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Groupe de Recherche en
Économie Théorique et Appliquée

First globalization: Why did France miss the boat?

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La France dans la première mondialisation: une opportunité gachée ?

Résumé

Partant des travaux de Bairoch sur les difficultés de la France à atteindre les marchés émergents pendant la première mondialisation (1880-1914), cet article tente d'identifier les sources de cet échec. L'article s'appuie sur une base de données totalement nouvelle regroupant les imports et les exports de la France sur une période de 64 années. L'exploitation de cette base permet d'analyser les changements de la structure géographique et produits des flux commerciaux français. En appliquant les tests statistiques standards pour déterminer la concentration des flux commerciaux, l'article montre que la structure du commerce français devient très rapidement spécialisée dans l'intra-branche, ce qui sous-entend un repli relatif sur les marchés de proximité.

Mots-clés : Commerce international, commerce intra-branches, première mondialisation, Spécialisation, France

First globalization: Why did France miss the boat?

Abstract

Starting from Bairoch's observation of declining French foreign trade, especially in emerging markets during the first globalization (1880-1914), this article endeavours to identify the sources for the failure to exploit the opportunities afforded by global economic growth after 1870. For this purpose a comprehensive dataset of French imports and exports of unparalleled size was assembled to investigate the changes these underwent both in geographical and product distribution over a period of 64 years. Applying standard tests of trade flow concentration, we find that France's trade structure reflected its early intra-industry specialization which implied increasing reliance on 'proximity' markets.

Keywords: International trade, Intra-Industry trade, 1st globalization, Specialization, France

JEL: N7

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Introduction

The decline of French trade power and especially its exporting capacity in the last third of the 19th Century seems well-known in historiography (see Cameron, 1961 ; Maizels, 1963 ; Weiller, 1971, Levy-Leboyer, 1971, Toutain, 1977)[1]. Bairoch (1993) shows this impressively: still the world's second largest exporter on the eve of the Franco-Prussian war of 1870, France slipped within a few years (1875) to fourth place, having been overtaken by new German Reich and the US. This trend was continuous until World War I. Accordingly, France's share of world exports which had risen between 1847 and 1865 from 9 to 15.9%, fell to half that (7.2%) in 1913. In this respect, France's experience contrasts with that of most of other industrialising countries of the period excepted UK (Lewis, 1981; Foreman-Peck, 1998; Dedinger, 2006, 2012).

When trade statistics for the period 1850-1913 are put under scrutiny, it becomes apparent that this reversal of fortunes occurred at the onset of the 1870s. Lévy-Leboyer and Bourguignon (1990) locates it precisely during the short span of years from 1876 to 1879. Prior to that French exports grew two and a half times faster than total output while their growth was exactly of the same order as the latter thereafter. This explains why French trade suffered recurrent deficits from the end of the 1870s, an imbalance which worsened in the 1880s. Indicators of trade openness tell a similar story (Asselain and Blancheton, 2005): evidence shows the French index contracting at the beginning of the 1880s while other West European countries "open up" (See Lewis, 1951. This is the case for such laggards in industrialisation as Italy (see Federico & Wolf, 2011) and Spain (Tena-Junguito, 2006)).

Once all these various assessments are put together, the diagnosis of a retracting export capacity of French foreign trade after 1870 becomes evident – although rarely labelled "decline." The empirical basis for such conclusion, however, was always very slim, given the difficulty until recently to process large statistical datasets. Scholars have either devoted their efforts to short time spans (as Tyszynski, 1951) or individual benchmarks (Verley, 1988); in recent years even sophisticated approaches such as Broder's or Bairoch's have not used a comprehensive disaggregated database. For a long time the practical solution for working out the complete merchandise trade nomenclature was to focus on selected benchmark years (as Weiller and Bairoch have done). Hence no general overview of French foreign trade for the period since it has been the object of systematic records (1827) exists[2]. The present study is the first to make use of a comprehensive annual database by product and country for France's foreign trade over the period 1850-1913. It is hoped that a finer diagnosis can be obtained than the ones offered heretofore. Thus Lévy-Leboyer and Bourguignon highlight: "an error in estimating market trends. Contemporary observations show that manufacturers did not recognize in time that with the development of the urban market, durability and strength, which had justified the successful exportation of their products, ceased to be selling points" (1990: p.65).

The aim of the present paper has consisted in studying a new extended database of French foreign trade, the size of which is as of now unmatched, submitting to a number of tests and draw from these all the possible implications. If we have endeavoured to "see further" it has been by

[1] Maizels' shift share analysis of trade shows French competitiveness declining during the period. Weiller (1969) presents (in French) the first general survey of French foreign trade for a few selected benchmarks (given the data-processing technology available at his time) but he underplays its relative decline during the Third Republic. Invited by Kindleberger, Weiller (1971) presents an abstract of his research in JEH. Lévy-Leboyer (1971) was the first to signal that French growth was atypical in the last third of the 19th Century, a theme he develops in Lévy-Leboyer and Bourguignon, 1990. See also Bairoch, Paul, "La place de la France sur les marchés internationaux" and Toutain, Jean-Claude, "Les structures du commerce extérieur de la France 1789-1970," both in Lévy-Leboyer (ed.), 1971, pp. 37-52 and 53-74.

[2] Such databank exists for Italy since 1860 (http://www.bancaditalia.it/statistiche/storic/collanastorica/basi-dati-csbi/commercio-estero-italiano).

standing on the shoulders of Bairoch (1974) and expanding on his pioneering insights on the geographical distribution of European exports.

