Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

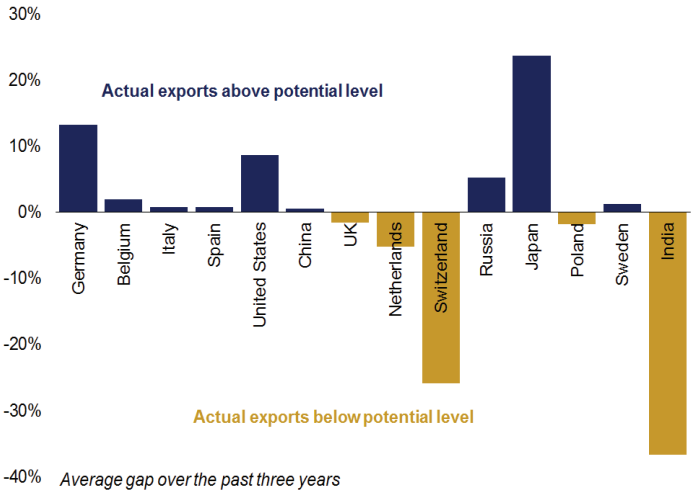
# Trésor-economics

No. 212 • December 2017

# Trade potentials: Targeting foreign markets

- DG Trésor has developed a tool to support decision-making and target buoyant markets for French exports. This tool is backed by a quantitative analysis of France's potential exports to its main partners in given sectors.
- To assess trade potentials, a sector gravity model is used. Somewhat akin to Newton's theory of gravity, the model describes trade flows in terms of the economic and geographic distances between trading countries.
- For a given year, the trade potential is the level of exports that would completely match the gravity model's prediction. This level provides a useful benchmark for analysing actual trade figures; it is not an export target.
- This analysis reveals that French exports are in line, overall, with their potential level for France's main trading partners: Germany, the US, Spain, Italy and Belgium. However, exports are below their potential for certain countries such as the UK, the Netherlands, Algeria and India.
- Trade potentials can help export policies target the markets that offer strong upside in the near future, in order to optimise effectiveness and maximise the economic benefits for France. Private-sector agents can also use this data to define their own export strategies.
- For example, the tool suggests that there is significant untapped potential for French service exports to the major emerging countries; for exports of chemical products to Algeria, Turkey and Russia; and for exports of medical and precision optical instruments to India. In the long run, such targeting could strengthen French positions in the most buoyant sectors and countries identified.

**Gap between France's actual and potential exports to its main trading partners**




*Average gap over the past three years*

Source: ***CHELEM database; DG Trésor calculations.***

*How to read this table: On average, over the past three years, France's actual exports to Germany were 13% higher than their potential level as calculated by the model. Conversely, actual exports to Switzerland were just 74% of their potential level.*

# 1. By providing theoretical export levels, trade potentials can inform policies in support of exports

## 1.1 A gravity model uses simple variables to provide an estimate of the theoretical level of trade between two countries

A gravity model is an econometric model that is estimated using bilateral data on trade in goods. Somewhat akin to Newton's theory of gravity, this model describes an empirical relationship between trade flows and forces of attraction such as the geographic distances between trading countries, the size of their economies, as well as the existence of a shared border, former colonial ties, common legal systems or the existence of a free trade agreement. Its simplicity, its explanatory power and its versatility make the gravity model a particularly useful tool for analysing international trade and trade policies.

The export flows estimated by a gravity model are called "trade potentials". The trade potential is a country's level of exports to one of its partners assuming that their trading ties fit perfectly with the theoretical structure of world trade. This indicator does not say anything about the optimal level of trade; instead, it provides a benchmark that can be used to assess an economy's actual exports. Trade potentials must not be interpreted as export targets.

## 1.2 Compared to trade potentials, actual exports show no major imbalances with France's main partners[1]

By identifying the cases in which France's actual export performance is above or below its trade potentials, we can

draw initial conclusions on French foreign trade. While the model does not forecast the overall level of French exports,[2] it allows comparisons between the observed and predicted levels of exports for each bilateral relationship. When a country's exports to one of its trading partners are below their potential level, it may suffer from a deficiency in its export performance because according to the traditional determinants of trade, it should export more to this partner. Conversely, exports higher than the theoretical level of trade indicate a special relationship between two countries not captured by the variables included in the model.

## 1.3 For several years now, France has surpassed its trade potential with most[3] of its main trading partners

Since 2007, French exports to Germany have been higher than the trade potential indicated in the model. This trend is confirmed regardless of the different specifications we tested. This situation does not reflect an imbalance but indicates the existence of additional characteristics, other than the variables used in the gravity model, which have a positive effect on the trading ties between the two countries. Indeed, since 2011, German exports to France have followed the same trajectory.

(1) The results below cover France's main trading partners, representing a total of 80% of export sales in 2016.
(2) By construction (with years and countries as fixed effects), one country's total observed exports to the rest of the world each year are equal to its total estimated exports. Thus, when the trade potential with certain countries is higher than actual exports to those countries, it will automatically be lower with other countries. This property enables us to study the distribution of exports between trading partners, not the overall level of French exports.
(3) Observed exports are higher than potential exports to Germany, Spain, the US, Italy, Belgium and China. All these countries are in France's top eight export markets.

## Box 1 : DG Trésor's gravity model

The structural gravity model developed by DG Trésor incorporates: (i) international trade data, (ii) multilateral resistance terms, and (iii) an underlying estimation method based on recent economic literature. Unlike the existing literature, our model is broken down on a sector level (iv).

