The decline of French trade power during the first globalization (1850-1913)

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Le déclin des positions commerciales de la France durant la première mondialisation (1850-1913)

Résumé

Cet article propose une analyse quantitative du commerce extérieur français entre 1850 et 1913. Il croise les dimensions géographique et sectorielle des relations commerciales de la France à partir de données annuelles extraites du Tableau générale du commerce de la France. Les importations en provenance de 41 pays et les exportations vers 63 destinations sont pris en compte. Les flux entrants et sortants de produits sont étudiés à différents niveaux de désagrégation. L'analyse de ses données offre une vue globale originale de l'insertion de la France dans la première mondialisation. Jusqu'à présent l'historiographie offrait des contributions très fragmentées sur le sujet.

L'article montre que la France a, dans un premier temps, intensifié ses échanges extérieurs malgré un repli relatif de ses exportations vers des marchés de proximité à la faveur de la signature des traités commerciaux des années 1860 et de la guerre civile américaine. Mais dans un second temps elle n'a pas profité des opportunités de la première mondialisation et de l'accélération du rythme de la croissance mondiale. A partir des années 1880 elle s'installe dans des déficits chroniques et voit ses parts de marchés à l'exportation baisser assez rapidement faute d'une bonne diversification marchés et d'une diversification produits suffisamment pertinente. Les exportateurs français se replient sur des marchés proches (Royaume-Uni, Belgique et colonies d'Afrique de Nord notamment). Ils sont trop peu présents sur des marchés émergents lointains (Etats-Unis, Japon, Argentine....) il est vrai très protégés mais en forte croissance alors que dans le même temps ces pays gagnent, eux, des parts de marché en France. La structure de spécialisation de la France apparait trop éclatée en fin de période, elle repose sur un secteur textile déclinant, soumis à une forte concurrence international, sur un ensemble hétérogène d'autres produits manufacturés trop nombreux pour pouvoir exploiter des économies d'échelle et être compétitif et sur une montée en puissance inquiétante des produits primaires.

Mots-clés : spécialisation, commerce intrabranche, mondialisation

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Abstract

This article offers an exhaustive quantitative analysis of the French foreign trade during the second part of the 19th century (1850-1913). It uses both geographical and sectoral dimension. Products are analyzed at a highly disaggregated level (corresponding to the SITC rev.3). We have studied imports from 41 countries and exports to 63 destinations.

The article shows that France has faced problems to benefit from the global economic growth induced by the first globalization from the end of the 1870's because of a weakness in geographical and sectoral diversification. Indeed, France withdraws on close markets and is not able to take advantage of emerging countries' economic development.

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

JEL: N7

This article investigates a quantitative analysis of French foreign trade between 1850 and 1913. Using annual data from the "General Board" of French trade, it uses both geographical and sectoral aspects of trade relationship between France and its partners.

We take into account imports from 41 countries and exports to 63 destinations. We used different level of disaggregation to analyze product's inflows and outflows. Data analysis gives an original view of French integration during the first globalization while, up to now, historiography only gave fragmented contribution on the subject.

The article shows that France has initially intensified its foreign exchange despite a relative withdrawal of its exports toward local market (proximity market) thanks to the 1860's trade agreement and the American civil war. Then, it doesn't take the opportunity offered by the first globalization through the sharp increase in world growth. From the 1880's, France has chronic deficit and its market shares deriving from exports quickly decline because of inefficient market diversification and an irrelevant products diversification. French exporters withdraw on the proximity market (European markets like the United Kingdom, Belgium and North African colonies). On the contrary, they fail to establish themselves on distant emerging markets (the United States, Japan, Argentina…) which are highly protected but also enjoy a strong growth. At the same time, these emerging countries obtain new market shares in France. At the end of the period, specialization structure of French economy appears to be too fragmented. It is based on a declining textile industry which faces strong competition, on other heterogeneous groups of products whose considerable number avoid any possibility of economies of scale and prevent the country from being competitive, and on the worrying rise of primary products.

Actual French integration in the globalization presents many similarities with the 19th century's. Since the 2000's, French market share in world exports goes down whereas its trade deficit increases. France is not involved enough in emerging areas (China, India…) and suffers from a move down-market of its exports.

The article is structured as follows. First section presents data, statistical method and review of literature. Section 2 provides an analysis of the geographical and sectoral distribution in the exports. Section 3 analyses in the same way imports. Section 4 studies bilateral flows through the coverage ratio of imports by exports analysis and the intra-industry trade measure. Last section discusses the main results and gives some explanation and line of research.

I) Survey, data and methodology.

Among the economic literature we found out a lot of contributions about quantitative analysis of France's foreign trade during the first globalization; however they are still fragmented. Some of them particularly focus on short periods: Tyszynski (1951) studies the structure of manufactured products' exports after 1899; Verley (1988) analyses the links between exports and growth during the 1860's applying an intersectoral method; Broder (1993) uses a new approach in terms of effective protection to call into question the effects of the Méline's tariff on specialization; Bairoch (1993) studies the geographical and sectoral structures of exports in 1890 and 1913. Even when considering a longer period, works either focus on few chronological points (Bairoch, 1977; Levy-

Leboyer and Bourguignon, 1985; Guillemet, 2002) or on very specific thematic like intra-industry trade (Becuwe, 1986), the international openness measure (Asselain et Blancheton, 2005, 2008), connections between tariff policy, productivity and exports (Dormois, 2006), relationships with colonies (Marseille, 2005). Authors such as O'Rourke (2000), Irwin (2002), Clemens and Williamson (2004), Jacks (2006), O'Rourke and Lehmann (2008), Tena-Junguito (2009), Schularick and Solomos (2011) also integrated the French case to the extensive literature through works on the tariff-growth paradox (1870-1913). Nevertheless, bringing these puzzle's pieces together does not give a clear view of French participation in the international trade during the first globalization.

Bairoch's works (1993) as well as Levy-Leboyer and Bourguignon's (1985) remind that France is a major trading power during the first globalization. French share within world exports is about 9% in 1847, 15.9% in 1865, 11.6% in 1870, 9.7% in 1890, 8.6% in 1900 and 7.2% in 1913. Until 1871, it is the second bigger exporting country in the world, but from 1875 Germany ranks first and then the United States overtakes it. Historiography moderates French decline for many reasons. First, it is hard for a country early involved in the industrial revolution to maintain its market shares facing many new competitors'. Then, according to Bairoch (1993), French exports per capita are stable on the 1890-1913 period whereas Switzerland and the United Kingdom's exports per capita dropped.

The idea of exports dynamism is developed in Toutain's pioneer work (1977). Using openness coefficients (Exports/physical product, Exports/GDP, industrial exports/ industrial GDP), he shows that French exporting capacity remains strong under the 1890-1900's protectionist system.

Levy-Leboyer and Bourguignon (1985) detect a breaking point during the period 1876-1879. Indeed, from the mid-19th century, exports growth in volume had been 2.5 times faster than production growth; after then exports growth increases in the same proportion than production growth. As figure 1 show, French economy faces chronic deficit from the end of the 1870's, and particularly in the 1880's.