Bairoch was puzzled, among other things, by the weak and declining diffusion of French exports in Latin American and Asian markets in 1890 and 1913 (his two chosen benchmarks) as well as the swelling trade to French colonies, a phenomenon further documented by Marseille (1984).

Together these observations hint at a failure of French export trade to achieve market diversification during the 'second industrialisation,' a failure that was already keenly felt by contemporary experts (see Aubert, 1900). Heretofore, however, only partial evidence has been assembled (either for selected benchmark years, products or trading entities or regions). We propose to examine the whole record for the entire period with an approach encompassing the complete nomenclature and all of France's trading partners.

The article is structured as follows. First section presents data and statistical method. Section 2 provides an analysis of the geographical distribution of both exports and imports. Section 3 studies French specializations (with Herfindhal index and C4 index) and the intra-industry trade measure (Grubel and Lloyd index). Last section discusses the main results and gives some explanation and line of research.

Makeup of the database and methodology

Our strategy has consisted in processing the disaggregated data for France's foreign trade recorded annually in the *Tableau Général du Commerce et de la Navigation*[3] between 1850 and 1913. As our focus is geographical and product specialization, all the available information on origin/destination was entered in the base (this represents 41 countries (or 'entities') for imports and 63 for exports) as well as take into account the whole product range, including 60 product headings for imports and 75 for exports (a classification matching roughly the SITC rev.3). This nomenclature allowed the use of different levels of aggregation as in the construction of the C4 index where the four main export products are taken into account.

As is customary in this type of enquiry, data on 'special trade' have been retained, rather than those on "general trade" (which includes transit trade). Special trade relates more closely to the productive structure of the domestic economy.

Sometimes the geographical structure of trade is best studied with the assistance of a gravity model. However, for the group of France's major partners a number of variables (including annual national GNP data) were unavailable. As a result, we opted for a methodology best adapted to the information at hand in order to achieve the greatest possible reliability of our results:

- First, our pool of data being relatively large (over 6,650 entries for geographical structure), the methodology required the observer status being as objective as possible;

- Second, the chosen tools of analysis needed to make generalizations possible with a minimum loss of information.

For these reasons, we used a method based on multidimensional analysis, and more specifically a correspondence analysis (see Benzecri, 1992; Le Roux and Rouanet, 2011). While applying these methods, we were in a position to detect the structuring factors of imports and exports for the period under consideration. Factorial axes stand for the independent variables of the

[3] Title varies depending on the period.

system's organization, and reveal various countries' contribution to the total variance of trade as well as detect time breaks (more details in Appendix 1).

Turning now to the product nomenclature, the base includes annual export data for 75 products representing on average 86% of French total exports (likewise import data for 60 different products cover around 57% of French total import trade). This extensive export database allowed for the use of two indices of concentration: the Herfindhal and the C4 indices. Furthermore, the export being aligned on the import nomenclature, we exploited data on 142 products with the same description in one and the other category to calculate a Grubel and Lloyd index measuring intra-industry trade intensity. This was conducted for 1849, 1859, 1870, 1875, 1880, 1885, 1890, 1893, 1895, 1900, 1902, 1904, 1906, 1908, 1910, and 1913. Taking into account all calculations, our product database includes more than 15,600 data.

The geographical distribution of French trade

The aim of this section is to bring out the geographical distribution of French foreign trade, and observe its change overtime. We apply a correspondence analysis method to exports and imports in turn. For the sake of clarity, we focus on the first factorial axis, which clearly dominates the total variance of both exports and imports.

The apparent retreat of exports onto proximity markets

Factorial analysis applied to the export series with a view of identifying the structural factors and temporal break points, represents 45.8% of the phenomenon's total variance. Given the size of the contingency table (63 entities times 64 years yield 4,032 observable data), this factor appears as a determinant and structuring factor of French exports over the whole 1850-1913 period. The main axis is stable, for individual as well as for opposed variables.

Countries on the positive side of the factor contribute to 44.45% of its formation. On this same side, the 1901-1913 subperiod accounts for 40.04% of its construction. Regarding their positioning, we should associate discriminated countries and the 14 years ending the observation period.

On the negative side, we find other countries contributing 42.6% of the factor's formation. This underlying factor is of necessity ancient because the 1850-1866 sequence contributed 42.25% of its construction. Table 1 sums up the results obtained for France's main partners.

Table 1. Proximity markets versus emerging countries

Countries with a positive sign (absolute contribution to axis %)		Countries with a negative sign (absolute contribution to axis %)	
Indochina	8.73	Peru	7.07
Belgium	8.59	Spanish dominions in America	5.69
Germany	6.01	Italy	5.37
Tunisia	5.39	Spain	4.83
Morocco	4.03	United States	4.55
Algeria	3.54	Reunion	3.78
Madagascar	3.33	Brazil	3.02
Colombia	2.70	Martinique	2.54
Congo and Senegal	2.18	Turkey	2.18
		Chile	1.86
		Guadeloupe	1.72
Total	**44.45**	**Total**	**42.61**