(i) As in the models used in the literature,[a] our model incorporates export data in nominal terms, data describing the economic mass of partners, and trade barriers (distance, customs duties, specific characteristics of the partners[b]). The latter variables allow for a detailed description of the role of each component of bilateral trade costs. The database covers 189 countries from 1949 until 2015.[c]

(ii) In its simplest form, a gravity model incorporates only bilateral variables that describe the trade costs between the exporter and the importer. Exports *(X)* are a function of a gravitational constant *(G)* and variables describing the exporter's propensity to export goods *(S)*, on one hand, and the importer's propensity to import goods *(M)*, on the other. These variables are mainly each country's economic mass as expressed in GDP. Lastly, exports are a function of a vector of bilateral resistance variables $(\tau_{ij})$ ; these are the costs of trading between the two economies, i.e.:

$$X_{ij} = GS_iM_j\tau_{ij}$$

In this configuration, changes in the costs of trading with a third country (i.e. between the exporter or importer and the rest of the world) are not factored in despite the possible existence of trade creation or trade diversion effects. This could be the case, for instance, if the trading costs between a given country (e.g. France) and a country that is not a party to a new trade agreement (e.g. the US) become higher than the costs of trading with a competitor that is a party to the same agreement (e.g. Germany). To take account of these effects, multilateral resistance terms are introduced via country-year fixed effects for the importer and the exporter.[d] Thus, the structural gravity equation is:

$$X_{ij} = \frac{Y_iY_j}{Y}\left(\frac{\tau_{ij}}{\Omega_i\Phi_j}\right)^{1-\sigma}$$

Under this equation, exports *(X)* from country i to country *j* depend on:

- the relative economic mass of the partners $(Y_iY_j)$ as a proportion of global GDP *(Y)*, with economic mass measured as each country's GDP
- the ratio between bilateral trade costs $(\tau_{ij})$ and the multilateral resistance terms $(\Omega_i\Phi_j)$
- $\sigma$ is the constant elasticity of substitution used in Armington's assumption (1969) of imperfect substitution between domestic and imported goods.

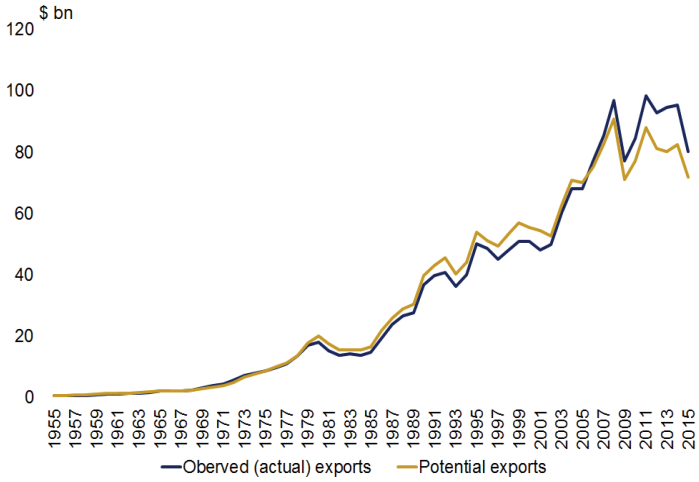
The internal multilateral resistance term $\Phi_j$ captures the level of trade protection imposed by the importer *j* in its relations with all other countries (except the exporter), whereas the external multilateral resistance term $\Omega_j$ captures the trade protection imposed on the exporter *i* in its relations with all other countries (except the importer).

(iii) The model is estimated using the Poisson pseudo-maximum likelihood estimator,[e] whose main advantage is the fact that it deals with zero trade observations. Indeed, it is possible for countries not to trade with each other, and this zero trade conveys important information for estimating the determinants of world trade.

(iv) Lastly, we carry out 13 regression tests using sector data.[f] This type of model is uncommon in the literature, even though it is compatible with the use of multilateral resistance terms and yields satisfactory and robust results in terms of coefficients and estimated trade potentials.

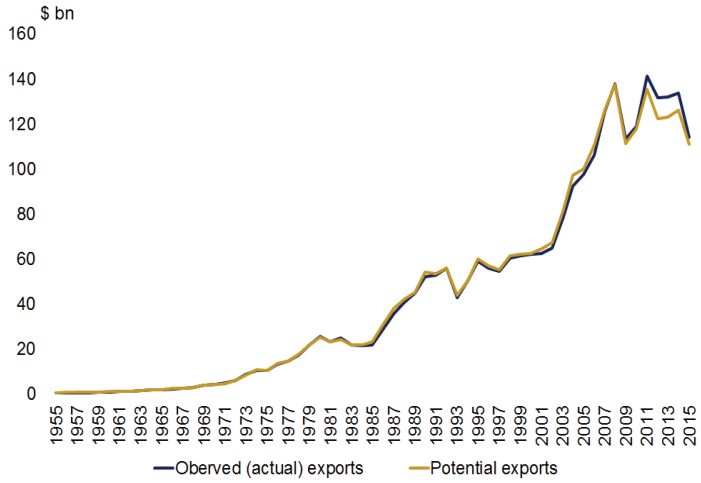
a. For example: D. Davis and T. Gift (2014), "The Positive Effects of the Schengen Agreement on European Trade", World Econ.
b. Gravity data comes from the CEPII's "Gravity" dataset, and trade agreement data comes from Mario Larch's Regional Trade Agreements Database from Egger and Larch (2008).
c. Exports are reconstructed using the IMF's DOTS and the UN's Comtrade databases for the global model, and using the CHELEM database for the sector model. Certain countries are missing, including Kosovo, the Marshall Islands, Palau, South Sudan, San Marino and Micronesia.
d. James E. Anderson and Eric van Wincoop (2003), "Gravity with Gravitas: A Solution to the Border Puzzle", The American Economic Review, vol. 93, no. 1 (Mar.).
e. J.M.C. Santos Silva and S. Tenreyro (2006), "The Log of Gravity", Review of Economics and Statistics, 88(4), pp. 641-658.
f. The sectors studied are: aerospace, chemical products, food products, pharmaceuticals, steel products, shipbuilding, medical and precision optical instruments, paper/paperboard/publishing, machinery, electrical equipment and appliances, automotive, business services, tourism, and transportation services.

