral in the trade balance for 2017 (€0.0 billion after +€0.8 billion in 2016)<sup>1</sup>.

<sup>1</sup>. Throughout the report, the trade balance is measured in value and FOB-FOB.

**1 - Main components of the annual balance of trade in goods**



Source: INSEE, quarterly national accounts

## The French trade deficit in manufactured goods: a breakdown according to the different items of final demand

### Over the long term, net exports grew less than imports due to domestic demand

#### *Principle of the breakdown of the manufacturing trade balance*

As manufactured goods have accounted for most of the deterioration in the trade balance over the long term, the rest of the present analysis is focused on the trends in foreign trade for just these products. In order to highlight some of the more structural factors that lie behind this manufacturing trade deficit, the balance can be broken down according to the final uses of manufactured goods.

Since a large portion enters into the production process of the national industrial sector via intermediate consumptions, it is important to include in the different items making up demand the imports of manufactured goods used in the production process on the one hand, and those used as final goods on the other. The manufacturing trade balance can therefore be broken down into two accounting elements. The first of these corresponds to the share of the manufacturing trade balance attributable to domestic demand, namely that of households, general government and enterprises<sup>2</sup>. The second element covers the share, generally positive, serving only foreign demand, namely exports of manufactured goods minus the imports of manufactured goods required for the production of all goods and services exported (*Annex 1 - Method*). The advantage of such a presentation is to be able to compare, firstly, the respective impacts of final consumption and investments and, secondly, exports on the manufacturing trade balance. By way of example, as the manufactured import content of exports of manufactured goods has been rising since 1980 and represented more than 25% of these exports over the period 2007-2017, it curbs the buoyancy of net exports and therefore also weighs down on the manufacturing trade balance.

In the rest of the report, the terms manufactured import content (or “import content”) of domestic demand and net exports will be used to refer to the two components mentioned above.

Here, manufactured import content represents the amount in nominal terms of all manufactured goods imported in order to manufacture goods (or offer services) meeting the total demand for goods and services of all institutional sectors.

This manufactured import content will, in what follows, be distinguished by sector to represent the amount of all the manufactured goods that were imported to meet the final demand for goods and services of a given institutional sector.

As for net exports, they correspond to the exports of manufactured goods minus the imports of manufactured goods that served total demand from enterprises exporting goods and services.

#### *Over the recent period, the manufactured import content of domestic demand has been more vigorous than net exports of manufactured goods*

Since 1980, the import content of domestic demand has increased by 5 percentage points of GDP while net exports have grown at half that rate (2.5 percentage points of GDP). Over the recent period (*Graph 2*) since 2007 the import content of domestic demand has been higher and has grown faster than net exports. This situation was already seen in the 1980s, when the import content of domestic demand grew faster than net exports.

Thus, in spite of a return to the pre-crisis level (+15% of GDP on average between 2002 and 2007), net exports are too weak for the balance to be positive and the manufacturing trade deficit has widened (-1.3% of GDP in 2017 after -1.0% of GDP in 2016).

<sup>2</sup>. This demand has been obtained using the method for breaking down the import content of the demand items initially developed by Berger and Passeron (2002).

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**The sharp increase in manufactured import content in domestic demand concerns the three main institutional sectors**

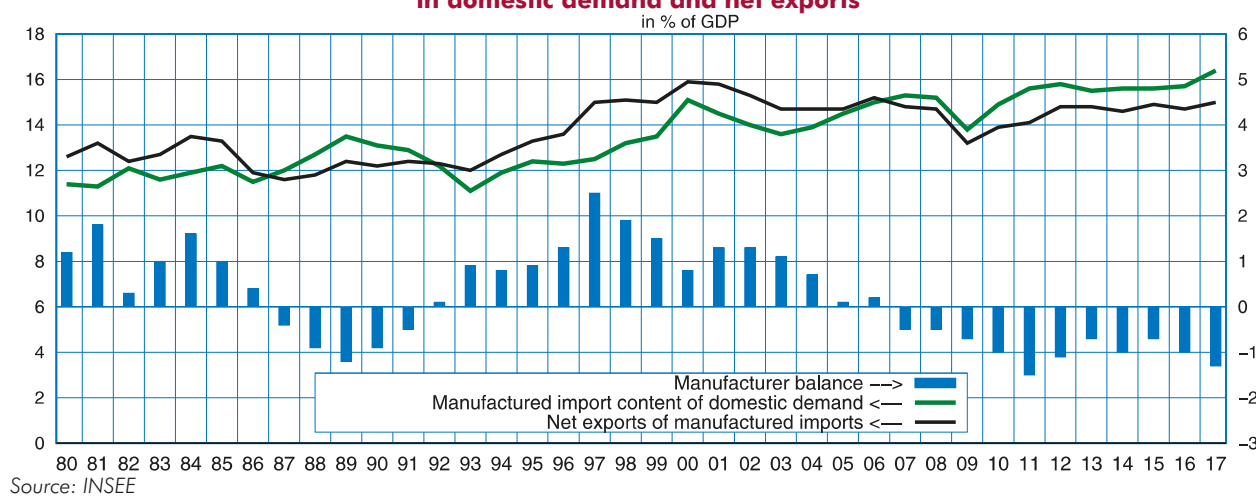
Domestic demand can itself be broken down according to the institutional sectors that account for it, namely households, enterprises and general government. Final demand for manufactured goods consists of final consumptions. This is also the case of that of general government, which also contains a low portion of investments (accounting for about 25% of general government's final demand for manufactured goods over the period 2002-2017), whilst that of enterprises only includes investments and changes in inventories (gross fixed capital formation).

Thanks to the breakdown used, i.e. the import content of demand (*Annex 1 - Method*), the respective impacts of each of the three institutional sectors on the manufacturing trade balance can be compared.