Figure 1: Exports and Imports' shares in value as a percentage of GDP.
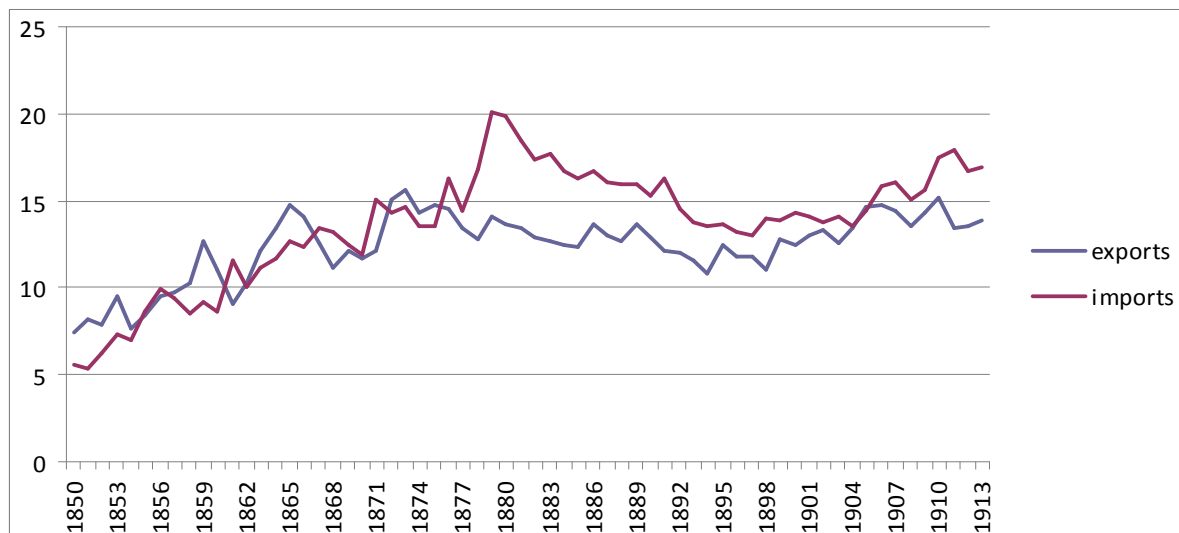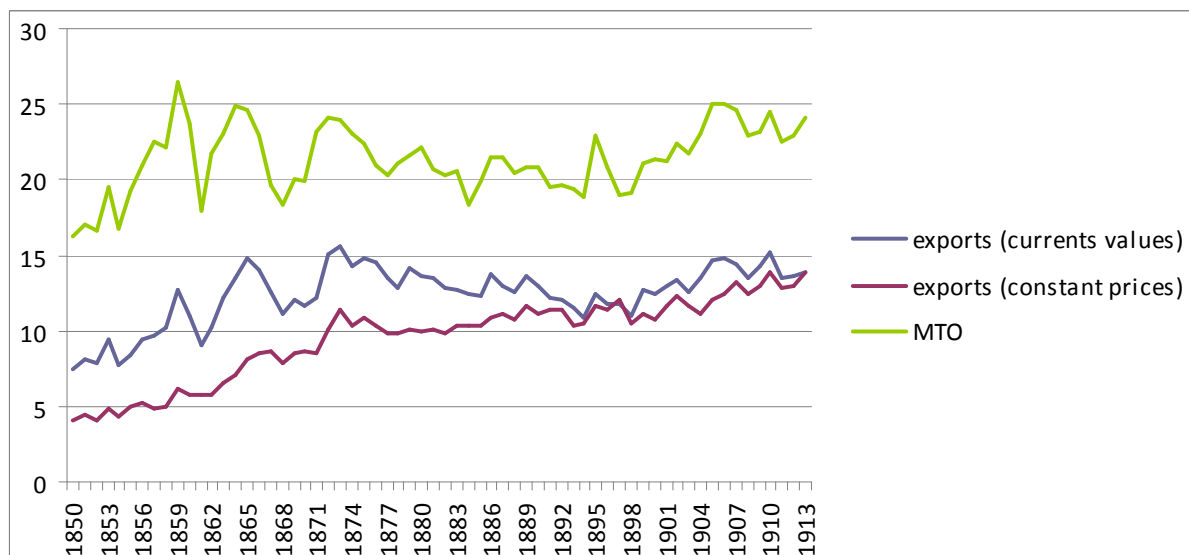

Source: Asselain and Blancheton (2005)

Openness measurement proposed by Asselain and Blancheton (2005), preventing from dynamic bias associated with traditional openness ratio, confirms that French exports have been lacking dynamism from the end of the 1870's: exports/GDP ratio at constant prices lightly increases and industrial openness (that's to say the relationship between value added of industrial exports and total value added of industrial sector) remains static from the 1870's to World War I. The correlation

between MTO coefficient and exports/GDP ratio expressed in current prices shows the industrial sector plays a key role in French performance.

Yet, explanations are still confused to understand France's trade troubles. According to Levy-Leboyer and Bourguignon: "As we miss better explanations, we must implicate (…), a mistake in markets trends' appreciation (…). Manufacturers did not realize in time the strength and quality of their products was not a selling point for exporting anymore, due to the development of cities' markets."

Bairoch's study of geographical structure and products composition of French exports for the years 1890 and 1913 underlines the weakness of French products' penetration in Latin American and Asian markets as well as a strong development of trade flows with the colonies thus confirming Marseille's work (2005). These studies suggest France can hardly achieve market diversification for exporting, but evidences are still missing.

Figure 2: share of the exports in current values and constant prices as a percentage of GDP and MTO coefficient.

Source: Asselain and Blancheton (2005)

Studies generally focus on the structure instead of the geographical origin of imports. Toutain calculates openness ratio series (Importations/Physical product, Agricultural importations/Agricultural product, Industrial importations/Industrial product), he analyses the evolution of imported products' repartition at some key dates (1860, 1890 and 1913) and comes to clear conclusions about French economy transformation.

Jean Weiller (1969) proposes imports data according to the type of products (food, industrial raw material and artifacts) and to the products' origin using 14 countries and 23 temporal points between 1873 and 1913. He defends the thesis of a moderate protectionism, which tends to be consistent with structural evolution related to France's development. According to him, imports are "the reflection of radical structural changes of the world economy" (1969, p.1769). He underlines that industrial progresses result in increasing raw material imports as well as increasing manufactured products purchase mainly coming from European countries "which means few significant changes in the geographical repartition of French imports (Europe/rest of the world) occurred before World War I"(1969, p.1770).

Levy-Leboyer and Bourguignon have looked into imports structure of trade flows and their geographical origin (USA, United Kingdom, Europe, Algeria and Mediterranean) for 3 dates (1876, 1896 and 1913). Guillaumet studies French relative openness to its European partners taking into account imports at some key dates (1860, 1881, 1903, and 1912). Results show a relative increase in trade with the European partners, despite a fall from 1885 and then stagnation at the beginning of the 20th century. Relying on chronological distant points and considering this type of flows may face strong annual variation, it is very hard to analyze the relationship between French imports (its dynamics and back-off) and trade policies changes.

This article proposes a global analysis of French foreign trade between 1850 and 1913 using imports and exports annual data found in the "General Board of French foreign trade" available for consultation at the National customs Museum. Annual inflows from 41 countries (or areas) and annual outflows to 63 countries (or areas) are analyzed.

The article tries to cross geographical dimensions with sectoral dimensions of French foreign trade. Concerning products, we take into account more than 60 headings for the importations and about 75 for the exports. Every product is classified according 3 groups (agricultural products, primary products, industrial products), but a more detailed analysis of the flows remains possible in order to enlighten the specification issue (using the Herfindhal index, the share of the four main products in total exports…). Bilateral flows are also taken into account to measure the coverage ratio and the intensity of intra-industry trade (Grubel and Lloyd index).

First, we will start analyzing exports data and then we will turn to imports data. Each times geographical structure of the exchange is considered and inflows and outflows are statistically processed**.** To study geographical structure of the exchanges, a gravity model might have been appropriate but we met a lack concerning annual data for the ten countries of our sample (in particular GDP data). As a consequence, we chose the most appropriate tools for our national data, in order to fulfill at least two objectives:

First, we had to treat rigorously the large number of data (more than 6000). That is why we decided to opt for an observer status thus showing objectivity toward data.

Secondly, these analysis tools may help providing a clear synthesis of the information with a minimum of loss, while ensuring an opportunity for hypothesis.

For both reasons, we used a multidimensional analysis method, and more particularly a correspondence analysis (Benzecri, 1992; Le Roux and Rouanet, 2011). Applying these methods, we are able to detect structuring factors of inflows and outflows for the concerned period. They actually are factorial axes that underline independent variables of the system's organization, permit to highlight each country's contribution to the total variance of the phenomenon and to detect temporal breaks**.**

Following a study of the geographical structure, products structure is first analyzed using aggregated data (3 groups of products) and then using more disaggregated data, in order to help throwing light on issues such as specialization and intra-industry trade.

Results are compared with French historiography's knowledge and with international trade analysis concerning the first globalization, especially with recent researches by Accominotti and Flandreau (2005), Williamson (2006), Dormois (2006), Jacks, Meissner et Novy (2010, 2011), Lampe (2008, 2009, 2011).

II) Geographical and sectoral distribution of French exports: a withdrawal to proximity markets.

2.1 Overall view of the evolution of French exports' market diversification.

Exports flows are aggregated in 12 areas: the United Kingdom, the United States and Germany because of their status of "major nations"; Belgium, Spain, Italy and Switzerland, whose proximity with French market can explain intensive or antagonistic trade relationship; Colonies, closely related to the Empire's themes; Other European countries; Central and South American countries; Other countries and then a group of 3 countries comprising Russia, Egypt and Turkey.

Three graphs above show the share of the different countries and groups of countries in the total of French exports.

They first suggest that France's exports at the end of the period are mainly for the United Kingdom, Belgium and its colonies.

At the beginning of the period, the United Kingdom represents 25% of French exports, this share increasing after the 1860's treaty to reach 35.9% in 1866. England's share remains high until the beginning of the 20th century, still reaching 30% in 1901, and falls under 20% on the eve of World War I.

Belgium powerful rise starts in the 1860's and speeds up at the beginning of the 1870's (14.26% in 1871), going on steadily until 1913 (more than 16%).