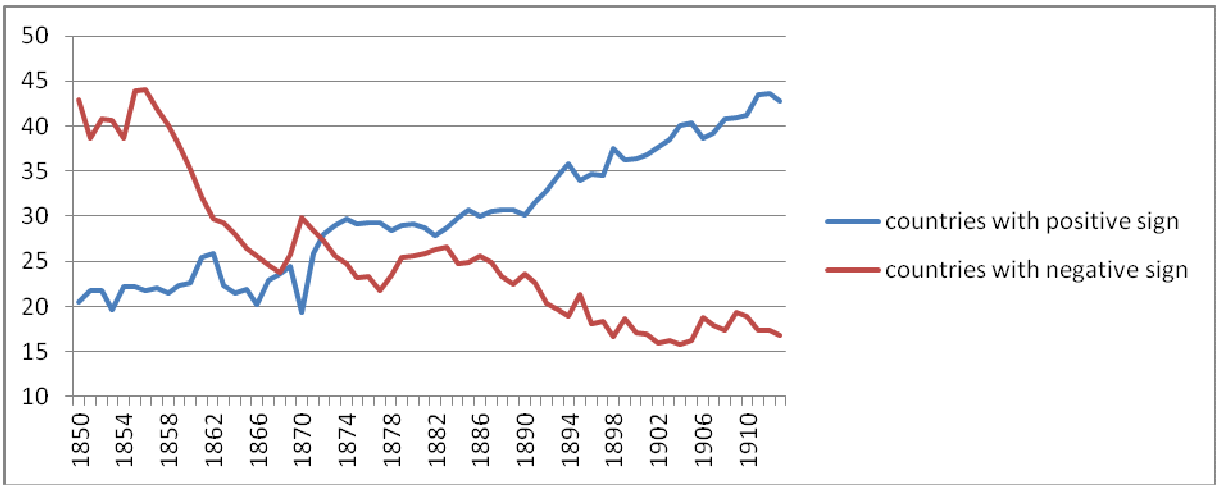
The tests reveal that the whole time sequence spanning the second half of the 19th Century and the first of the 20th is split into two consecutive and heterogeneous subperiods. Every single year of the 1850-1891 subperiod exhibits a negative sign, a sign which is reversed for the years from 1892 to 1913. Tellingly, the years of this sign reversal correspond to the passage of the Méline tariff (April 1891-January 1892). Testing now for homoscedasticity, two time sequences exhibit an absolute contribution axis (denoted by CTR) at least equal to 1.56 (100÷64): 1850-1866 and 1901-1913.

Countries exhibiting a positive sign present the common feature of absorbing a growing share of French exports. In relative terms, this share more than doubled**,** from 20.5% to 41.6% from the beginning to the end of the period. By contrast, the share of countries with a negative sign dropped continuously, from 42.0% in 1850 to 16.8% in 1913. The vast majority of countries in the first category (with the exception of Colombia) were located in the vicinity of France, either in the industrial core (Belgium, Germany), or among France's closed colonies (Algeria, Morocco, Tunisia). Countries in the second category were geographically distant from France (Peru, United States, Brazil, Chile), or found in the European periphery (Italy, Spain), or among distant colonies (Reunion, Martinique). French colonies did not make up a homogenous group: their contribution to French export trade varied enormously.

This contrast between the two categories of countries is confirmed by the negative correlation coefficient between their own market share (-0.83). Its value even climbs higher (to -0.88) if we focus on the most significant subperiods: 1850-1866 and 1901-1913.

Statistical analysis thus reveals a gradual redirection of French exports to 'proximity markets', either geographically or politically, at a time when 'globalization' prompted market diversification, extension and deepening.

Figure 1. Changes in market share for the two types of countries



Sources: Tableau général du commerce et de la navigation (1850-1913); authors' calculations.

Imports: 'traditional partners' vs. emerging countries

The principal factorial axis retaining the characteristics of the countries from which French imports are drawn represents 49.6% of the phenomenon's total variance. This stands for the driving force behind the formation of the structure of the French import trade since almost half of it depends on this factor**.** Countries represented in table 2 participate in this factor's construction. They have been selected because of a contribution of 2.44% at the least, the threshold of the homoscedasticity hypothesis (100/41).

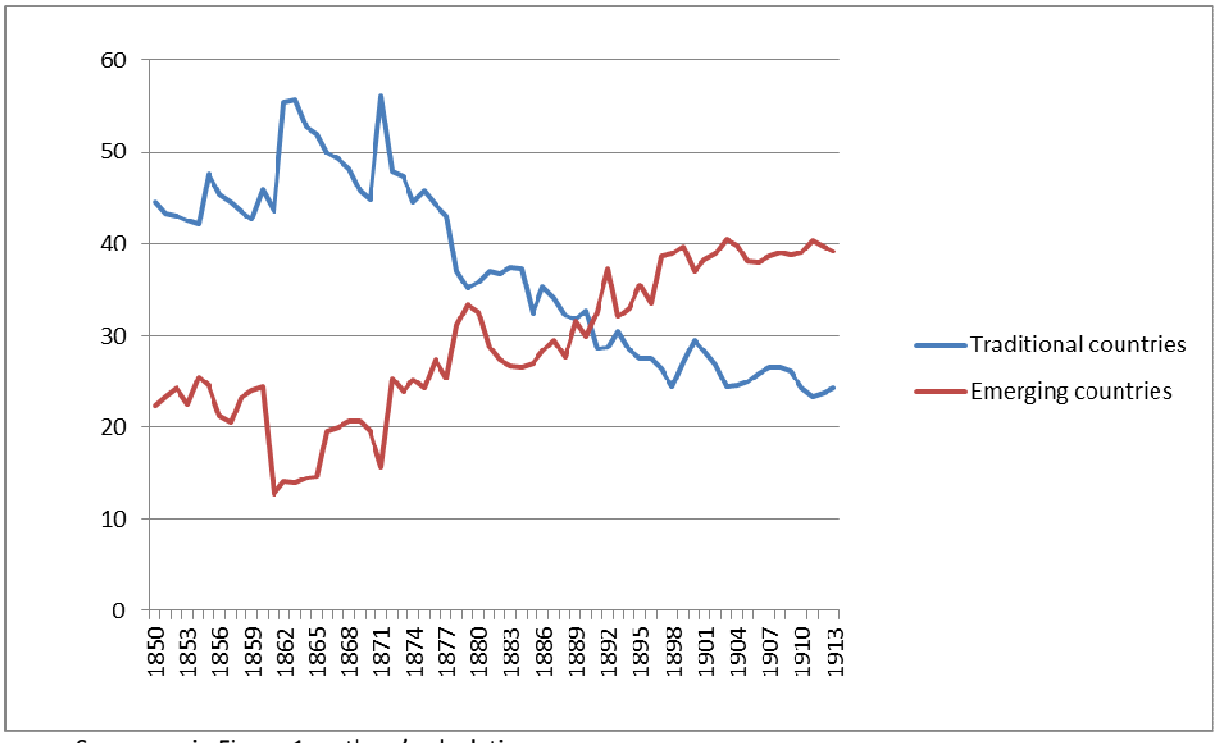
Table 2: Main contributors to the development of French imports, 1850-1913