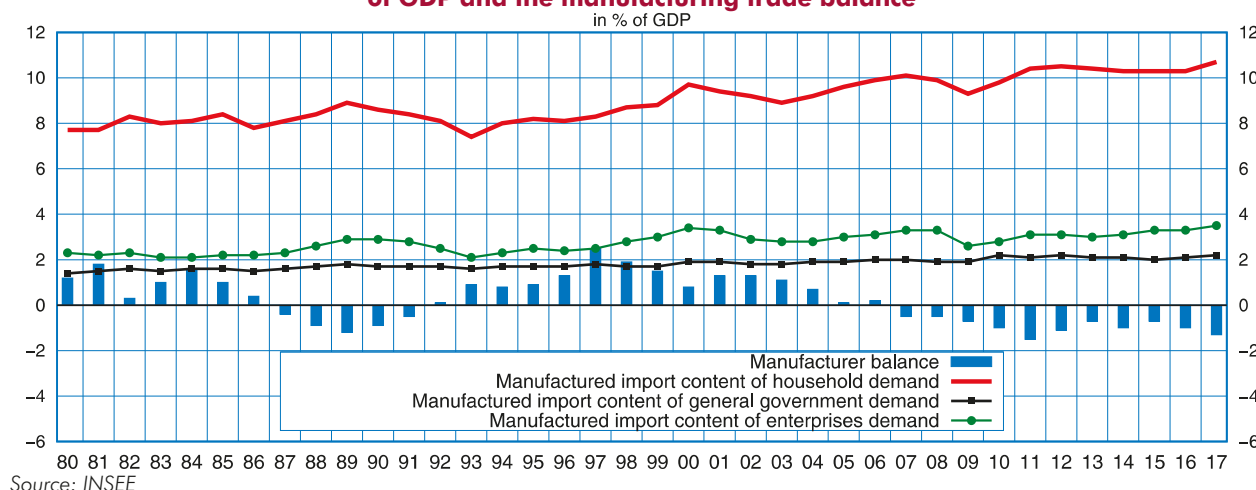
*The weight in GDP of the manufactured import content of households is higher than that of the other institutional sectors*

Domestic demand for manufactured goods stems mainly from household consumption (*Graph 3*), where on average over the period 1980-2017, the manufactured import content represented 9.0% of GDP. Furthermore, the manufactured import content of enterprises and general government represented 2.8% and 1.8% of GDP respectively.

## 2 - Breakdown of the manufacturing trade balance according to variations in domestic demand and net exports



## 3 - Manufactured import content of each institutional sector as a ratio of GDP and the manufacturing trade balance



# The French trade deficit in manufactured goods: a breakdown according to the different items of final demand

## Breakdown of manufactured import content

### Methodology





In this report, the amount of imports of manufactured goods is calculated for each type of good in demand from each of the institutional sectors (households, general government, enterprises, "exports"). As a result, the imports of manufactured goods counted may be *direct* (e.g. a household buys an imported car), therefore corresponding to imports of manufactured goods serving a final demand for manufactured goods, or *indirect* (e.g. chemicals used for agricultural production), representing in this case imports of manufactured goods serving a final demand for non-manufactured goods (in our example, agricultural products).

According to *Table*, for the year 2015, meeting household demand for manufactured goods required not only manufactured goods, but also agricultural products, energy products or services (column "DIM"). In the same way, all the other goods demanded by households (agricultural (AZ), energy (DE) and services (DS)), required imports of manufactured goods (line "DIM").

**Table - Breakdown of the import content of household final demand by type of product according to production branch**  
For 2015, in €bn

Goods used as intermediate consumptions	Production branches				
	AZ Agriculture	DE Energy	DIM Manufacturing sector	FZ Construction	DS Services
AZ	6	0	6	0	1
DE	1	15	10	1	4
<b>DIM</b>	<b>5</b>	<b>3</b>	<b>194</b>	<b>16</b>	<b>21</b>
FZ	0	0	0	0	0
DS	2	2	20	6	50

Where:

-  +  Manufacturing import content of household final demand (for goods and services)
-  Direct manufacturing import content, i.e. imports of manufactured goods serving household final demand for manufactured goods
-  Indirect manufacturing import content, i.e. imports of manufactured goods serving household final demand for non-manufactured goods

### Terminology

With the breakdown used, manufactured import content corresponds to the line in red, which represents the amount of all the manufactured goods imported to manufacture goods (or offer services) meeting demand for each type of goods for a given institutional sector.

As well as the manufactured import content already defined, it is necessary to explain the two terms that compose it (*Table*). *Firstly*, direct manufactured import content, also known as the "direct effect", covers the amount of the imports of manufactured serving the final demand for manufactured goods of a sector. *Secondly*, the amount of the imports of manufactured goods meeting the final demand for non-manufactured goods of a sector is called "indirect manufactured import content", or the "indirect effect". It should be noted that these terms - direct/indirect - convey the nature of final demand (for manufactured and non-manufactured goods), but do not show whether the imports were used for intermediate consumption, final consumption or GFCF. ■

## The French trade deficit in manufactured goods: a breakdown according to the different items of final demand

Although the share of manufactured import content in GDP has been rising continuously since 1980 for each sector, it is useful to distinguish whether this increase in imports of manufactured goods has been to serve final consumption of manufactured goods or that of other goods and services.

It should borne in mind that for a given sector, the manufactured import content covers both the manufactured imports serving the sector's final demand for manufactured goods – this is referred to as the *direct effect* or the *direct component* – and those serving the sector's final demand for non-manufactured goods, which is referred to as the *indirect effect* or the *indirect component* (see *Breakdown of the manufactured import content*).