If colonies were a large market for France at the beginning of the period, this is no longer true from the 1860's (market share falls from 11.52% in 1861 to 6.5% in 1864). However, colonies become attractive again in the 1890's. At the end of the period, these markets represent 13.5% of French exports.

Then, graphs suggest a drop in the relative share of distant markets, some being considered as emerging market like the United States, Argentina or Japan.

In 1850 the United States represents 18.2% of French exports, still decreasing, especially from the American Civil War. Finally, France will never reach this market as well as it did at the beginning of the period: 10.9% in 1870, 6% in 1913 while American GDP grows at 4% per year and represents about 2.5 times the United Kingdom's (Maddison, 2001).

Moreover, the relative share of Central and South American countries (Argentina, Chile, Peru…) decreases significantly in the long run: 12.7% in 1857, 4.25% in 1900 (although after 1910 it increases to 6%). The process is identical for a group of three "old historic partners" (Turkey, Russia, and Egypt): their respective share decreases all the period long.

Finally, one last point appears to be outstanding: permanent weakness of the "Others countries" group's share (always below 2%), either composed of areas under British influence (British dominions in America, India and Africa) or gathering big countries starting to make a success in the world trade (Australia, Japan, China) and incidentally have a growing share in French imports (see next section).

Figure 3: Shares of England, the United States and Germany in the sum of exports of France (%).
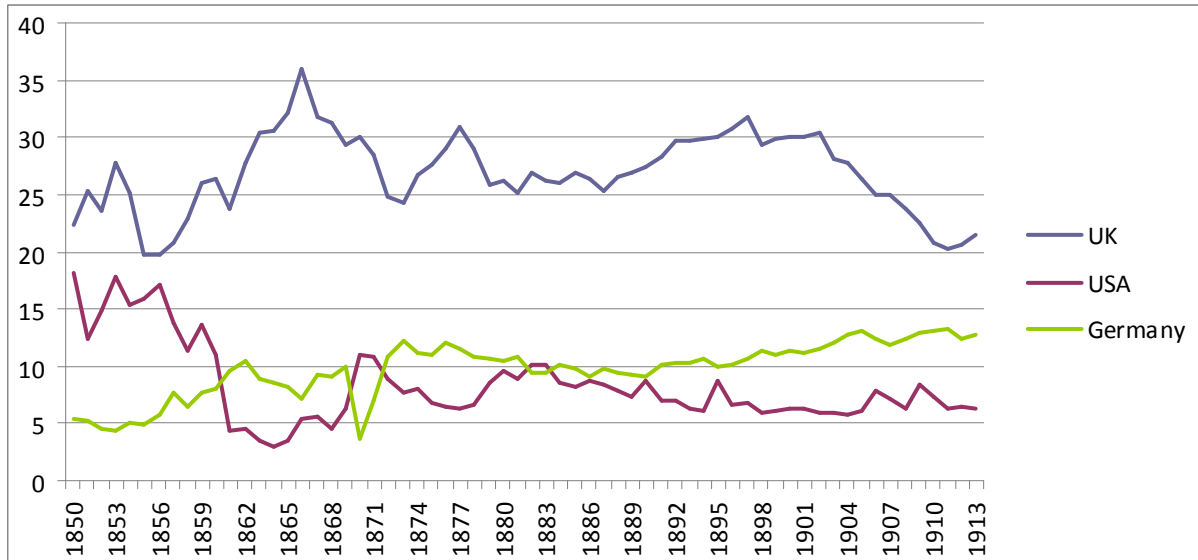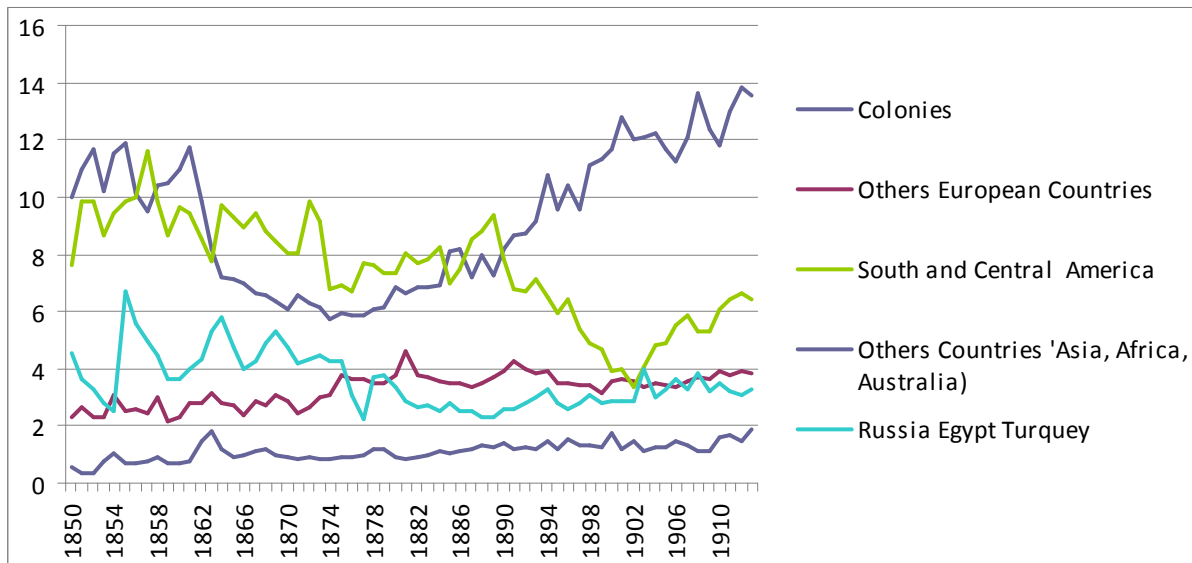

Source: General Table of France foreign trade, own calculation.

Figure 4: Shares of Italy, Belgium, Spain and Switzerland in the sum of France exports (%)
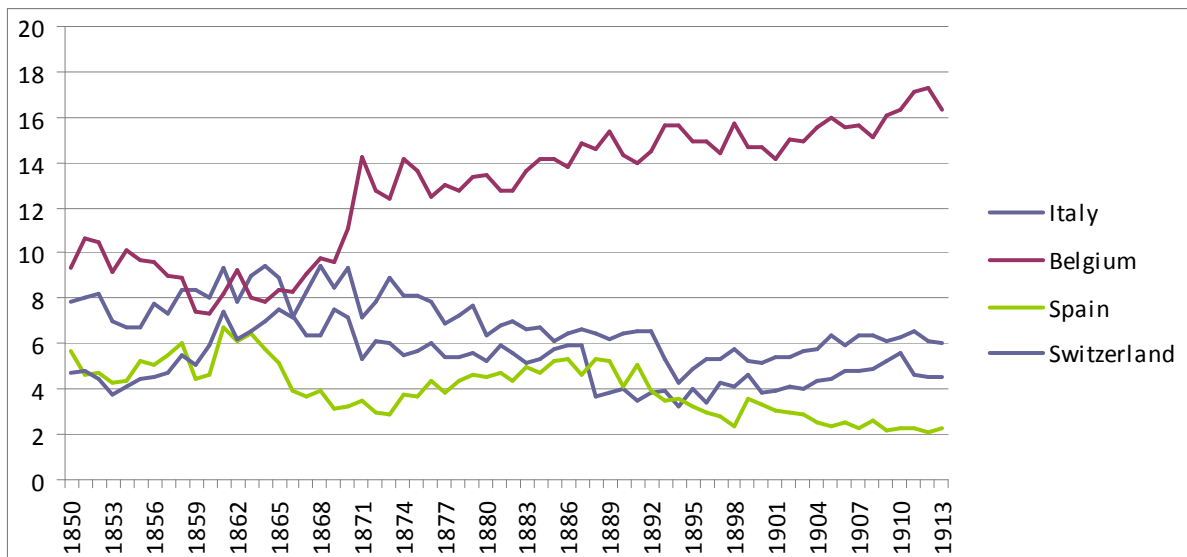
Source: General Table of France foreign trade, own calculation.

Figure 5: **Shares of Colonies, Other European Countries, Turkey, Egypt and Greece, Central and Latina America and Other countries in the sum of exports of France (%)**

Source: General Table of France foreign trade, own calculation.

2.2 Correspondence analysis method application

We apply factorial analysis to the exports series in order to identify the structuring factors and temporal breaking point.

First axis: Withdrawal to proximity

First factor represents 45.76% of the phenomenon's total variance. Considering the size of the contingency table (63 countries-individual and 64 year-variable, that is 4032 data), we must see this factor as a determinant and structuring factor of the French exports during the 1850-1913 period.

The main axis is stable, for individual as well as for opposed variables.