**Chart 1: France - Germany**



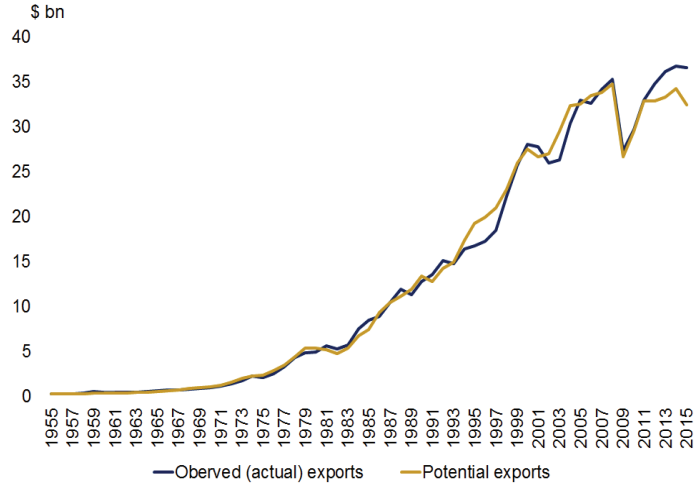

*Sources: DOTS and Comtrade; DG Trésor calculations.*

**Chart 2: Germany - France**



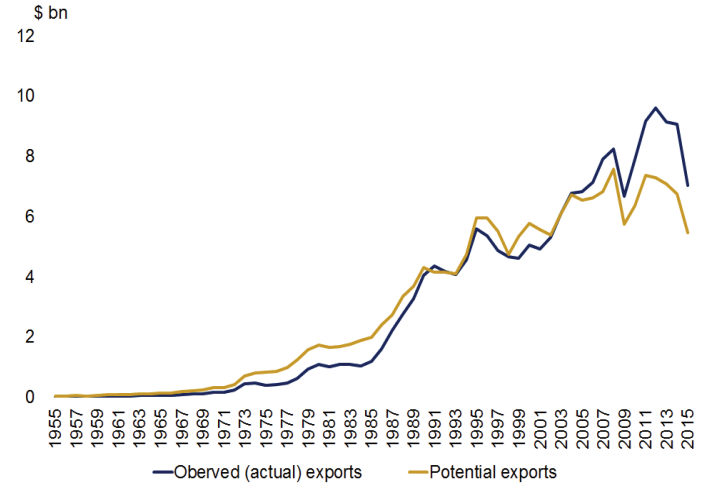

*Sources: DOTS and Comtrade; DG Trésor calculations.*

**Chart 3: France - United States**




*Sources: DOTS and Comtrade; DG Trésor calculations.*

**Chart 4: France - Japan**



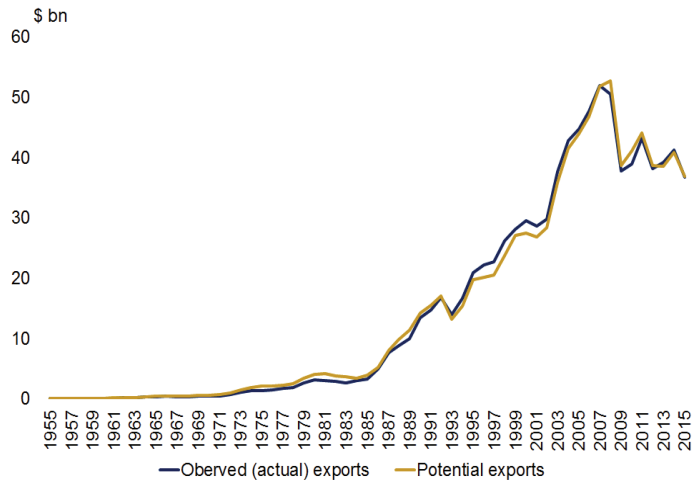

*Sources: DOTS and Comtrade; DG Trésor calculations.*

How to read this chart: Between 1965 and 2007, France's potential exports to Germany (yellow line) were higher than its actual exports (blue line). These trendlines reversed in 2007, with actual exports surpassing potential exports by €11bn p.a. on average over the last three years.

France's actual exports to the US also surpass the trade potential calculated by the model. The world trade trajectory since 2012 could have caused French exports to the US to decline, but they bucked the predicted trend and continued to rise. Trade with Japan and Singapore has shown similar trends recently.