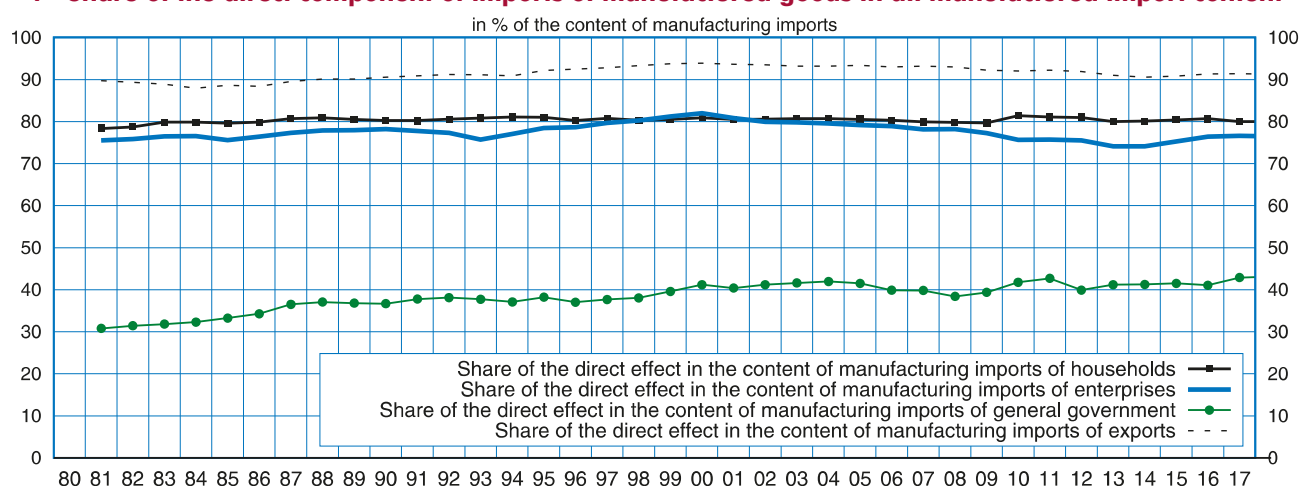
Two things stand out when this breakdown is examined.

First of all, an analysis in terms of level shows that on average over the long term, the *direct* component of the import content appears to be very high for households and enterprises, as well as for exports (of the order of 75% to 95%, *Graph 4*). This means that the import content for these sectors mainly consists of imports of manufactured goods to meet their demand for manufactured goods. However, the *direct* effect is a minority (39% on average since 1980) for general government, the *indirect* component therefore accounting for the largest part. In addition, an analysis of the trend over time shows that for general government, the split between the direct and indirect components has seen a substantial growth of the direct component. However, it has been much more stable for the other institutional sectors over the long term.

More precisely, concerning general government, growth in the *direct* component has accelerated considerably since the 1980s. Indeed, the proportion of imports of manufactured goods serving the final demand of general government for manufactured goods rose from 31% in 1980 to 43% in 2017 (*Graph 4*). This rise is due to a continual increase in general government's demand for manufactured goods since 1980, as well as a change in the structure of that demand. Indeed, the relative manufactured import content in the final demand for manufactured goods of general government has increased by 25 percentage points since 1980 (from 33% of demand for manufactured goods to 58%).

For households, the direct component of the manufactured import content has increased slightly since 1980 (80% in 2017 compared to 78.4% in 1980, *Graph 4*). This means that it is households' "direct" demand for manufactured goods, which has been rising continually since 1980, that has led to an increase in

### 4 - Share of the direct component of imports of manufactured goods in all manufactured import content



N.B. For each of the sectors, the direct manufactured import content (also called the *direct component* or *direct effect*) is given as a proportion of the total manufactured import content (i.e. imports serving the sector's total demand for goods and services).

Source: INSEE

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imports of manufactured goods. Moreover, the share of the manufactured import content in households' demand for manufactured goods has virtually doubled since 1980 (44% in 2017 compared to 25% in 1980), underlining, as for general government, a change in the composition of households' demand for manufactured goods, with the latter now including more imports.

Finally, for enterprises, unlike households and general government, the direct component of imports of manufactured goods, which increased until 2000 (from 75% in 1980 to 81% in 2000), then fell back to 76% in 2017. During the 2000s and the 2010s, the increasingly marked use of manufactured purchases from abroad to produce non-manufactured goods (or offer services) can be explained by China's entry into the World Trade Organisation (WTO) in 2001. Indeed, China's membership of the WTO accentuated the fragmentation of the value chains in world trade, thereby inducing an increased use of manufactured intermediate consumptions purchased abroad in the French production process<sup>3</sup>.

### The import content of corporate demand is more sensitive to the economic cycles than that of households

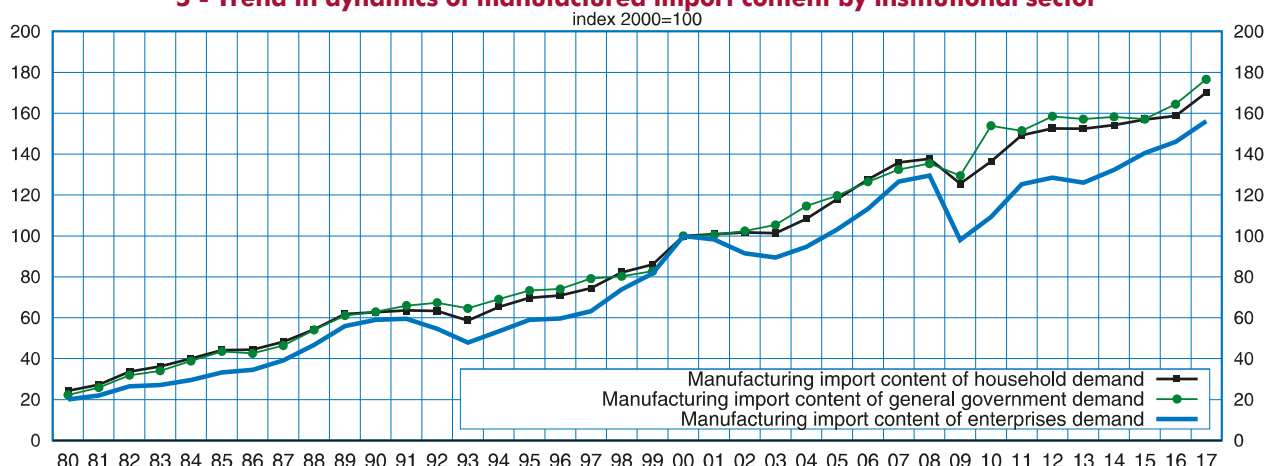
In recent years, demand from French enterprises appears to have been the least dynamic among the different institutional sectors. Indeed, over the period 2010-2017, which corresponds to a period of economic upturn, corporate final demand grew 26% compared to the years 2002-2009, whereas that of general government increased by 32% and that of households by 29% (Graph 5).