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

From the negative side, we find other countries that contribute to 42.61% of the factor's formation. These countries must be connected to the beginning of the period because 1850-1866's contribute to 42.25% of its construction.

The entire period is divided into two subperiods. Every year of the 1850-1891 subperiod has a negative sign whereas years from 1892 to 1913 have a positive sign. We must notice that the transition year corresponds to the Meline's tariffs setting up. Nevertheless, in accordance with the homoscedasticity criteria (year-variable must be considered as contributive if its CTR is at least equal to 1.56 (100/64)), we must focus on the 1850-1866 period on one hand and on the 1901-1913 period on the other hand.

Table above presents countries that participate to the first factor's formation and their contribution in percentage.

Table 1: First factorial axis: countries.

Countries with a positive sign	Contribution (%)	Countries with a negative sign	Contribution (%)
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
Morroco	4,03	The United States	4,55
Algeria	3,54	Reunion Island	3,78
Madagascar	3,33	Brazil	3,02
Colombia	2,70	Martinique	2,54
Congo, Senegal	2,18	Turkey	2,18
		Chile	1,86
		Guadeloupe	1,72
Total	44,45	Total	42,61

Countries with a positive sign present the particularity to absorb a growing share of French exports. Their relative shares from the beginning to the end of the observation period have more than doubled, from 20.5% in 1850 to 41.57% in 1913. On the contrary, relative share of the countries with a negative sign drop continuously all the period long, from 41.99% in 1850 to 16.82% in 1913. Countries with a positive sign (except Colombia) are geographically close to France and well-industrialized (Belgium, Germany), or close colonies (Algeria, Morocco, Tunisia). Countries with a negative sign are geographically far-distant from France (Peru, the United States, Brazil, Chile), or close but less-industrialized (Italy, Spain), or distant colonies (Reunion, Martinique). As a result, colonies are not a homogenous group according to their different contribution to the French exports absorption.

These opposite evolutions are illustrated in the following figure.

Figure 6: Market shares evolution for the two types of countries
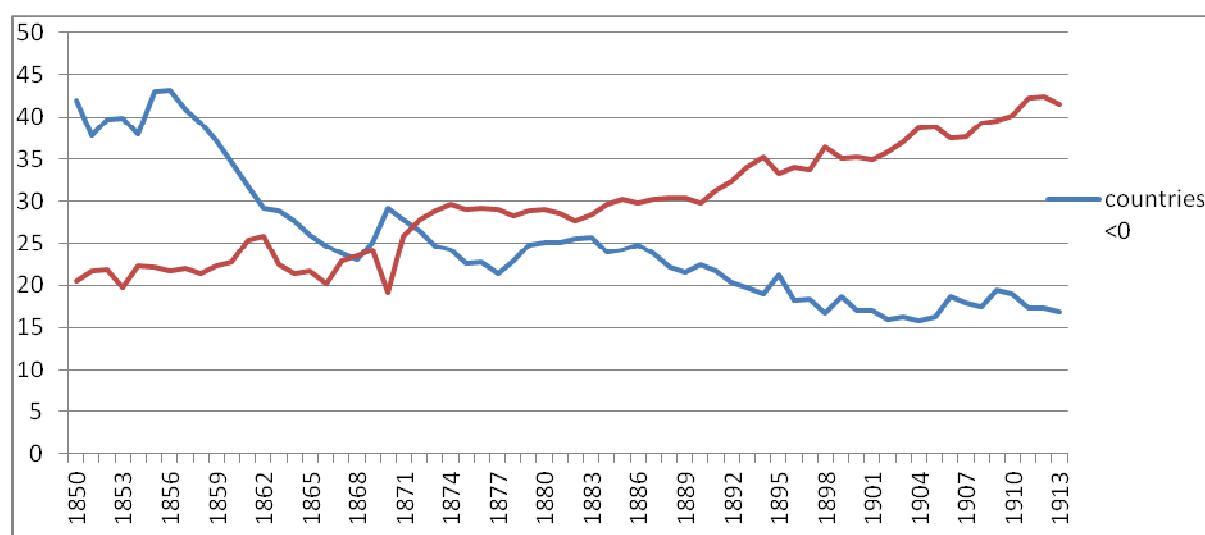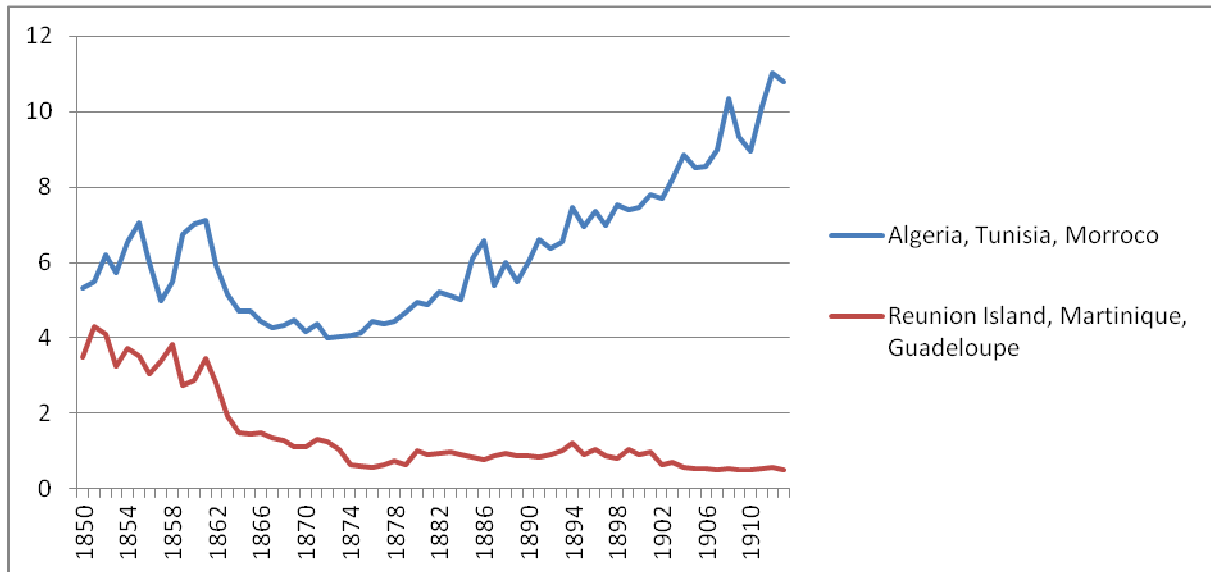

Source: General Table of France foreign trade, own calculation.

Opposition between these two groups of countries is confirmed by the correlation coefficient between their own market shares which is -0.83. This value is higher (-0.88) if we just consider the significant periods: 1850-1866 and 1901-1913.

French colonies are divided into two groups which are opposed: Algeria, Tunisia and Morocco on one side, Reunion, Martinique and Guadeloupe on the other side. Similarly as the importation (see section 2), the share of the closer countries is growing in the total French exports whereas the share of the last three countries mentioned is decreasing as we can see in the next graph. Same thing can be said about border countries because Italy and Spain are opposed to Belgium. First of all see their share decreasing whereas Belgium's share is growing. We must underline that a tariff war opposed France with Italy from 1888 and France with Spain from 1891.

Figure 7: Relative shares evolution of Maghreb countries and Caribbean countries in the sum of exports of France (%).

Source: General Table of France foreign trade, own calculation.

In the whole period, correlation coefficient is -0.21 and even -0.68 for the two significant subperiods. Cumulated share of Algeria, Tunisia and Morocco is twice higher (5.32% in 1850 to 10.78% in 1913). Cumulated share of Reunion Island, Martinique and Guadeloupe falls from 3.49% in 1850 to 0.52% in 1913. That's why it is important to distinguish French colonies as a heterogeneous group with two different evolutions.

Second factor: Impact of the American Civil War and the 1860's treaty.

Second factorial axis represents only 14.47% of the phenomenon total variance. Its contribution is three times less than the first factor's one. Countries which are responsible for its formation and their respective relative share to the factor's construction are represented in the table 2.

Table 2: **Second factorial axis: the countries.**

Countries with a positive sign	Contribution (%)	Countries with a negative sign	Contribution (%)
The United States	27,99	England	13,80
Algeria	7,10	Switzerland	5,31
Reunion Island	5,06	English dominions in the Mediterranean	2,33
Guadeloupe	3,78	English dominions in Africa	1,86
Martinique	2,56		
Tunisia	2,35		
Spanish dominions in America	2,22		
Congo, Senegal	2,19		
Morocco	1,68		
Russia	1,67		
Total	56,60	Total	23,30

Concerning variables, contributory subperiods are represented in the table 3.