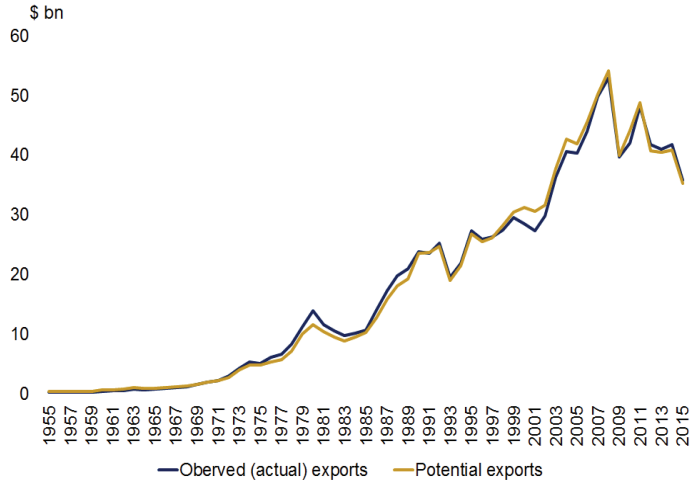
For the full period studied, France's actual exports have been well aligned with the trade potentials for most of its European trading partners. This holds true for Italy, Spain, Belgium, Sweden and Austria - as well as for Poland and Russia.

**Chart 5: France - Spain**



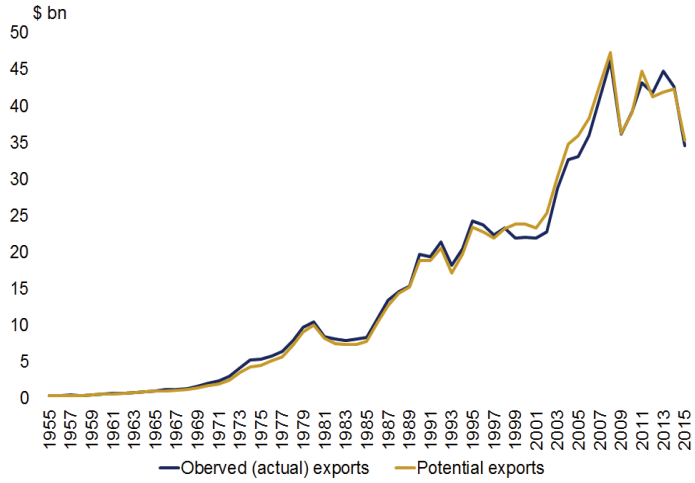

*Sources: DOTS and Comtrade; DG Trésor calculations.*

**Chart 6: France - Italy**



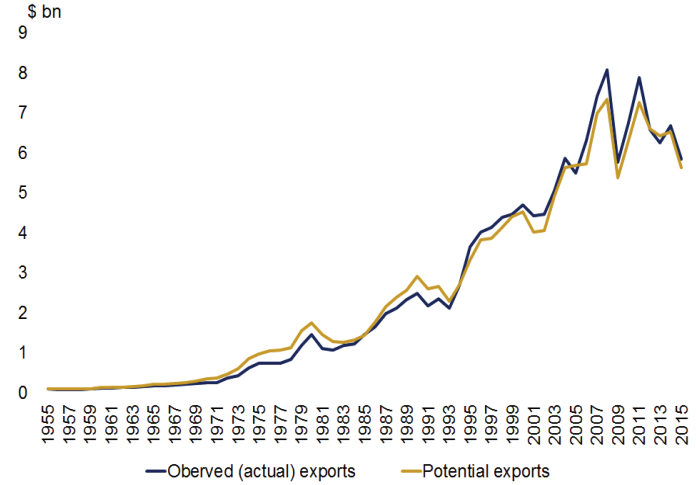

*Sources: DOTS and Comtrade; DG Trésor calculations.*

**Chart 7: France - Belgium**




*Sources: DOTS and Comtrade; DG Trésor calculations.*

**Chart 8: France - Sweden**




*Sources: DOTS and Comtrade; DG Trésor calculations.*

For countries to which France's actual exports surpass the trade potential, an increase in exports could entail an increase in the trade potential, rather than a wider gap between actual exports and potential trade. Such an improvement can only occur with a change in the gravity equation's structural variables, for instance, a reduction in trade costs. Tangibly speaking, this means that trade policies are implemented that strengthen integration or regulations converge (trade agreements, harmonised standards, integration of customs procedures, etc.).

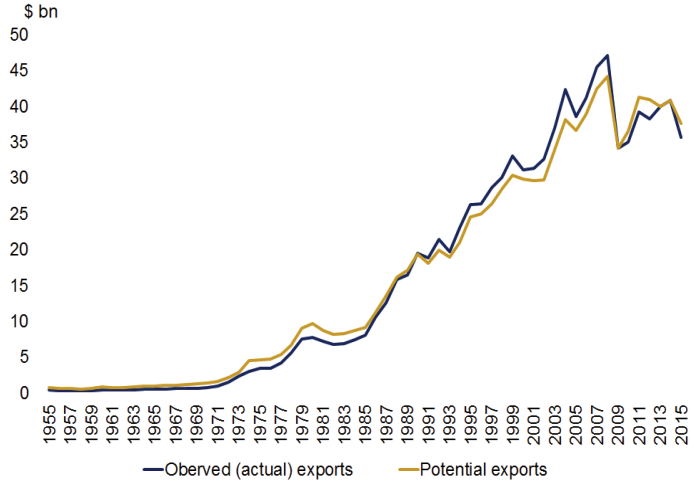
## 1.4 For the past few years, France's exports to the UK have been below their trade potential

France is lagging behind its trade potentials for a small number of markets mainly located outside the EU.