*After the economic crises of 1993, 2002 and 2008, corporate investment in manufactured goods took longer to recover than the consumption of manufactured goods by households and general government*

This can most likely be explained by the cyclical nature of the composition of investment in manufactured goods, more sensitive to cyclical downturns than the composition of households' and general government's consumption of manufactured goods. Indeed, following the crises of 1993, 2002 and 2008, the manufactured import content of corporate investment fell, during 1993 itself and the following year for 2002 and 2008, by 7%, 2% and 31% respectively. At the same time, the manufactured import content of household demand fell a little less (-5%, 0%, -12%) and that of general government was less affected (-3%, +3%, -6%).

<sup>3</sup>. *Conjoncture in France*, December 2016 - "Why have exporters lost market shares?"

**5 - Trend in dynamics of manufactured import content by institutional sector**



Source: INSEE



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## The manufacturing trade deficit covers a heterogeneous situation in the sub-items that compose it

*The surplus in transport equipment reflects France's specialisation in the aeronautical and shipbuilding sector*

*Deficits in "other industrial goods" and capital goods: vigorous domestic demand and/or an unspecialised productive system?*

The breakdown of the manufacturing trade balance into sub-items reveals differences between French export capacities and the needs of domestic demand for each set of goods in question.

While France is a net exporter in the agrifood industry, the surplus in transport equipment (Graph 6) covers a deficit in the automotive sector and a large surplus (+€32.3 billion in 2017) in the aeronautical and shipbuilding sector. This situation, which has persisted since 2007, reflects the current specialisation of the French economy in the aeronautical and shipbuilding fields.

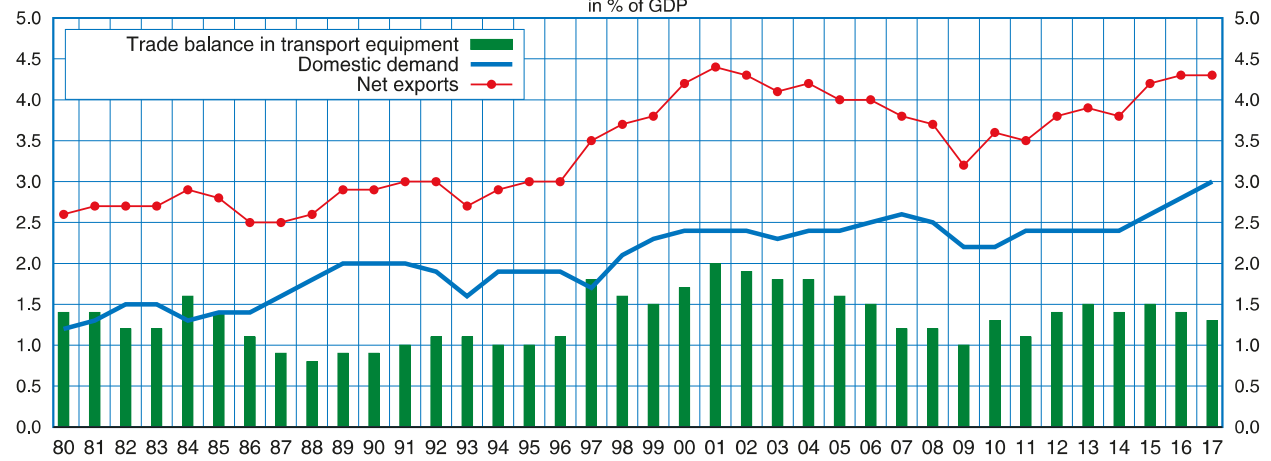
In spite of the good performance of sales of chemicals (+9% between 2016 and 2017, +60% since 2000), France's leading sector of specialisation<sup>4</sup> in 1981, the trade balance in "other industrial goods" has been deteriorating continually since the year 2000 (-€25 billion in 2017 compared to -€7 billion in 2000).

The growing share of general government (consumers of pharmaceuticals in particular) in domestic demand for "other industrial goods" since the 1980s (28% of domestic demand in 1980 compared to 59% in 2017) and the downturn in economic activity in 2009 led to an increase in the gap between domestic demand for "other industrial goods" and net exports (Graph 7). All in all, the trade balance in "other industrial goods", which already stood at just over -€11 billion in 2009, widened sharply since then to reach -€25 billion in 2017.

Finally, the buoyancy of corporate investment in capital goods (representing 51% of domestic final demand for capital goods in 2017) led to purchasing abroad (Graph 8), due to a relatively unspecialised productive system.

<sup>4</sup>. Specialisation according to the RCA (Revealed Comparative Advantage) indicator described in Trésor-Eco no. 98.