Table 3: **Second factorial axis: The years.**

Years with a positive sign	Contribution (%)	Years with a negative sign	Contribution (%)
1850-1860	52,96	1864-1869	16,10
1909-1913	9,89	1875-1878	9,22
Total	62,85	Total	25,32

We must correlate countries with subperiod: Countries with a positive sign (the United States…) must be associated with both subperiod 1850-1860 and 1909-1913. Contrary to the first factor, second axis is not stable. Relative contributions are strongly influenced by the positive side of the axis. We must underline the relative importance of the United States as well as the importance of the first decade of the period (1850-1860). To interpret this factor, we must emphasize that all the colonies are in the same side of the axis and are correlated with the United States. Their relative weight is not insignificant: it contributes to 24.72% of the factor's formation.

We can also notice England's appearance even if its contribution is less than the half of the United States' one, it stays the principal contributor on the negative side.

Figure below presents cumulated market shares' evolution of both opposed group of countries.

Figure 8: **Market shares' evolution of both opposed group of countries**
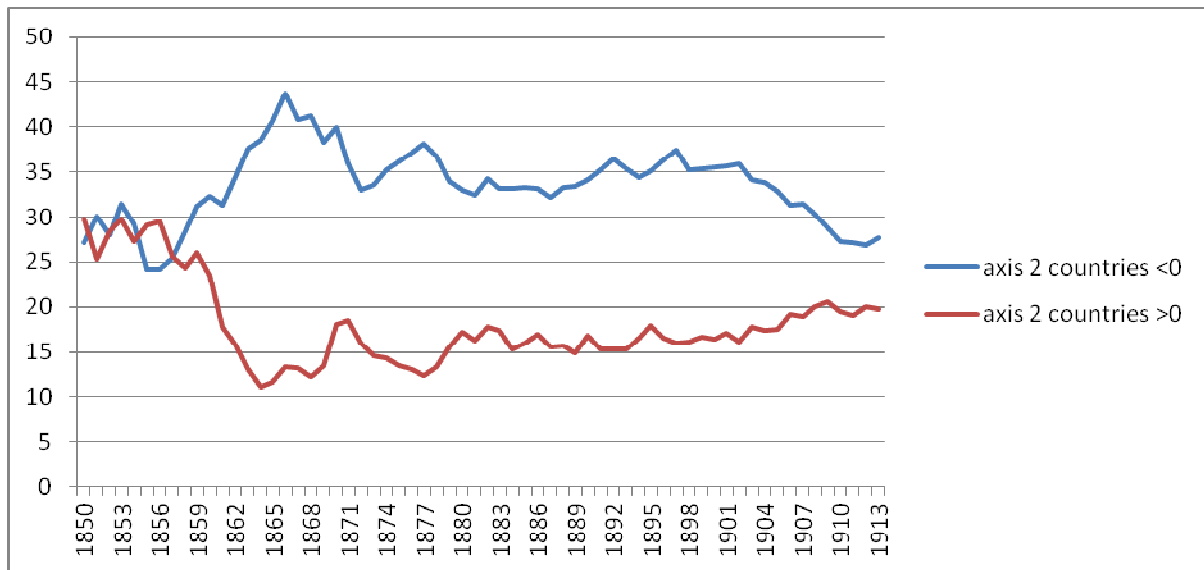
Source: General Table of France foreign trade, own calculation

Over the whole period, correlation coefficient between the evolutions of market shares for both group is -0.79, and -0.83 if we only take into account the four significant subperiods.

Market shares' evolution seems to be very opposed and antinomic during the first decade: if relative share of one group grows, the other one decreases. Dropping out appears significantly from 1860 to 1866, where the gap between market shares of both group is maximal: 43.73% for the "England" group and 13.32% for the "United States" group. American civil war explains the collapse in exports to the United States, "traffic reorientation" to England and its satellite is also much easier thanks to the Cobden-Chevalier treaty that come into force.

Then, evolutions are opposed and fluctuating from 1866 to 1880. They stay on the whole similar until 1902, date from which "England" group's share falls (from 35.97% to 16.15% in 1912, ie a decrease of 19.82 points). At the same time, the "United States" group's share increases but less significantly: 16.15% in 1902, 19.97% in 1912, ie an increase of 3.82 points.

To sum up, after the American civil war a part of the trade flow was reoriented to England, but at the end of the period the important fall in English market shares was not offset by the growth of outlets to the United States. We can notice also that the linearity of the American market shares curve proves that the "American" group was not recovered. Even, between both extreme dates of the period, this market share fall by 10 points (29.79% in 1850, 19.73% in 1913). At the same time, "England" group's market share is constant: 27.16% in 1850 and 27.71% in 1913.

The United States' relative share is stagnant between 1883 and 1913. It means that national specialization do not find specific outlet in America which are far from reaching (in relative value) the importance they had at the beginning of the period. As we previously said, we can notice that significant England's drop (about 10 points) between 1902 and 1912 is not offset by the growth of the exports to the United States.

Concerning colonies, interpretation is complex. First factor divided them into two very distinct subgroups. Countries of the Caribbean area have a decreasing market share, contrary to North African countries that enjoy increasing market share. When gathering these countries into a same group, it leads to a market share's curve almost parallel to abscissa. In other words, fall in the market

share of the first countries is offset by the rise of the second ones. On the whole, colonies share is rising from 9.17% in 1850 to 12.10% in 1913.

Entering into details, colonies are intensifying their opposition to England rather than their proximity with the United States. Table 4 presents the correlation coefficient.

Table 4: Correlation coefficient between market shares.

	Whole period	**Significant periods**
The United States / Colonies	0,19	0,49
England / Colonies	-0,50	-0,81

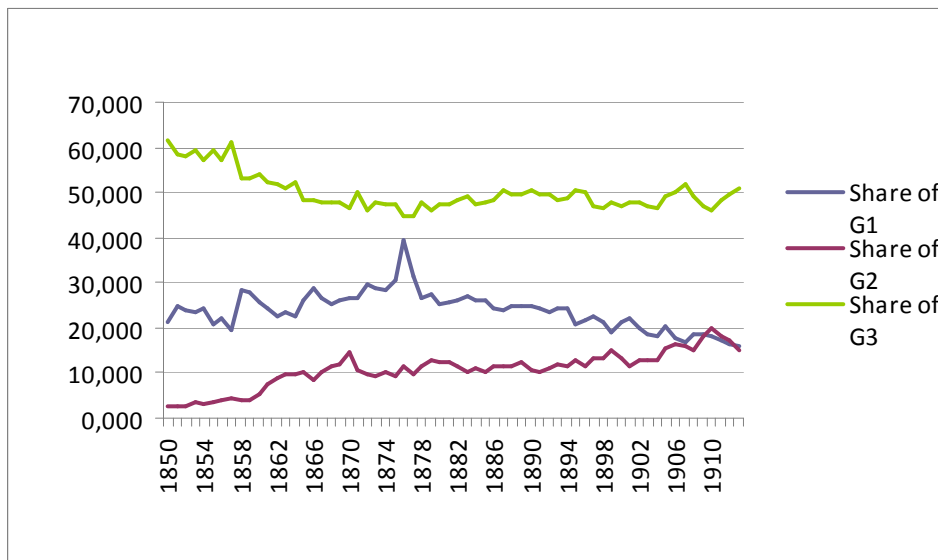Source: General Table of France foreign trade, own calculation.

Colonies are mainly opposed to England during both 1864-169 and 1909-1913 subperiods: fall of the colonies' market share and rise for the England's one during the first subperiod and vice versa for the end of the second subperiod. As for the opposition between the United States and England, it is highly correlated with the first subperiod (1850-1860).

2.3 French exports products' structure:

We classify exported products into 3 main categories: agricultural products (G1), primary products (G2) and manufactured products (G3) and calculate their respective share in total exports.

Graph below highlights that France was an "advanced" countries at the beginning of the period. Manufactured products account for 60% of total exports in the 1850's, this share decreasing to 50% in the 1860's and stay stable at this level. Agricultural products' share grows during the 1850-1860 period, reaching a peak at 40% in the 1870's. It goes regularly down until the war. Primary products' share is about 2% in the 1850's and regularly grows to 20% at the end of the period.

Figure 9: Relative shares evolution of the three groups of products in the sum of exports of France.

Source: General Table of France foreign trade, own calculation.

At the outset French manufactured exports are concentrated in the textile sector. As the next figure shows, French specialization into textile is strong as it accounts for 40% of total French exports during the 1850 decade. Then, this share regularly falls to about 15% at the end of the period. We must notice the dramatic drop in 1871, associated with the loss of Alsace and Lorraine's textile industry potential.