Countries with positive sign (absolute contribution to axis %)		Countries with a negative sign (absolute contribution to axis %)	
China	6.37	Italy	22.13
Algeria	5.19	Turkey	7.37
Argentina	5.18	Spanish dominions in America	5.23
Tunisia	5.10	Belgium	3.73
Romania	4.20	England	3.57
Germany	3.82	Peru	2.90
United States	3.55	Reunion	2.81
Japan	3.00		
Chile	2.86		
Total	**39.27**	**Total**	**47.74**

The figure below illustrates the contrasting trend in the relative share of each group of countries identified by our method. We name countries in the first category "emerging countries" and those in the second "traditional countries".

In order to better understand opposition between both groups of countries, following figure shows each relative weight in total imports.

Figure 2. Trends in the relative share of the two country groups in total French imports (%)



Source: as in Figure 1; authors' calculations.

The correlation coefficient between the variables pertaining to the two groups is high, negative and significant (-0.95). It highlights the inverse relationship between of the contribution to French imports of the two groups of countries. Things look as if imports from emerging countries (the United States, Germany, China, Japan…) were gradually displacing those from France's traditional partners (e.g. Britain, Belgium, Italy, Turkey)

This substitution operated gradually, with emerging economies gaining ground from the late 1880s onward. This contrasted sharply with the situation at the beginning of the period, especially between 1860 and 1874, when France's main suppliers were still her traditional partners: Britain, Belgium and Italy.

The year-by-year examination of the variables confirms this conclusion. The 1850-1887 subperiod is clearly associated with the predominance of France's traditional partners while during the second subperiod 1888-1913, the general trend has the same factorial sign as that of emerging countries. "Emerging" is defined here from the perspective of French trade and may or may not reflect the progressive status of the economy of that country or region.

As in the case of exports, the years at both ends of the period, 1860-1877 and 1902-1913, together set the pitch for the dynamics of its whole as they contribute most to the formation of the causation variable. The first time sequence is emblematic of the dominance of France's traditional trade connections in the wake of the Cobden-Chevalier treaty at a time moreover, concomitant with the American Civil War, when imports from the US collapsed (ushering into the so-called "cotton famine"). Together the two events account for the diverging trends exhibited by the two groups of countries and highlights the significance of the 1860 to 1877 time sequence.

Table 3 sums up the contrast between the situation of the first and of the last time sequence of the period under examination.

Table 3. Average relative share of both groups of countries in French total imports (%)

	1850-1887	1888-1913
Traditional partners	43.9	27.1
Emerging countries	23.3	36.8

Source: see previous table; authors' calculations

By the end of the 1880s the group of emerging countries overtook that of traditional partners as the main supplier of French imports. Up to that date we can argue, the dynamics of Cobden-Chevalier were still in force comforting and strengthening intra-European trade (through the MFN clause) as well as traditional external connections. This observation is consistent with recent work at a global level. Lampe (2008, 2009) has established, as did Accominotti and Flandreau (2008), that the Cobden-Chevalier treaty network did not result between 1860 and 1875 in an expansion of world trade but had a differentiated impact depending on the type of traded products. According to the authors, this led instead to an intensification of trade between European countries.

By the end of the 19th Century, France faced an awkward situation, revealed by correspondence analysis, in which her dependence on emerging markets for her imports was matched by a persistent reliance on her traditional markets for her exports. Although her financial strength gave her ample leeway to allay this discrepancy (consistently producing a growing trade deficit), the skewed distribution of her trade and the declining coverage ratio towards emerging countries suggest a particular difficulty on France's part to adapting her economy to the new constraints induced by the "first" globalization.