**6 - Trends in the trade balance in transport equipment and the main components**



Source: INSEE

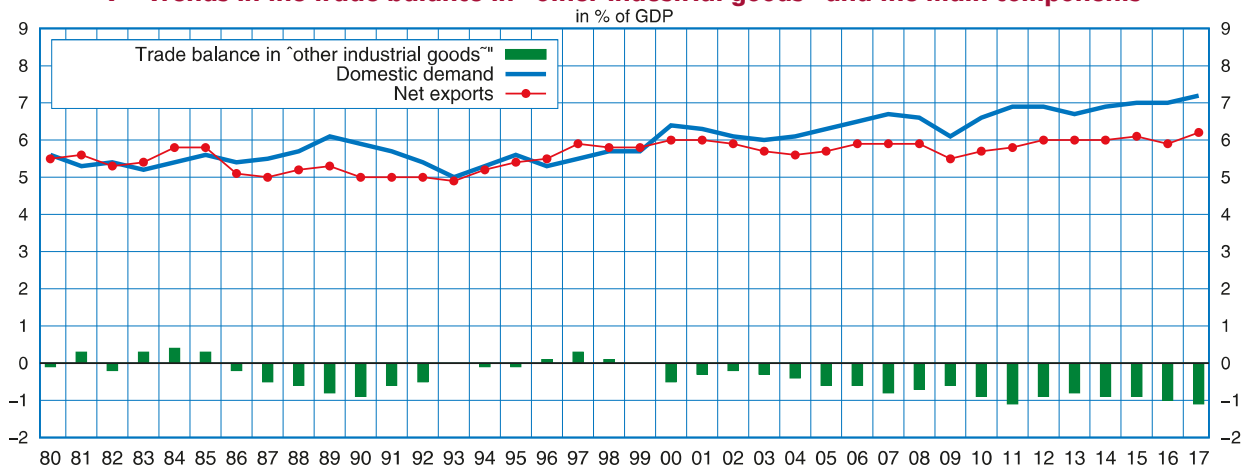


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## The specific case of 2017

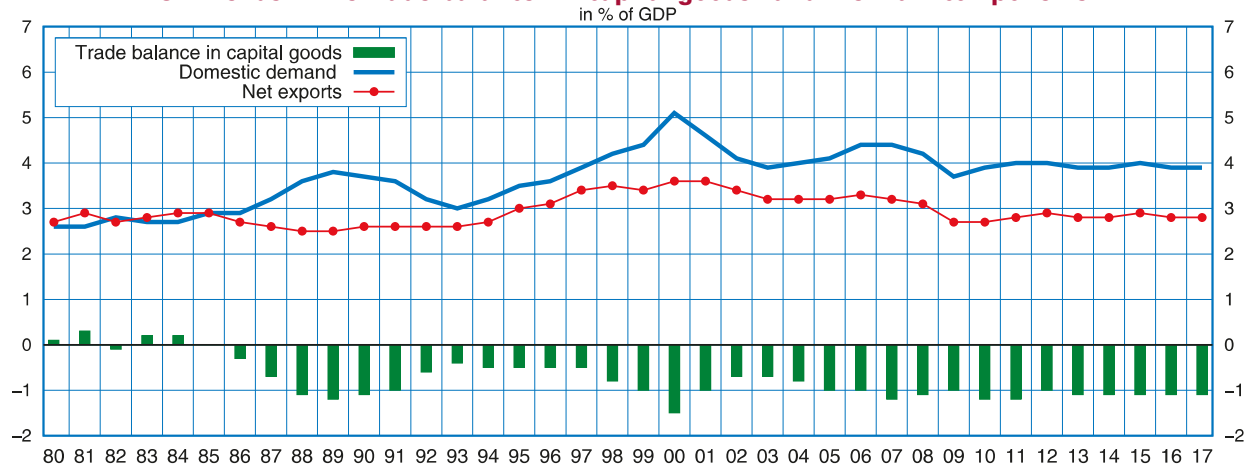
Since the 1990s, the French trade balance in manufactured goods has been characterised by the contribution of domestic demand being more buoyant than exports net of imports, and 2017 continued in the same vein. Indeed, in spite of the fall in market share of French exports (-0.6% after -0.5% in 2016), sales of manufactured goods abroad, net of the imports used to produce them, grew sharply compared to 2016 (+5.6% after -0.2% in 2016), but at a slower pace than that of domestic demand for manufactured goods (+7.1% in 2017 after +2.2% in 2016). However, beyond these structural factors defining the French trade balance in manufactured goods, certain cyclical factors can throw some light on the growing manufacturing trade deficit in 2017.

7 - Trends in the trade balance in "other industrial goods" and the main components



Source: INSEE

8 - Trends in the trade balance in "capital goods" and the main components



Source: INSEE

# The French trade deficit in manufactured goods: a breakdown according to the different items of final demand

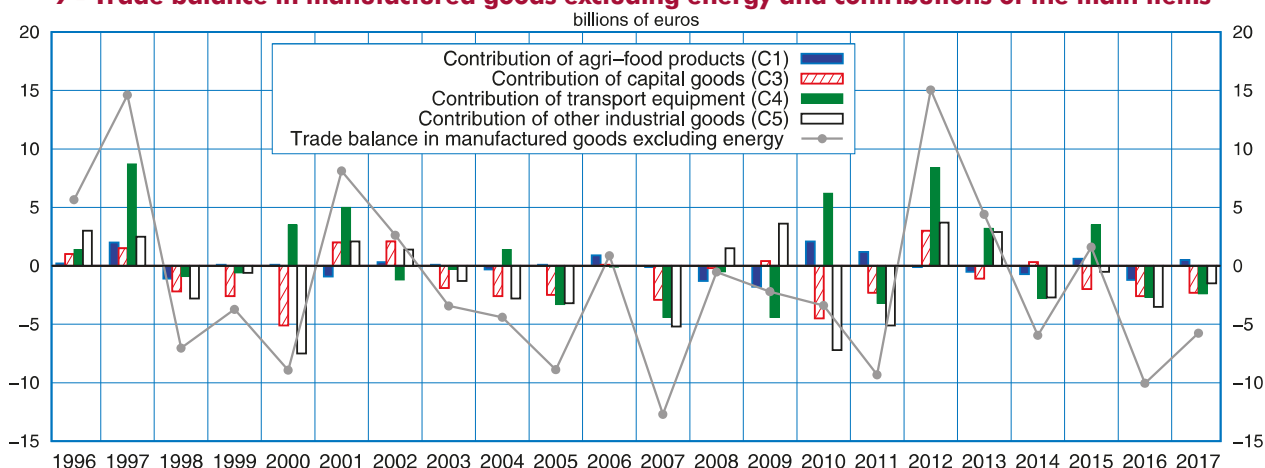
*Manufactured goods affected by one-off purchases?*