Figure 10: **Relative shares evolution of textile products and non-textile products in the sum of exports of France.**
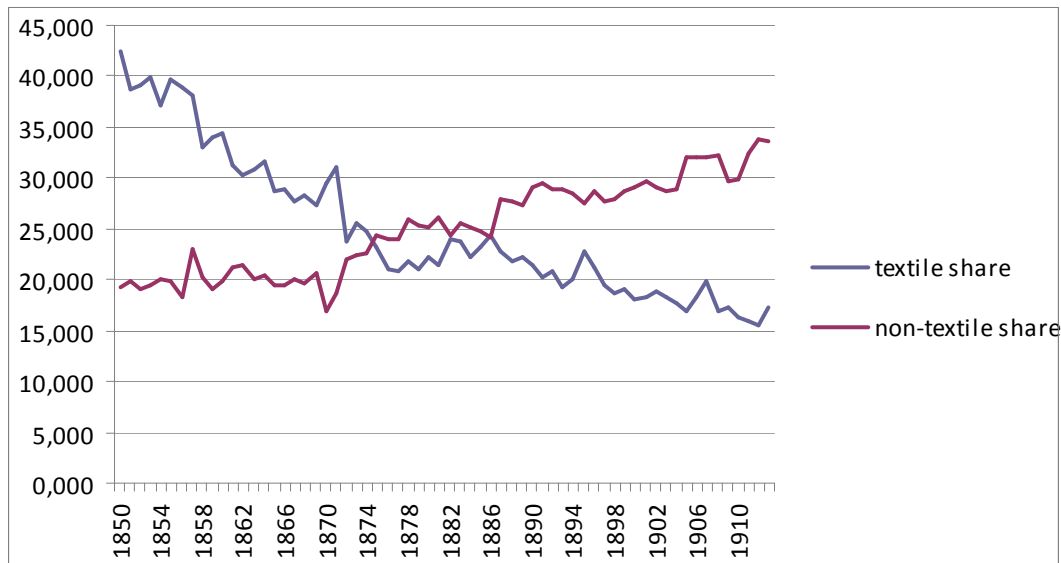
Source: General Table of France foreign trade, own calculation.

Among manufactured goods, we can notice the powerful rise of 8 headings that reveals new specialization of the French economy ("Fancy articles, knick-knacks, brush making industry…and Industrial articles from Paris", "automobile", "dressed skin", "machine and mechanical", "chemical products", "cast iron, iron, steel, materials", " rubber's piece of work", "dressed peltry or peltry's piece of work"). Among them, share of the "machine and mechanical" heading rises from 0.2% during the 1865-1870 period to 2% in 1910, "chemical products" one from 1% in 1870 to 3% in 1910. Automobile's exports which are not counted in the exports flows in 1900 represent 3.5% in 1910. That's why France appears to be the world leader in this industry at the beginning of the 20th century. According to Tyszynski (1951) automobile's French exports represent in 1913, 29.5% of the total word exports.

At the end of the period, French specializations seem to be fragmented between textile industries subject to strong competition from emerging countries (in particular Japan) and rising productions, too numerous to exploit economies of scale.

To explain the fall in agricultural products' share from the middle of the 1870's, we should study two key sectors: wine and cereals. Wine exports quickly decrease: it represented 13.5% of French exports in 1854, but only 3% before the World War I. A wine producing crisis, due to Phylloxera, appears in 1863. It becomes disastrous from 1875 as it was an underproduction crisis. Cereals' share which is fluctuant with the harvest between 1850 and 1880, drops in the 1880's before to tend to zero after the Meline's tariffs establishment. According to Asselain and Blancheton (2000), this new tariffs was purely defensive for this sector and had counter-productive effects on the cereals' yields. Lhomme (1970) explains French agriculture difficulties by a technical backwardness and by the drop in transport costs which ease the imports of agricultural products from the New World in Europe.

According to Lhomme, a second explanation is the improvement of the mean of transportation. Transportation (especially by sea) becomes both faster and more regular but also sheaper. Wheat from the United States and Canada, wool from Australia can more easily come to compet with French similar products. Other improvements, as the "cold technique", allow the transportation of meal from Argentina. That's why distance which was a natural protection before

the first globalization is less and less determinant. To sum up, these two first causes explain the production of costless merchandises from far countries which come to compete with French products. From the two first explanations, a third cause of the crisis appears: increase in foreign imports.

Figure 11: Relative shares of cereals and wine in the sum of exports of France (%).
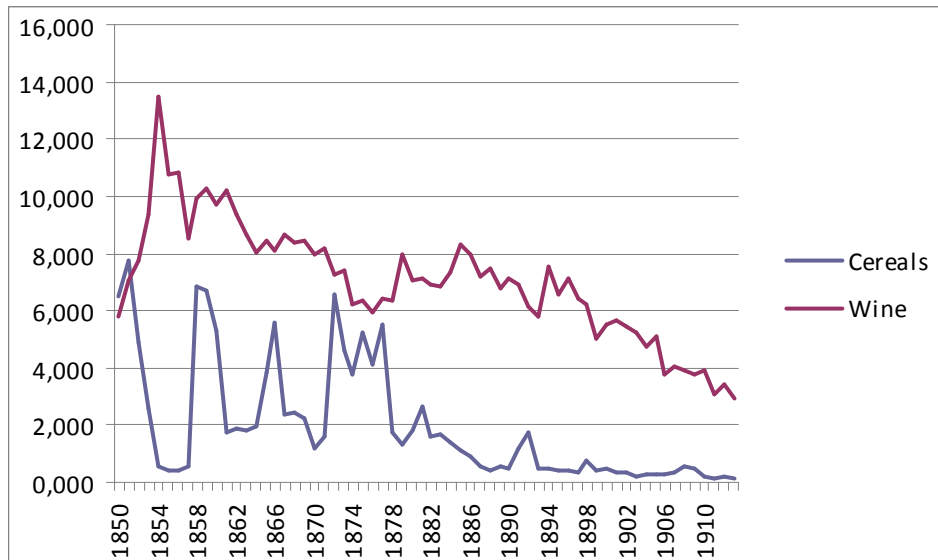
Source: General Table of France foreign trade, own calculation

Primary products share (mainly wool and silk) experiences a significant growth. It is almost negligible at the beginning of the period, increases firstly in the 1860's to reach 10% and secondly at the beginning of the 20th century to reach its peak at about 20%. This "specialization" does not match the international labor division standards and is the sign of a move down-market of the French exports.

In order to highlight the specialization's dynamic, it could be interesting to empirically study the French exports' concentration per product. We calculate two indexes: the Herfindhal index and the C4[1]. Following figures illustrate their evolution during the whole period.

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[1] Herfindal index corresponds to the following formula: $H = \sum_i X_i^2$ with X_i is the share of product I exports in the total exports. Maximal value is 100. C4 represents the share of the four top products in the total exports in percent.

Figure 12: Herfindhal index of French exports' evolution
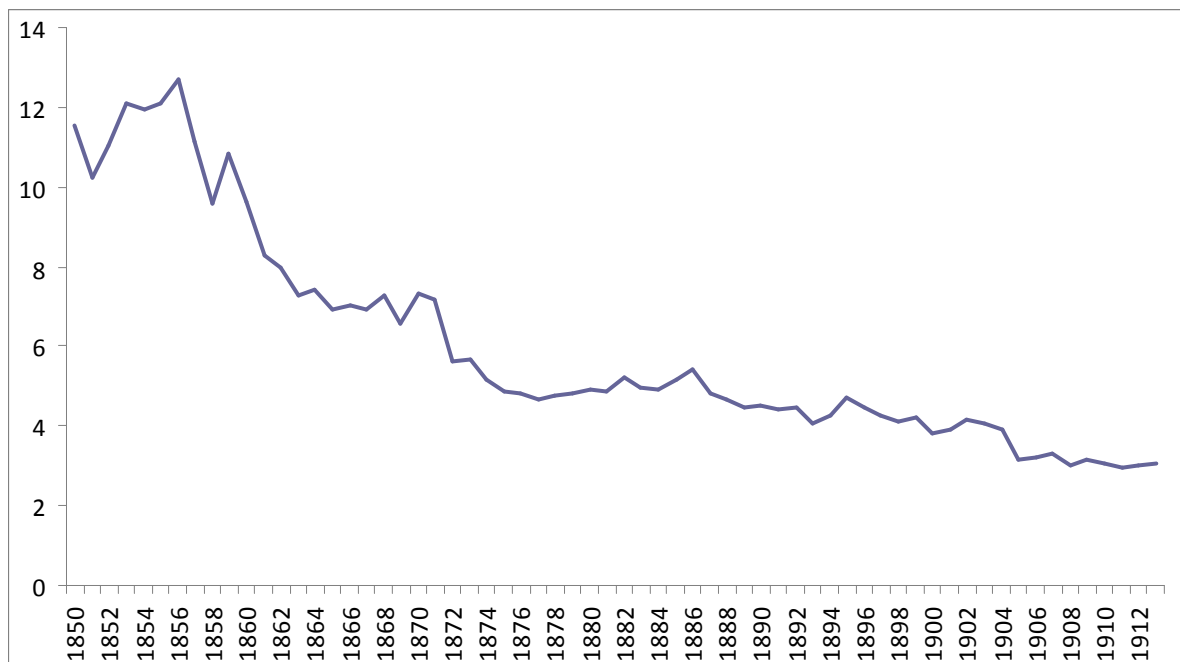
Source: General Table of France foreign trade, own calculation