French trade specialization over the medium term

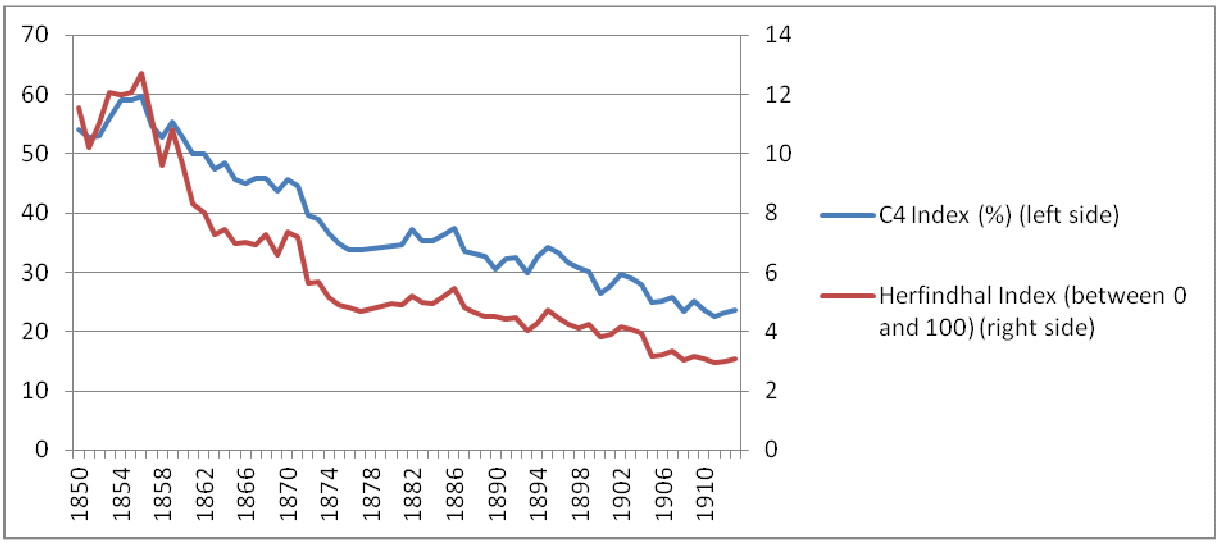
The changing geographical distribution of French trade partners is partly indicative of a loss of competitiveness of French exports on world markets. Is this diagnosis confirmed by the observation of changes in the product structure of French trade?

Decreasing export concentration

In order to unveil the dynamics behind the geographical trade reorientation of French trade after 1880, we explore France's export concentration by product by using as guides the two only conventional indicators in international and industrial economics (Tirole, 1988): the Herfindhal index and the C4 index.

The Herfindhal index is a very straightforward indicator of concentration corresponding to the following formula: $H = \sum_i X_i^2$ with X_i being the share of product i in total exports. Its maximal value is 100. C4 represents the share of the four top products in the total exports in percentage.

Figure 3. The course of the Herfindhal and C4 index applied to French exports



Source: as in Figure 1; authors' calculations

As even casual observation of the shape and slope of both curves makes clear, the correlation between the two indices is very strong (0.97). They both reveal declining export concentration. A downward trend in French exports' concentration seem to get under way around 1856. At this date, France's four key export products represented 59.7% of her total exports, a ratio which fell to 22.6% in 1911.

At the beginning of the period, France appears to have espoused a Ricardian model of trade, exporting few products in large quantities**.** It is obviously an inter-industry specialization[4]. Then, after a period of uncertainty, export concentration fell gradually and continuously.

Scrutinizing year-to-year changes in the C4 index over the 1850-1913 period, allows to trace trade specialization more closely. To some extent characterization of the trend in exports depends on the classification used, which may or may not be best suited to this type of enquiry. However, it is noticeable that the list of France's major foreign exchange earners did not differ markedly from one end of the period to the other. This consisted of a dozen of products including finished textiles (silk, woollen and cotton fabrics), wine, fancy goods and trinkets[5]). In 1913, France's main exporting

[4] If we consider five French specializations (silk, cotton, woollen and linen fabrics, wine), at the beginning of the 1850's France didn't import any of these products. At the end, in 1910 the coverage ratio was to two percents.

[5] This product category, specific to the French nomenclature combined a number of luxury or decorative articles using precious wood, inlaid with bone, ivory, mother-of-pearl including chessboards, tobacco jars jewellery cases, toys and the like; the Board of Trade used the formula "Small fancy wares and toys."

industries were still those, which had made their fame under the Second Empire, only their share in total trade had been dwindling.

Does this stability necessarily imply that French traders failed to exploit opportunities to expand and diversify their supply? Three facts stand out which can help answer this question:

- against a background of accelerating technological change, the apparently immobile supremacy of the top 12 exports over a relatively long period of time (64 years), appears nothing short of extraordinary;
- even for her key exports, France faced tough competition from other countries after the middle of 1870's.
- even as it developed further down the line of an industrial economy, France remained an exporter of primary goods (or 'base products'), such as raw silk and agricultural product, up to the First World War.

Such impressive hints, however, of demotion and decline can be mitigated by taking into consideration the rise of intra-industry trade to which we devote the next paragraph.

The development of intra-industry trade

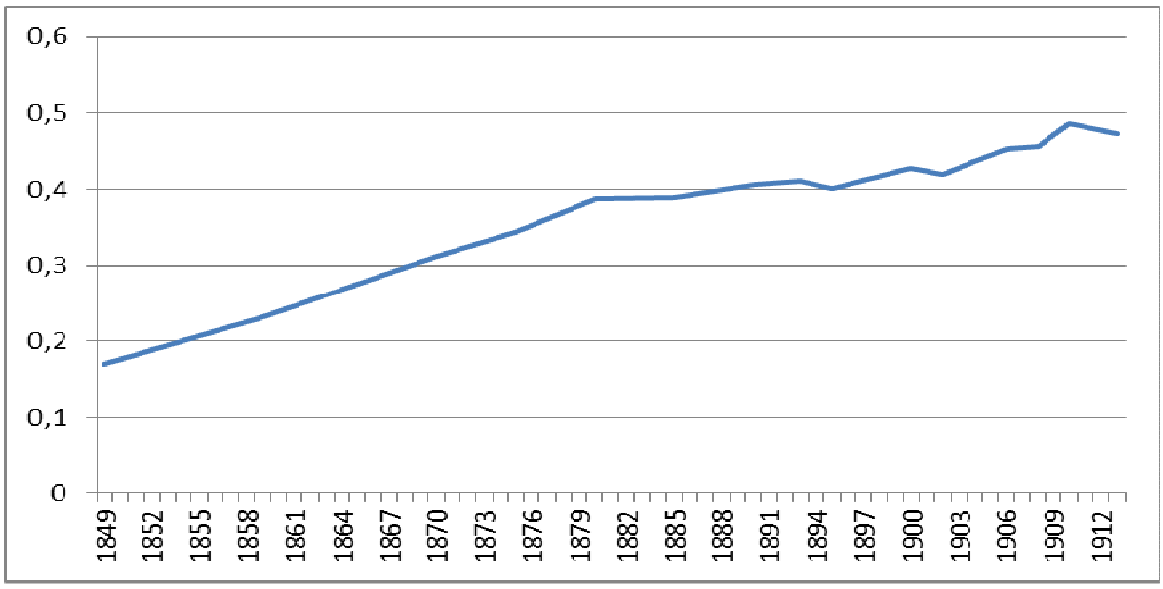
In order to gauge the importance of intra-industry in total French trade, 142 products were selected with an identical description in the export as in the import nomenclature. Their trade volume was tabulated for 16 benchmark years at different interval: 1849, 1859, 1870, 1875, 1880, 1885, 1890, 1893, 1895, 1900, 1902, 1904, 1906, 1908, 1910, and 1913.