The recent period shows wide gaps between actual exports and trade potentials for the following main trading partners: the UK, Switzerland, India, Algeria and Morocco.

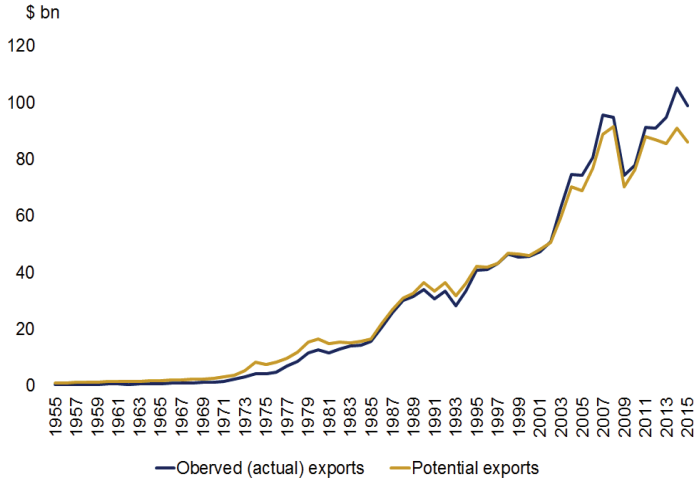
From the 1990s until the crisis, French exports to the UK systematically surpassed their potential level, even after factoring in the potential trade diversion after the euro area was created. However, since 2008, French exports have been below their trade potential. Conversely, over the same period, Germany has managed to surpass its trade potential with the UK.

**Chart 9: France - UK**




*Sources: DOTS and Comtrade; DG Trésor calculations.*

**Chart 10: Germany- UK**




*Sources : DOTS and Comtrade; DG Trésor calculations.*

Germany and France have gravity structures that are very similar with respect to the UK: comparable GDP compared to the rest of the world, an equivalent distance from the UK, currency and language barriers, and different legal systems. We can clearly pick out two phases: 1) France won market share over the period 1990-2008, then 2) Germany won market share from France after the crisis began. Thus, France has considerable leeway to recover its advantage vis-à-vis the UK.

For countries to which France's actual exports are below the potential level, a relevant approach would be to improve our exports in successive stages. The aim initially would be to regain market shares to narrow the gap with the trade potential, and then to derive maximum profit from the implementation of a common EU trade policy by lifting the trade potential. The first stage involves cross-cutting pro-competitiveness policies and targeted export support policies, whereas the second stage relies more on a reduction of trade barriers by signing free trade agreements and converging regulations.

### 1.5 Targeting trade policy requires a more precise analysis than provided by the trade potentials model

Trade potentials, estimated for foreign trade as a whole, provide an overview of the structural ties between two countries. However, this approach may conceal significant differences between export sectors and is insufficient as a decision-making aid for foreign trade policy.

DG Trésor has developed a tool based on sector export potentials in 2022. This tool indicates which sectors and countries offer the greatest potential for French exports.

## 2. A decision-making tool based on an analysis of sector trade potential in value-added terms

In order to maximise the economic impact of the human and financial resources invested in foreign trade policy, the tool presented here enables markets (i.e. countries and sectors) to be targeted according to: 1) the trend in international demand in these sectors; 2) France's potential sector exports to its partners; and 3) French value added in exports in these sectors.

Starting with a quantitative analysis, this tool aims to identify buoyant export markets in 2022 in the goods sectors in which France has revealed comparative advantage (RCA) and in the main service export sectors.

## 2.1 The decision-making tool enables forward targeting of export markets

The first assumption is that foreign trade policy must be based on the current characteristics of the manufacturing base and is no substitute for structural industrial policy that can modify France's RCA.

RCA is an indicator of an economy's strengths and weaknesses in terms of exports.

RCA measures the gap between the observed and theoretical balance for a given product; the theoretical balance corresponds to a country with no sector specialisation. If this gap is positive, then the country has a revealed comparative advantage for the product in question. If the gap is negative, the country has a comparative disadvantage. The sectors for which France has shown a revealed comparative advantage at least once in the past three years are presented in the table below.

**Table 1: Goods sectors used in the model and their contribution to total French exports**

| | Value of exports ($ bn) in 2015 | % of total French exports |
|---|---|---|
| Aerospace | **64.1** | *13.0%* |
| Chemical products | **52.7** | *10.7%* |
| Food products | **47.6** | *9.6%* |
| Automotive | **47.2** | *9.6%* |
| Machinery | **40.7** | *8.2%* |
| Pharmaceuticals | **32.1** | *6.5%* |
| Electrical equipment and appliances | **19.7** | *4.0%* |
| Medical and precision optical instruments | **18.9** | *3.8%* |
| Steel products | **15.1** | *3.0%* |
| Paper, paperboard and publishing | **8.9** | *1.8%* |
| Shipbuilding | **1.2** | *0.3%* |
| Total for selected sectors | **348.2** | *70.5%* |

*Source: CHELEM database; DG Trésor calculations.*

Our analysis includes service sectors due to their growing contribution to total exports. In order to assess France's strengths in the service sector as accurately as possible, given that the CHELEM database does not include RCA for services, we have chosen the categories for which French exports were the highest in 2016. The service sectors analysed are tourism, business services[4] and transportation. These are the three largest service export items, totalling 70% of France's total exports of services.