In 2017, capital goods contributed 40% of the deterioration in the trade balance in manufactured goods excluding the energy component, whilst transport equipment and other industrial goods contributed 42% and 27% respectively (Graph 9). Firstly, the negative contribution of capital goods can partly be explained by massive purchases of industrial machinery in January and telecommunications equipment in December. Secondly, one-off purchases of pharmaceuticals in Q1 2017 and of uranium in Q3 2017 accounted for a substantial share of the deterioration in the trade balance in other industrial goods. Furthermore, purchases of turbojets from the United Kingdom and satellite parts from Germany in Q3 2017 partly explain the negative contribution of the transport equipment sector.

*Focus on imports of capital goods*

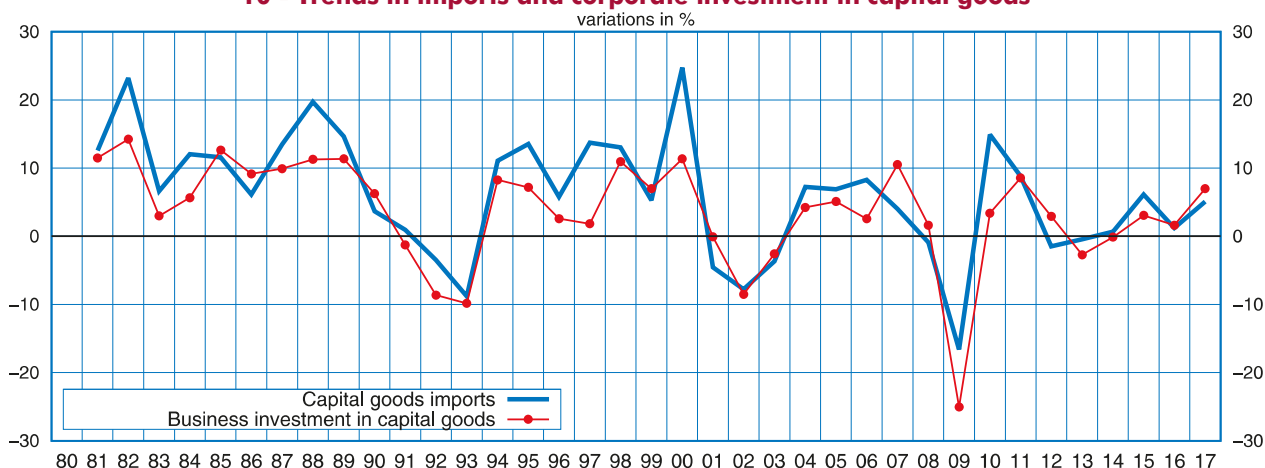
Since 2015, the contribution of capital goods to the deterioration in the trade balance in manufactured goods has been about 63% (123% in 2015, 26% in 2016 and 40% in 2017). This followed the accelerated depreciation measure introduced in April 2015, which ended in April 2017. This scheme, intended to encourage industrial corporate investment with the aim of improving the competitiveness of enterprises by increasing their production capacity, led to a sharp increase in imports of capital goods (Graph 10). Indeed, the capital goods sector has a structural deficit (Graph 8), hence the need to buy industrial machinery and other capital goods abroad.

**9 - Trade balance in manufactured goods excluding energy and contributions of the main items**



Source: INSEE

**10 - Trends in imports and corporate investment in capital goods**



Source: INSEE

## The French trade deficit in manufactured goods: a breakdown according to the different items of final demand

### *Cyclical fluctuations and forecasts*

In addition, the manufactured goods export and import forecast equations used in INSEE's *Conjoncture in France* corroborate the analysis of recent trends in French foreign trade. On the export side (*Annex 2 - Manufactured import and export forecast models used in Conjoncture in France*), world demand for French goods, at a level unseen since 2011, explains a large part of the buoyancy of deliveries abroad in 2017. On the import side, the substantial contribution of weighted global demand, representing the import content of all the items of demand, explains more than half the growth in imports of manufactured goods in 2017 (+3.7 percentage points in an annual growth in imports of 5.5%). Indeed, the increase in corporate investment in 2017 (+4.4% after +3.2% in 2016), added to the vigour seen in the consumption of general government (+1.4% after +1.4%), played a role in increasing weighted global demand. This therefore buoyed imports of manufactured goods in 2017, including one-off purchases, which occurred in sectors (pharmaceuticals, aeronautics) where general government and enterprises account for most of the demand.

### **Conclusion**

The manufacturing trade deficit, resulting from a gap between the dynamics of net exports and imports of manufactured goods serving domestic demand, has been widening constantly since 2009. More particularly, breaking down domestic demand by institutional sector shows that the buoyancy seen since 2009 is due above all to the changes in the manufactured import content of households and general government, sectors which are less sensitive to jolts in the economic situation (in particular the effects of the 2008 economic crisis) than enterprises.

Accordingly, a breakdown of the import content into direct and indirect components leads to different results for the different sectors. For households and general government, it is mainly a direct effect that is seen, that is, imports of manufactured goods are mainly serving a demand for manufactured goods. For enterprises, an indirect effect is observed since imports of manufactured goods are increasingly serving their demand for non-manufactured goods, in particular due to the fragmentation of value chains.