For each product and each year, a Grubel and Lloyd Index (GL) has been devised according to the following formula:

$$GL_i = 1 - \frac{|X_i - M_i|}{X_i + M_i}$$ (for each i product).

Then a global intra-industry trade index can be obtained for each year by computing the mean average of all GL_i indices. Its trend is illustrated in Figure 4 below.

Figure 4. Trend in the GL index for French intra-industry trade, 1850-1913

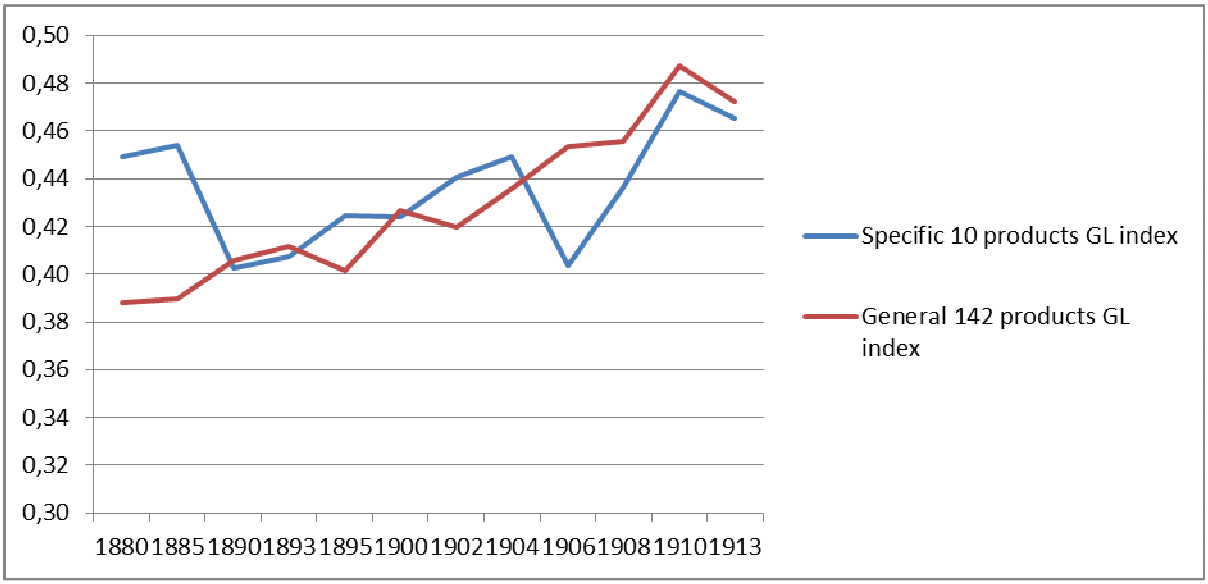


Source: as in Figure 1; authors' calculations.

The sharp upward movement of the Grubel-Lloyd index between 1850 and 1880 reveals the importance intra-industry trade assumed in the second half of the 19th century: its share in total trade rose from 16% in 1849 to 48% in 1913. By this time France had long left the 'Ricardian model' and embarked instead on an intra-industry specialization course. Given the lack of political instruments at the disposal of governments of the time (Dormois, 1999), it is unlikely this switch resulted from concerted policy choices; instead one can assume that France competed effectively on the markets for intermediate goods on the basis of their intrinsic quality.

In order to shed some light on the reality of this, a specific Grubel and Lloyd index was computed for 10 out of France's 12 key exports (they include: garments and underwear, silk, woollen and, cotton fabrics, fellmongery and leather articles, fancy goods and toys, raw wool and silk, spirits and wine)[6]. In Figure 5 charts the course of this specific index as well as of the general 142 article-index for the 1880 to 1913 period.