Then, we used a sector gravity model to select the buoyant markets in terms of value added. The decision-making support tool developed by DG Trésor is forward-looking: the objective is to target the markets for which France has strong export growth potential on a five-year timeline.

To target these markets, we have made forecasts of exports to each country in goods sectors with positive RCA and in the three selected service sectors. The forecasting process has three steps.

Step 1:

For each country, we calculate each sector's contribution to total imports over the past ten years. Then we extrapolate this sector's contribution out to 2022 and apply it to the IMF's forecasts of total imports in 2022. This enables us to identify the countries with the largest import markets for the targeted French export sectors (see Table 3, Ranking 1)

Step 2:

However, the absolute size of a market does not necessarily make it buoyant for France. Therefore, we use trade potentials derived from gravity equations to target the largest potential markets for France given the bilateral relations, the various trade agreements in force, and tariff and non-tariff trade barriers. Thus, we use 13 gravity

(4) Legal and accounting services, management and public relations consulting, advertising/market research/surveys, R&D, architecture, engineering, scientific and agricultural services, operating lease management, services for the retail sector, other services for companies (notably employment services).

models (one for each goods sector with positive RCA and one for each service sector) whose econometric equations assess bilateral trade with every country in each sector.

Applying gravity equations to each sector not only yields robust results for the various econometric tests, but also confirms our initial hypothesis. For example, language barriers and distance have a very strong impact on the tourism sector, but very little effect on aerospace exports.

**Table 2: Econometric estimates of trade potentials: effects of variables on each sector**

| | %exports explained | All goods | Food | Aerospace | Electric appliances | Automotive | Chemical | Medical & precision optical | Machinery | Paper | Pharmaceuticals | Steel | Transports | Tourism | Business services |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance | 63% | -0.818*** | -0.734*** | -0.0758** | -0.822*** | -0.709*** | -0.897*** | -0.599*** | -0.666*** | -0.967*** | -0.406*** | -0.986*** | -0.676*** | -1.137*** | -0.472*** |
| Language | 4.5% | 0.295*** | 0.295*** | 0.0729* | 0.155*** | ns | 0.152*** | ns | 0.251*** | 0.425*** | 0.148*** | 0.222*** | ns | 0.413*** | ns |
| Border | 6% | 0.502*** | 0.438*** | 1.094*** | 0.0636*** | 0.359*** | 0.543*** | 0.568*** | 1.266*** | 1.272*** | 1.354*** | 0.455*** | 0.337*** | 0.633*** | 0.264*** |
| Colonial link | 0.25% | 0.433*** | 0.977*** | 1.638*** | 0.737*** | 1.410*** | 0.297*** | 0.273*** | 0.329*** | 0.346*** | 0.319*** | 0.945*** | ns | 0.378** | ns |
| Legal system | 2.4% | 0.164*** | 0.306*** | ns | 0.307*** | 0.438*** | 0.0941*** | ns | ns | 0.205*** | ns | 0.202*** | 0.270*** | 0.209*** | 0.423*** |
| EU | 6.6% | 0.297*** | 0.764*** | ns | ns | ns | 0.426*** | 0.201*** | 0.340*** | 0.428*** | 0.365*** | 0.533*** | ns | ns | ns |
| Other regional FTAs | 8.6% | 0.312*** | 0.320*** | 0.283*** | 0.271*** | 1.060*** | 0.372*** | 0.421*** | 0.457*** | 0.109* | ns | 0.342*** | 0.159* | ns | 0.447*** |
| NAFTA | 8.8% | 0.136*** | 0.561*** | ns | 1.076*** | 1.019*** | ns | 0.0945** | 0.156*** | 0.292*** | ns | 0.219*** | ns | ns | ns |
| N | | 638,373 | 224,112 | 105,438 | 198,806 | 180,238 | 218,648 | 195,974 | 215,407 | 199,183 | 166,739 | 163,692 | 9,055 | 8,399 | 8,572 |
| $R^2$ | | 0.89 | 0.88 | 0.9 | 0.93 | 0.94 | 0.93 | 0.85 | 0.92 | 0.95 | 0.82 | 0.89 | 0.82 | 0.92 | 0.9 |

*Fixed effects: importer-year; exporter-year* *NS: not significant* * p<0.05 ** p<0.01 *** p<0.001

By cross-referencing these trade potentials with the forecasts of the countries' imports by sector, we obtain France's potential export markets in 2022.

This targeting according to our potential market shares considerably reshuffles the ranking of our largest trading partners (see Table 3, Ranking 2).

Step 3:

Lastly, we factor in the French value-added content of our exports, in order to maximise the benefits for the French economy.

We use ratios of French value added for each sector.

This final step enables us to identify the countries and sectors that offer the most upside for French exports in 2022 - in terms of French value added.

Taking account of value added does not have a major impact on the overall ranking, but it has a considerable effect on the sector breakdown per country (see Table 3 below).