Figure 13: C4 evolution in the sum of exports of France (%)
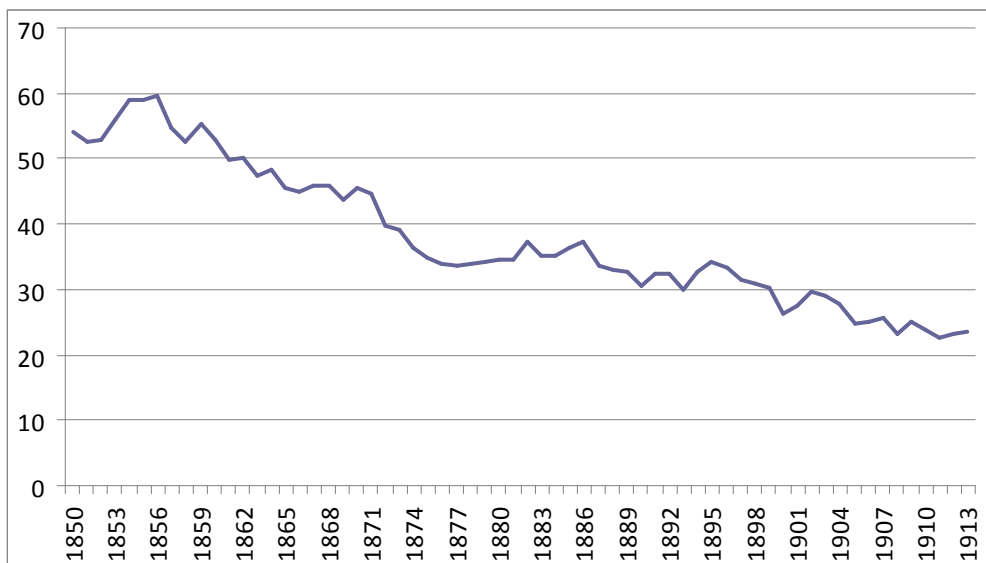
Source: General Table of France foreign trade, own calculation

Correlation coefficient between both indices is 0.9713. They both illustrate perfectly the evolution of French exports' concentration. A drop in French exports' concentration starts in 1856. At this date, the fourth first post to export represented 59.71% of total exports and fall to 22.61% in 1911.

At the beginning of the period, France clearly appears to follow the Ricardian model, exporting few products in large quantities. Then, the concentration blurs and slowly decreases.

It is interesting to examine products constituting the C4 per year (see annex). Indeed, French economy's specialization faced few changes during the 1850-1913 period. Products composing the C4 at the beginning of the period are mainly textile products (silk, woolen), wine, marquetery, knick-knacks…and are also those which constitute the index at the end of the period: textile products (silk, woolen, cloth and lingerie…). So it is possible to sum up the French economy specialization structure during the second part of the 19th century in 12 products, mainly issue from textile industry and agriculture (wine). The only thing that changes is the share of these products in the total French exports.

Does it mean that France has failed its integration into the first globalization? Three facts are meaningful: the 64-years stability of the main exported products at a time when innovations were numerous; strongest competition from the emerging countries on the products where France is still specialized; the presence of silk and agricultural products ("base products") at the end of the period among specializations.

We will develop the analysis of the decline in national exports' concentration by the study of French intra-industry trade during the period 1850-1913. This kind of study can weaken the positive answer to the question above (see section 4).

III) France: a market for the emerging countries and imports structured by the trade policy.

3.1 Geographical structure transformation of the French imports between 1850 and 1913: powerful rise of new actors in the international trade.

Imports flows have been aggregated like the exports in twelve areas. Three following figures present the relative share's evolution of these areas in French total imports in percent.

These figures show the progress of England's share in French imports until the middle of the 1860's and then its decreases until the beginning of the 20th century. England, which has absolute advantages in terms of production's costs in the middle of the 19th century in most manufactured production, benefits from the decrease in French tariffs which begin in 1850 with a new trade policy and continue with the 1860's treaty. Otherwise, its powerful rise as France's supplier coincides with the drop in American imports during the Civil War.

The United States' trajectory is strongly affected by the American Civil war that drops its exports. Then, the United States struggle to take the market shares back while other supply networks are already present (for example Egyptian imports for the cotton). From 1880, their exports structure is influenced by a move upmarket (less base products, more manufactured goods).

Germany's share regularly rises even in the 1870's and in the beginning of the 20th century. This increase shows the Germany's powerful rise, the growth of its competitiveness and new specializations like in metal working industry, electrical device, chemical products (see Dedinguer, 2006 ; Dormois, 2006). Trade relationships between both economies are very influenced by the most favored nation clause, imposed by the article 11 of the treaty of Frankfurt (Poidevin and Bariety, 1977); as a consequence, tariffs environment is becoming more relaxed. Among the others border countries, market shares' evolution of Italy and Spain draws the attention by their movements much more sudden than the one concerning the exports. Italy's share that peaked at 14% in the 1850's quickly decreases to 9% at the beginning of the 1880's and only 3% in the 1890's. Spain's share is stagnant at the beginning of the period and increases from 3% at the end of the 1870's to 8-9% at the end of the 1880's. Then, it decreases a first time in the middle of the 1890's and again at the

beginning of the 20th century until 3%. These countries are in a strong trade war (commercial war?) against France, from 1888 for Italy, from 1891 for Spain. France applies to them retaliatory tariffs in order to curb imports. The French trade policy hardening impedes economic activity in Italy (Frederico, 2006) and strongly penalizes wine-producing sector in Spain (Fernandez, 2009).

Other countries' share (including for example Australia, China and Japan) rises regularly from 5% at the beginning of the period to about 15% at the end of the period. These emerging countries quickly take place in the international trade and seem to take market shares to the "old France's suppliers" (Belgium, England, Italy…)

Colonies share markedly drops during the 1860's and 1870's, it falls in 5% at the beginning of the 1880's but rises then to reach at the end of the period the 1850's level (about 10%). This market share's evolution which hides – as for the exports – differentiated contribution of the different areas, suggests two opposite phases in the colonies' contribution to the metropolis' development.

Figure 14: Share of England, the United States and Germany in the sum of imports of France (%)
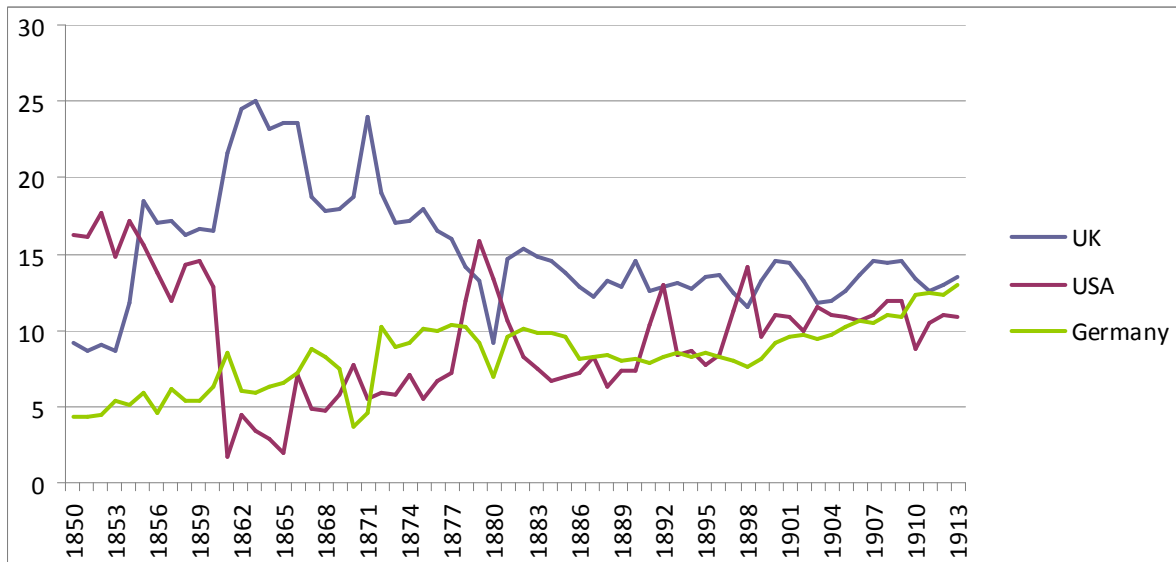
Source : General Table of France foreign trade, own calculation