Figure 5. Comparison between the specific ten products GL index and the general GL index

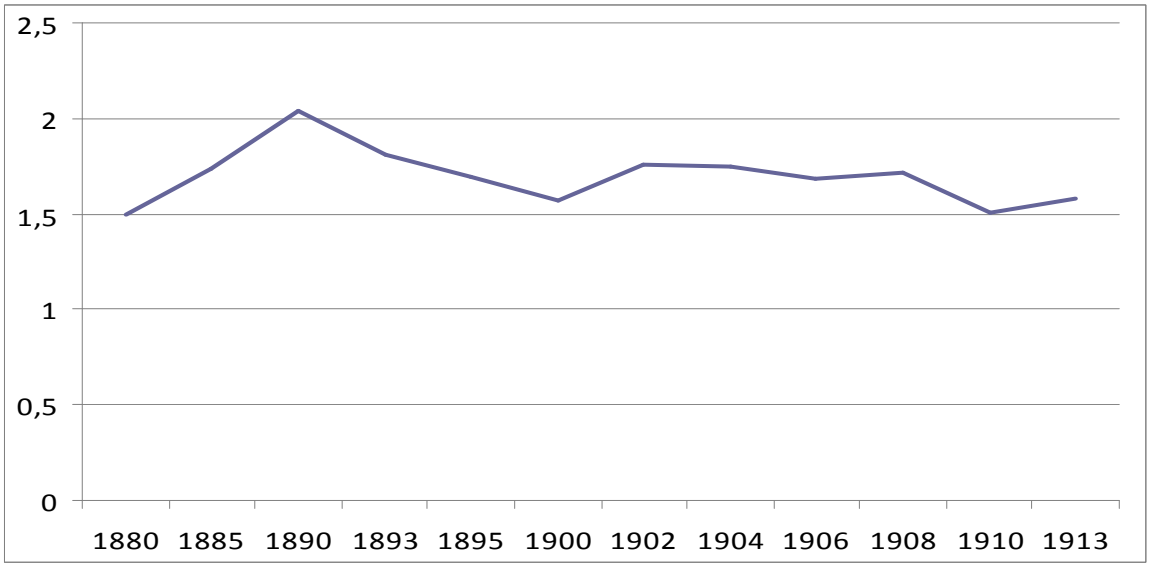


Source: as in Figure 1; authors' calculations.

It seems beyond doubt that French key exports faced especially tough competition towards the end of the 19th century as can be seen by comparing both intra-industry trade indices. That strongly confirms that the intra-industry trade constitutes one of the main contributing factors of French trade long before its discovery. French producers enjoyed a comparative advantage in specializing in intermediate or semi-finished goods and tried to exploit the opportunities presented them. To investigate this further the ratio of the unit value of export products over that for imports, or UV_X/UV_M, was computed for the range of products with identical description in the trade returns. The behavior of the curve representing the average is charted in Figure 6: not surprisingly exports exhibit a higher unit value than corresponding imports.

[6] See Table A2 in the Appendix 2.

Figure 6. Trends in the French UV_X/UV_M ratio.



Source : as in Figure 1; authors' calculations.

This is also the case for all individual key products with the exception of cotton and silk fabrics. Thus, France appears to trade analogous products of different quality, exporting luxury or semi-luxury goods, and importing coarser or common lower quality goods. In this respect, Falvey's (1981) theory appears particularly apt to account for French trade specialization at this time especially with respect to intra-industry trade. Falvey's approach remains faithful to the classical (perfect competition, absence of economies of scale…) and it seems that this explanation is plausible with the French economic conditions at this time.

Thus, contrary to first impressions, French export trade underwent diversification of a type which could not be at first easily detected. Under the appearance of stability, and as France's comparative advantage in her traditional lines of products (fine textiles and leatherwork, lace, trimmings and haberdashery) was gradually eroded, many market operators secured niches in intermediate, run-of-the-mill goods in a variety of lines in which they lacked any form of absolute comparative advantage: this fed the country's buoyant intra-industry trade. This atypical development finds its counterpart in the changing geographical distribution of the France's trade partners as countries with a strong intra-industry specialization element tend to trade with partners at a similar stage of economic development, thus slowing down the 'upward mobility' of production lines. In an increasingly competitive environment, this is the best prospective exporting industries could manage. To be sure, the two trends appear synchronized although the direction of the correlation is hard to establish.

Conclusion

Our analysis has confirmed and expanded on the apparent redirection taken by French exports towards geographically closer to the home market which occurred during the period during which globalization intensified. This reorientation took place after 1882, the statistically most significant turning point . It is perhaps no coincidence that this was the year of the resounding krach of the Union Générale bank and right after French trade policy took a protectionist bend. From the spectacular development of international trade which unfolded in the following decades, French trade seemingly remained aloof, failing to secure sizeable market shares in the faster emerging economies of the new world(s) such as the US, Argentina or Japan. While the French colonial empire was no match, in terms of export absorption potential, to the British dominions, inlays in foreign

markets was made difficult by the diffusion of protectionism overseas (Williamson, 2006). As contemporaries were already well aware and alarmed, the best counterfactual to French firms' predicament in the scramble for export markets, was offered at the time by the success of their German counterparts (Dedinger, 2012): Germany's penetration of Latin American import markets was about twice the size of France's and four times larger in British colonies (Bairoch, 1993). On the French side, limited market diversification was combined with a more fragmented structure (both being obviously correlated), as evidenced by a falling Herfindhal index of exports. Towards the end of the period, textile goods still loomed large among French exports (15% of total in value) but faced increasingly stiff competition from newcomers such as the Japanese industry, or established rivals, such as the German textile mills, whose productivity per worker overtook France's at the turn of the 20th Century (Dormois, 2006). It was especially hard for French firms to expand their production capacity in this context (and reap potential economies of scale).

As measures of the Grubel-Lloyd index reveal, this geographical redirection of French exports was a reflection of the structural reorientation of exporting firms towards intra-industry trade; it was inevitable that the type of goods demanded by the increasingly complex regional economies of Western Europe and the Mediterranean was to be made at the expense of satisfying the demand of far-off markets. This strategy also suited the production capabilities of French firms best (supplying standard technologically mature rather than sophisticated, highly differentiated goods).