In addition, an analysis of the manufacturing trade deficit, refined petroleum products excluded, by sub-item allows the items contributing negatively to the manufacturing trade balance to be identified. These items include capital goods and other manufactured goods. The trade deficit in the capital goods sector reflects a relatively unspecialised production capacity. As for the other industrial goods sector, it is characterised by high domestic demand, in particular from general government.

Finally, 2017 saw a worsening of the manufacturing trade deficit, but more than €6 billion compared to 2016. Beyond the structural factors highlight above, short-term factors could also explain a part of the deterioration in the manufacturing trade balance. More precisely, exceptional purchases in certain manufacturing branches throughout 2017 weighed on the manufacturing trade balance in 2017.

Accordingly, in 2017, in spite of the surge in exports of manufactured goods in 2016 (+5.0% after +1,9%), the strong growth in French domestic demand prevented the country from reducing its manufacturing trade deficit. ■

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## Annex 1 - Method

The approach used consists of breaking down the trade balance into the different types of final demand based on the breakdown of imports.

Import content is defined as the value of the imports required to meet final demand. Imports can be written as a linear combination of the different items in final demand, using supply-use balance equations for each type of goods:

$$(1) \quad P + M = EI + DM + DA + DE + X$$

where :

P: production of goods and services

M: imports,

EI: intermediate uses,

DM: household final demand (corresponding to their consumption and investments)

DM: general government final demand (corresponding to its consumption and investments)

DE: corporate final demand (corresponding to enterprises' gross fixed capital formation (investment) and changes in inventories)

X: exports

Either A the matrix of technical coefficients defined by

$$(2) \quad EI = A * P$$

Or D the diagonal matrix of penetration rates, defined as the ratio of imports to domestic demand:

$$(3) \quad M = D * (EI + DM + DA + DE) = D * (P + M - X)$$

The resolution of the system (1), (2), and (3) enables imports to be rewritten as a linear combination of the different items in final demand:

$$M = D * [I - A * (I - D)]^{-1} [AX + DM + DA + DE]$$

The term  $D * [I - A * (I - D)]^{-1} * DM$  for example is the column matrix of imports to be used directly or indirectly for households' final consumption.

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The foreign trade balance can then be written as:

$$S = X - M \Leftrightarrow S = X - D*[I - A*(I-D)]^{-1} [A*X + DM + DA + DE]$$

If we take  $B = D* [I - A*(I-D)]^{-1}$ , we get:

$$S = X - B*A*X - (B*DM + B*DA + B*DE)$$

$\Leftrightarrow$

$$(4) S = (I - B*A)*X - B*(DM + DA + DE)$$

The analysis of the trade balance is then restricted to manufactured goods only. This can be used to break down the matrices of the equation (4) according to their manufactured goods and other goods component.

For example, column matrix  $X$  of exports can be written as the sum of two column matrices  $X_m$  and  $X_a$  corresponding to the column matrices of exports of manufactured goods,  $X_m$ , and exports of other goods,  $X_a$ . Thus, equation (4) restricted to the manufacturing trade balance only becomes:

$$(5) S_m = (I - B*A)_{mm} X_m - A_{mo}*X_a - B_{mm}(DM + DA + DE)_m - B_{mo}(DM + DA + DE)_o$$

where:

$(I - BA)_{mm} X_m$ : trade surplus associated with exports of manufactured goods, in other words, exports of manufactured goods net of the imports needed to manufacture them,

$A_{mo}*X_a$ : trade deficit in manufactured goods generated by the imports required to export non-manufactured goods,

$B_{mm}(DM + DA + DE)_m$ : manufactured import content of the final demand for manufactured goods of households, general government and enterprises.

$B_{mo}(DM + DA + DE)_o$ : manufactured import content of the final demand for non-manufactured goods of households, general government and enterprises.

The first two terms in the breakdown above constitute the contribution of net exports to the manufacturing trade balance, the second being generally substantially lower than the first.

The last two terms constitute the manufacturing trade deficit linked to domestic final demand. ■

# The French trade deficit in manufactured goods: a breakdown according to the different items of final demand

## Annex 2 - Manufactured import and export forecast models used in *Conjoncture in France*

### Imports of manufactured goods equation

#### The model

The forecasts in *Conjoncture in France* are based on equations modelling imports of manufactured goods in real terms, using as an explanatory factor weighted global demand, in particular. The latter corresponds to the sum of demands emanating from the different sectors weighted by the import content of each component. One of the equations used in the forecasting exercise is the following:

$$\Delta \log(\text{IMP}_t) = 1.36 + \underset{(3.6)}{1.43} \Delta \log(\text{DGP}_t) + \underset{(9.8)}{0.57} \Delta \log(\text{DGP}_{t-1}) - \underset{(3.9)}{0.27} [\log(\text{IMP}_{t-1}) - \log(\text{DGP}_{t-1}) - 3.8 * (\text{Tendouv}_{t-1})]$$

Student statistics are indicated in brackets

Estimation period: 1990-2015

R<sup>2</sup> = 63%

Standard deviation of errors: 1.3%

Durbin-Watson: 1.90

Dans In this error correction equation:

IMP represents the imports of manufactured goods in real terms,

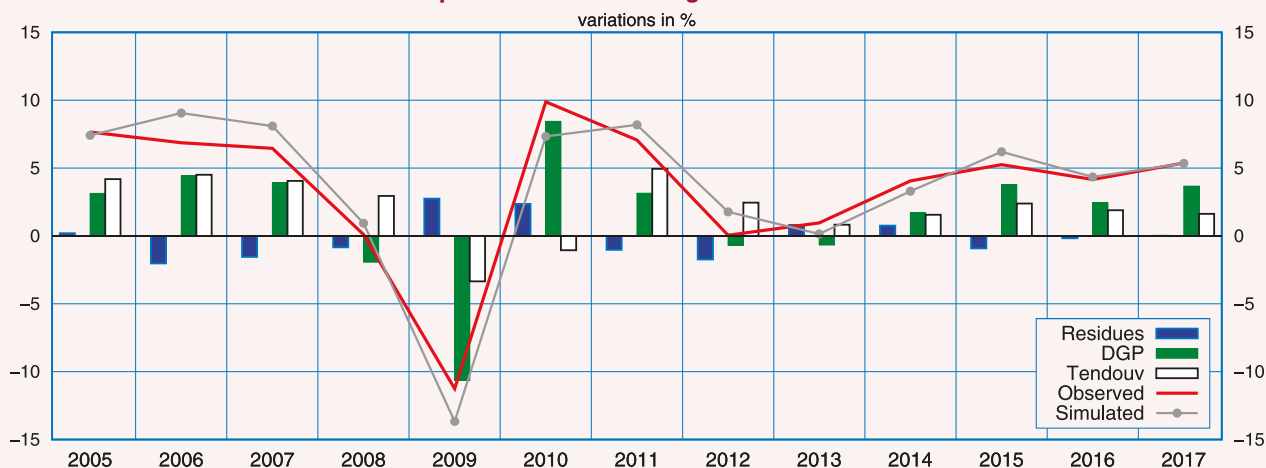
DGP is the weighted global demand indicator,

Tendouv represents the trend towards openness of the OECD economies (i.e. the OECD countries' imports as a ratio of their GDP) and reflects the structural trend of an increase in the share of imports in advanced economies.

Unitary in the long-term relation, the elasticity of imports of manufactured goods to short-term weighted global demand is higher than the unit translating a reaction of important imports to cyclical fluctuations in the weighted global demand.

### Calibration and contributions

#### Variations in imports of manufactured goods and main contributions



Source: INSEE

While the equation has tended to under- or over-estimate the trend in imports of manufactured goods in real terms in the past, the differences remain relatively limited and the variations are well accounted for (except for the period 2012-2013). Over the period 2014-2017, the gap between the imports observed and those forecast is negligible (mean difference of -0.09 points over this period).

# The French trade deficit in manufactured goods: a breakdown according to the different items of final demand

## Exports of manufactured goods equation

The equation used for exports of manufactured goods integrates as explanatory variables world demand for French goods and a competitiveness indicator, the real effective exchange rate (REER).

*The model*

In order to forecast exports of manufactured goods in real terms, one of the equations used is the following:

$$\Delta \log(EXP\_t) = 1.36 + 0.84 \Delta \log(DM\_t) - 0.30 \Delta \log(TCER\_t - 1) - 0.23 \left[ \log(EXP\_t - 1) - \log(DM\_t - 1) + 0.2\% (Trend\_t - 1) \right]$$

(3.7)
(12.3)
(-2.3)
(-3.7)
(-3.9)

Student statistics are indicated in brackets

Estimation period: 1995-2013

R<sup>2</sup> = 73%

Standard deviation of errors: 1.2%

In this error correction equation:

EXP represents the exports of manufactured goods in real terms,

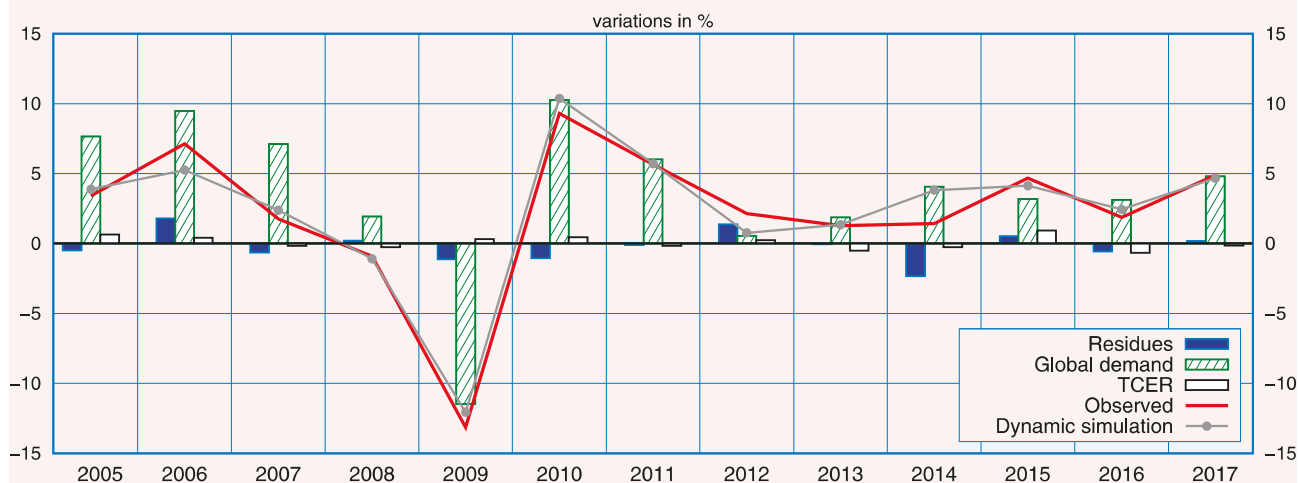
DM represents world demand for French goods

TEER corresponds to the real effective exchange rate

Trend corresponds to the trend loss of market share following China's entry into the WTO in 2001

## Calibration and contributions

### Variations in exports of manufactured goods and main contributions



Source: INSEE

After changes that were well accounted for by the model until 2012 (mean spread of the residuals of -0.01 points over the period 2005-2012), the latter tended to underestimate and then overestimate the variations in exports of manufactured goods over the period 2012-2014 (mean spread of the residuals of -0.3 points). Nevertheless, over the recent period (2015-2017), the gap between the exports observed and those forecast is negligible once again (mean spread of 0.0 points over this period). ■