**Table 3: Country ranking at each step of processing**

| Ranking 1 | | Ranking 2 | | | Ranking 3 | | |
|---|---|---|---|---|---|---|---|
| Ranking of countries by total imports in 2022 in France's sectors with positive RCA | | Ranking of countries by French export potential in 2022 in France's sectors with positive RCA | | | Ranking of countries by French value-added export potential in 2022 in France's sectors with positive RCA | | |
| 1 | United States | 1 | *(3)* | Germany | 1 | *(1)* | Germany |
| 2 | China | 2 | *(1)* | United States | 2 | *(2)* | United States |
| 3 | Germany | 3 | *(10)* | Belgium* | 3 | *(3)* | Belgium* |
| 4 | United Kingdom | 4 | *(7)* | Italy | 4 | *(4)* | Italy |
| 5 | India | 5 | *(13)* | Spain | 5 | *(6)* | United Kingdom |
| 6 | Japan | 6 | *(4)* | United Kingdom | 6 | *(5)* | Spain |
| 7 | Italy | 7 | *(2)* | China | 7 | *(7)* | China |
| 8 | Canada | 8 | *(14)* | Netherlands* | 8 | *(8)* | Netherlands* |
| 9 | South Korea | 9 | *(16)* | Switzerland | 9 | *(9)* | Switzerland |
| 10 | Belgium* | 10 | *(5)* | India | 10 | *(10)* | India |
| 11 | Russia | 11 | *(24)* | Ireland | 11 | *(11)* | Ireland |
| 12 | Mexico | 12 | *(11)* | Russia | 12 | *(12)* | Russia |
| 13 | Spain | 13 | *(6)* | Japan | 13 | *(13)* | Japan |
| 14 | Netherlands* | 14 | *(15)* | Poland | 14 | *(14)* | Brazil |
| 15 | Poland | 15 | *(17)* | Brazil | 15 | *(15)* | Poland |

*(Results of Ranking 1 before factoring in trade potentials)*

*(Results of Ranking 2 before factoring in French value-added)*

**Re-exports subtracted from the country's total imports of goods. Belgium: 30%, Netherlands: 54%, Singapore: 53%.*

## 2.2 Value-added trade potentials in 2022 can help target trade policies

The table below, designed to support foreign trade policy decision-making, shows value-added trade potentials in 2022 between France and its 40 main partners, both in France's sectors with positive RCA and in its main service export sectors. The colour of each box indicates the amount of France's potential exports in value-added terms in 2022 per country and per sector.

For instance, France has the potential to export between $100m and $300m of chemical products to Algeria (measured in terms of French value added). The service sector shows particularly high export potential to the BRIC countries, as does the export of medical and precision optical instruments to India.

This flexible tool is designed to help public- and private-sector decision-makers to define and target their export strategies.

Ultimately, such targeting is likely to strengthen - or foster the emergence - of French positions in the buoyant sectors and in the identified countries, while the inclusion of value-added data enables the fragmentation of production processes to be taken into account.

With regard to trade policy, used in a cross-sector approach, this tool can highlight opportunities for trade talks with other countries. In a sector approach, it can identify offensive interests in ongoing talks. With regard to export support, the identified trade potentials can fuel discussions about the bilateral fora to be set up with other countries, as well as the targeting strategy for export financing instruments.

Companies can use this tool more from a sector standpoint to identify buoyant markets in their sectors or, at the very least, to compare its econometric results with their own perception of the market.

## Table 4: Potential French exports in value-added terms in 2022

| | South Africa | Algeria | Germany | Saudi Arabia | Argentina | Australia | Austria | Bangladesh | Belgium* | Brazil |
|---|---|---|---|---|---|---|---|---|---|---|
| Aerospace | | | | | | | | | | |
| Chemical products | | | | | | | | | | |
| Food products | | | | | | | | | | |
| Pharmaceuticals | | | | | | | | | | |
| Steel products | | | | | | | | | | |
| Shipbuilding | | | | | | | | | | |
| Medical and precision optical instruments | | | | | | | | | | |
| Paper, paperboard and publishing | | | | | | | | | | |
| Machinery | | | | | | | | | | |
| Electrical equipment and appliances | | | | | | | | | | |
| Automotive | | | | | | | | | | |
| Other business services | | | | | | | | | | |
| Tourism | | | | | | | | | | |
| Transportation services | | | | | | | | | | |

| | Bulgaria | Cameroon | Canada | Chile | China | Colombia | Côte d'Ivoire | Croatia | Danmark | Egypt |
|---|---|---|---|---|---|---|---|---|---|---|
| Aerospace | | | | | | | | | | |
| Chemical products | | | | | | | | | | |
| Food products | | | | | | | | | | |
| Pharmaceuticals | | | | | | | | | | |
| Steel products | | | | | | | | | | |
| Shipbuilding | | | | | | | | | | |
| Medical and precision optical instruments | | | | | | | | | | |
| Paper, paperboard and publishing | | | | | | | | | | |
| Machinery | | | | | | | | | | |
| Electrical equipment and appliances | | | | | | | | | | |
| Automotive | | | | | | | | | | |
| Other business services | | | | | | | | | | |
| Tourism | | | | | | | | | | |
| Transportation services | | | | | | | | | | |

| | United Arab Emirates | Spain | Estonia | United States* | Russia | Finland | Greece | Hong Kong | Hungary | India |
|---|---|---|---|---|---|---|---|---|---|---|
| Aerospace | | | | | | | | | | |
| Chemical products | | | | | | | | | | |
| Food products | | | | | | | | | | |
| Pharmaceuticals | | | | | | | | | | |
| Steel products | | | | | | | | | | |
| Shipbuilding | | | | | | | | | | |
| Medical and precision optical instruments | | | | | | | | | | |
| Paper, paperboard and publishing | | | | | | | | | | |
| Machinery | | | | | | | | | | |
| Electrical equipment and appliances | | | | | | | | | | |
| Automotive | | | | | | | | | | |
| Other business services | | | | | | | | | | |
| Tourism | | | | | | | | | | |
| Transportation services | | | | | | | | | | |