This occurred as a massive fall in transaction costs boosted intercontinental trade to unprecedented heights, by the as is well documented by the study of its impact by Jacks (2009) and Jacks, Meissner and Novy (2011) has shown. Unfortunately but unsurprisingly, French export industries took little advantage of this boom which was triggered by the take-off of emerging economies; only did they register its repercussions on her supply of intermediate products and on the rise of the general price level.

It is hard to say whether France's exports underwent this redirection as a result of changing trade policy (1881 and 1892 tariffs, as well as assorted piecemeal protectionist measures). The general understanding is that French lawmakers adopted a policy stance which reflected deteriorating competitive conditions on the domestic markets: in the absence of promising prospects abroad, manufacturers intended instead to reserve the domestic market to themselves (Broder, 1993). The wave in the creation of *comptoirs* or (cartels) for a range of basic semi-finished goods in the 1890s is another testimony of this strategy: the excess supply could at times be dumped onto foreign markets at very competitive prices (Freedman, 1988). Specific effective protection indicators would probably confirm such a diagnosis (for cotton and other textile fabrics, iron castings and steel semi-products); indicators computed at the branch level certainly don't exclude that possibility (Dormois, 2006).

Today French trade exhibits the same frailties as 100 years ago, with a dwindling share in world exports, a steadily growing trade deficit, a down-market move in the value content of exports and a difficulty to break into emerging markets (such as China and India). Could it be that French reservations about the process of globalization (as documented by successive polls) has something to do with French firms' difficulty in competing successfully on world markets?

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Appendix 1:

Correspondence analysis perfectly applies to contingency tables, as it is the case here : raw data are introduced under the form of a *n*-by-*p* matrix *k* : $k_{i,j}$ stands for exportations (importations) in French francs to (from) country *i* during year *j*.

The so called factor analysis aims at reducing dimension *m* of a large set *E* of observations by minimizing the underlying loss of informations. By proceeding to a change of basis, this reduction can be performed by projecting subset *E* of vector space R^m onto a space of fewer dimensions R^k ($k<m$). Therefore, from a *m*-tuple of structures, this method results in a *k*-tuple of order structures that combine in twos for setting up the factorial experiments.

Statistically speaking, factorial axes correspond to eigenvectors associated to large eigenvalues of the covariance matrix. Each eigenvector indicates the percentage of informations on the factorial axis corresponding to eigenvalue λ.

Geometrically speaking, factorial axes are principal axes of inertia of the scatter plot. They are orthogonal to each other and interfere at barycenter of the scatter plot of R^p or R^n.

Economically speaking, factorial axes are linear combinations of the factors that one has to aggregate. Therefore, these are new variables, greatest common denominators of initial data, from which the latest are built, ordered and gathered together in order to confer to the considered system some consistency. Proximities of the observations (countries) amongst themselves, the variables (years) amongst themselves, and variables towards observations make easier the economic interpretation of the factorial axes.

To that purpose, it is useful to know the outputs of the used program : the interpreters.

• A table indicates the list of eigenvalues, along with the percentage of the total variance that is depicted on every axis, and the cumulative percentages.

• For each factor, a table indicates :
- Its weight.
- Its coordinate on the axis.
- Its contribution to inertia, described on the “absolute contribution axis” (denoted by CTR). It can be said that the variable (or observation) explains the inertia of the axis.

The contribution of the axis to the factor inertia, namely the “relative contribution axis” (denoted by COR). It can be said that this axis explains the inertia of the variable (or observation).

To sum up, absolute contributions permit to identify variables (individuals) which are responsible for factor’s construction and relative contributions permit to detect variables (individuals) which are exclusive characteristic of this factor.

In order to interpret an axis, we will identify column with the higher contribution. Thus, we will say that the axis “opposes” those with a negative sign and those with positive one. If the CTR of a point is close to 1, it means that it is almost on the concerned axis and it will not played a major role in the construction of other axis.

Appendix 2

Table 2: Ratio between unit value to exports (UV_X) and unit value to imports (UV_M)

	1880	1885	1890	1893	1895	1900	1902	1904	1906	1908	1910	1913
Garments and underwear	1.64	2.01	3.02	1.98	1.78	2.05	2.16	1.78	2.06	2.07	2.33	3.00
Silk fabrics	1.81			1.09	1.07	1.05	1.07	1.01	0.72	1.01	1.14	1.10
Cotton fabrics	0.92	1.00	0.95	0.90	0.65	0.55	0.48	0.48	0.51	0.53	0.64	0.64
Woollen fabrics		1.72	1.58	1.39	1.40	1.23	1.20	1.15	1.13	1.15	1.15	1.03
Leather or leather articles	1.06	2.89	2.75	2.06	2.01	1.40	1.43	1.47	1.53	1.34	1.32	1.41
Furniture, Fancy goods	1.88	1.28	1.39	1.52	1.37	1.28	1.42	1.28	1.35	1.55	1.39	1.29
Raw silk	1.05	1.11	1.03	1.05	0.89	1.02	0.97	1.02	0.52	0.67	0.89	0.76
Raw wool	1.44	1.49	1.45	1.60	1.61	1.40	1.96	1.76	1.65	1.50	1.57	1.57
Spirits	1.37	2.07	2.29	2.68	2.22	1.63	2.16	2.08	1.95	2.15	1.73	1.57
Wine	2.27	2.07	3.85	3.87	3.92	4.02	4.76	5.43	5.38	5.22	2.90	3.41
VUX/VUM average	1.49	1.74	2.03	1.81	1.69	1.56	1.76	1.75	1.68	1.72	1.51	1.58

Source: as mentioned in the introduction; authors' calculations

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