| | Indonesia | Ireland | Israel | Italy | Japan | Kazakhstan | Latvia | Lebanon | Lithuania | Luxembourg |
|---|---|---|---|---|---|---|---|---|---|---|
| Aerospace | | | | | | | | | | |
| Chemical products | | | | | | | | | | |
| Food products | | | | | | | | | | |
| Pharmaceuticals | | | | | | | | | | |
| Steel products | | | | | | | | | | |
| Shipbuilding | | | | | | | | | | |
| Medical and precision optical instruments | | | | | | | | | | |
| Paper, paperboard and publishing | | | | | | | | | | |
| Machinery | | | | | | | | | | |
| Electrical equipment and appliances | | | | | | | | | | |
| Automotive | | | | | | | | | | |
| Other business services | | | | | | | | | | |
| Tourism | | | | | | | | | | |
| Transportation services | | | | | | | | | | |

| | Malysia | Malta | Morocco | Mexico | Niger | Nigeria | Norway | New Zealand | Pakistan | Netherlands* |
|---|---|---|---|---|---|---|---|---|---|---|
| Aerospace | | | | | | | | | | |
| Chemical products | | | | | | | | | | |
| Food products | | | | | | | | | | |
| Pharmaceuticals | | | | | | | | | | |
| Steel products | | | | | | | | | | |
| Shipbuilding | | | | | | | | | | |
| Medical and precision optical instruments | | | | | | | | | | |
| Paper, paperboard and publishing | | | | | | | | | | |
| Machinery | | | | | | | | | | |
| Electrical equipment and appliances | | | | | | | | | | |
| Automotive | | | | | | | | | | |
| Other business services | | | | | | | | | | |
| Tourism | | | | | | | | | | |
| Transportation services | | | | | | | | | | |

| | Philippines | Poland | Portugal | Qatar | South Korea | Iran | Czech Republic | Romania | United Kingdom | Senegal |
|---|---|---|---|---|---|---|---|---|---|---|
| Aerospace | | | | | | | | | | |
| Chemical products | | | | | | | | | | |
| Food products | | | | | | | | | | |
| Pharmaceuticals | | | | | | | | | | |
| Steel products | | | | | | | | | | |
| Shipbuilding | | | | | | | | | | |
| Medical and precision optical instruments | | | | | | | | | | |
| Paper, paperboard and publishing | | | | | | | | | | |
| Machinery | | | | | | | | | | |
| Electrical equipment and appliances | | | | | | | | | | |
| Automotive | | | | | | | | | | |
| Other business services | | | | | | | | | | |
| Tourism | | | | | | | | | | |
| Transportation services | | | | | | | | | | |

| | Singapore* | Slovakia | Slovenia | Sweden | Swizerland | Thailand | Tunisia | Turkey | Ukraine | Viet Nam |
|---|---|---|---|---|---|---|---|---|---|---|
| Aerospace | | | | | | | | | | |
| Chemical products | | | | | | | | | | |
| Food products | | | | | | | | | | |
| Pharmaceuticals | | | | | | | | | | |
| Steel products | | | | | | | | | | |
| Shipbuilding | | | | | | | | | | |
| Medical and precision optical instruments | | | | | | | | | | |
| Paper, paperboard and publishing | | | | | | | | | | |
| Machinery | | | | | | | | | | |
| Electrical equipment and appliances | | | | | | | | | | |
| Automotive | | | | | | | | | | |
| Other business services | | | | | | | | | | |
| Tourism | | | | | | | | | | |
| Transportation services | | | | | | | | | | |

*Re-exports subtracted from the country's total imports of goods. Belgium: 30%, Netherlands: 54%, Singapore: 53%.*

> 6,000 | 3,000-6,000 | 1,000-3,000 | 750-1,000 | 500-750

300-500 | 100-300 | 50-100 | 0-50 | *Not available*

$ million

**Julien ARTHUR, Alisson DRAY**

**Publisher :**
Ministère de l'Économie
et des Finances
Direction générale du Trésor
139, rue de Bercy
75575 Paris CEDEX 12

**Publication manager:**
Michel Houdebine

**Editor in chief :**
Jean-Luc Schneider
(01 44 87 18 51)
tresor-eco@dgtresor.gouv.fr

**English translation:**
Centre de traduction
des ministères économique
et financier

**Layout:**
Maryse Dos Santos
ISSN 1962-400X
eISSN 2417-9698

## Recent Issues in English

**December 2017**

**No.°211.** Demographic challenges in the Maghreb countries
Fabien Bertho, Christine Brodiak, Laurent Chopiton, Grégoire de Warren, Guillaume Dufour, Garance Skorzewski, Adrien Sperry

**November 2017**

**No.°210.** Globalisation, growth and inequality: implications for economic policy
Valentin Cohen, Louise Rabier, Linah Shimi

**No.°209.** How to explain Germany's strong current account surplus?
Maylis Bechetoille, Titouan Blaize, Benoît Campagne, Diane de Waziers

**https://www.tresor.economie.gouv.fr/Articles/tags/Tresor-Economics**

**Direction générale du Trésor (French Treasury)**

**@DGTrésor**

*This study was prepared under the authority of the Directorate General of the Treasury (DG Trésor) and does not necessarily reflect the position of the Ministry of Economoy and Finance.*