Figure 15: Share of Italy, Belgium, Spain and Switzerland in the in the sum of imports of France (%)
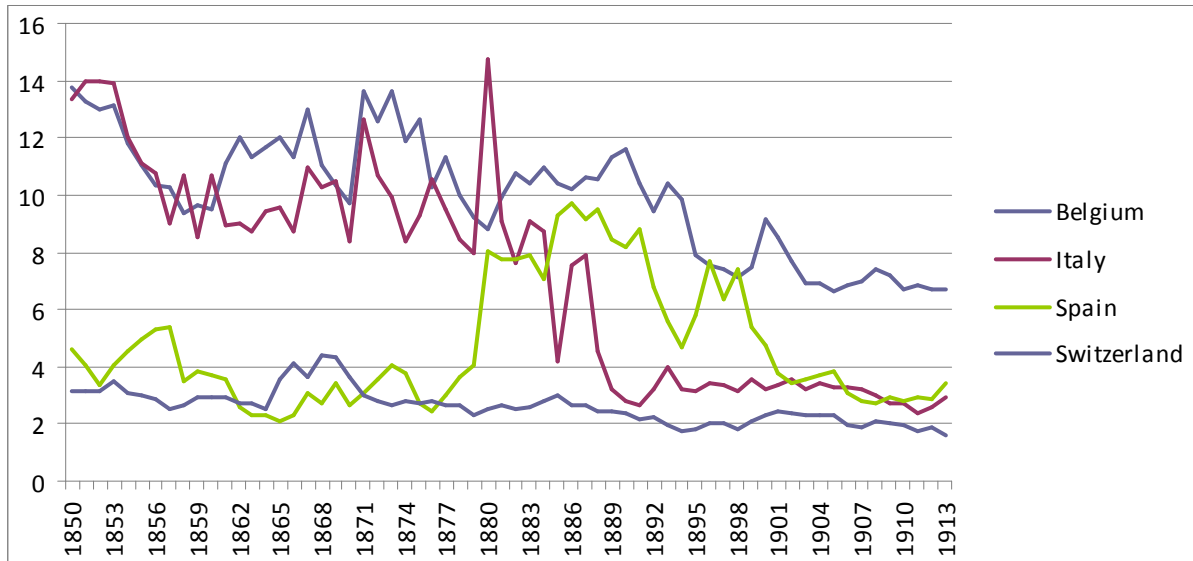
Source: General Table of France foreign trade, own calculation

Figure 16: Share of Colonies, Other European Countries, Turkey, Egypt and Greece, Central and Latina America and Other countries in the in the sum of imports of France (%)
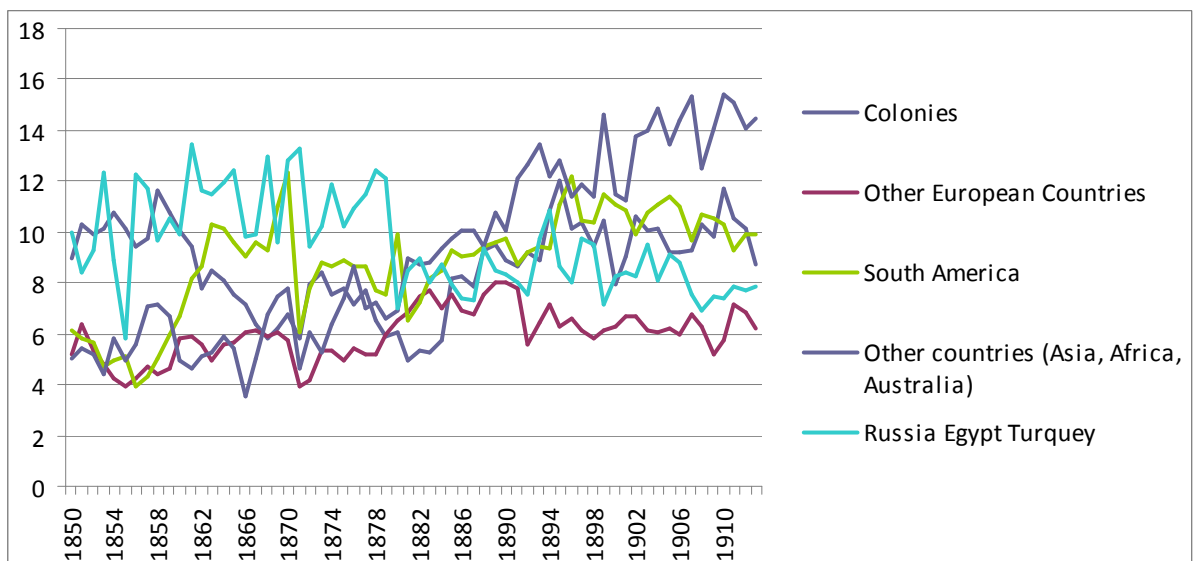
Source: General Table of France foreign trade, own calculation

3.2 Correspondence analysis method: application to the French imports

1st axis: an opposition between "old" countries and emerging countries

Principal factorial axis of imports represents 49.62% of the total phenomenon's variance. It is a main trend of the French exports' structure because almost the half of it depends on this own factor.

Countries which are in the table participate in this factor's construction. They have been selected because they have a contribution of 2.44% at least which is the value of the homoscedasticity hypothesis (100/41).

Table 6: 1st factorial axis – the countries

Countries with positive sign	Contribution (%)	Countries with a negative sign	Contribution (%)
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
The United States	3.55	Reunion Island	2.81
Japan	3.00		
Chile	2.86		
Total	39.27	Total	47.74

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

Figure 17: Evolution of the relative share of both groups of countries in the in the sum of imports of France (%)
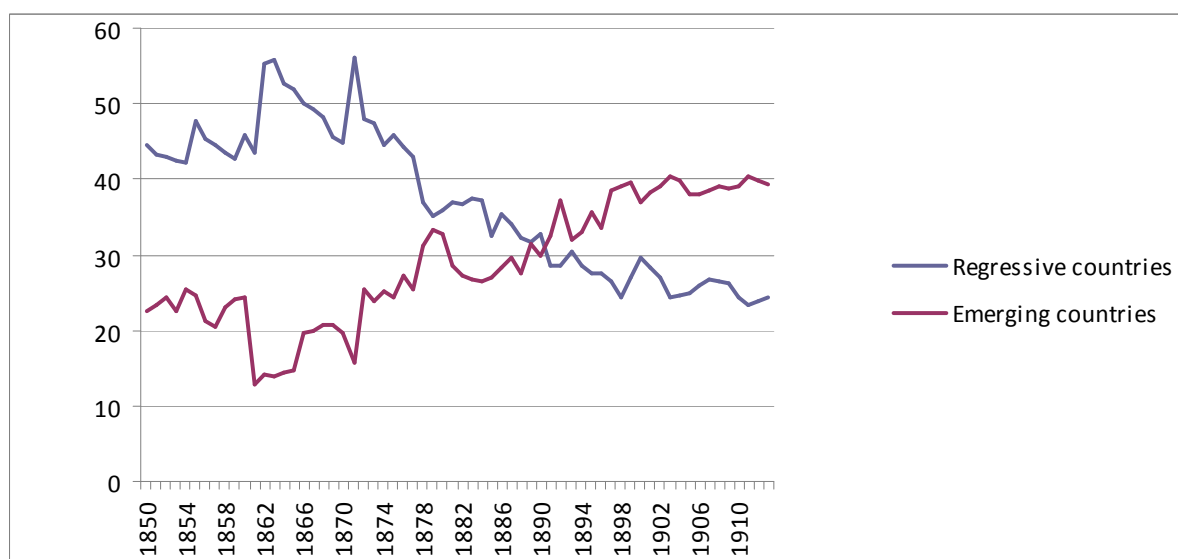
Source: General Table of French foreign trade, own calculation

Correlation coefficient between both groups is -0.95. It reveals the opposite effect of imports from both groups of countries. It seems that the imports from the emerging countries (the United States, Germany, China, Japan…) take the place of imports from countries whose trade relationships are older (England, Belgium, Italy, Turkey…)

There is a progressive shift in the geographical structure of French imports: from the end of the 1880's, the emerging countries are getting more importance. On the contrary, at the beginning of the period and in particular between 1860 and 1874, "old" countries like England, Belgium and Italy are the main suppliers of France.

Variable's contribution examination (ie years) confirms this fact. Subperiod 1850-1887 must be analyzed with the "old" countries whereas second subperiod 1888-1913 has the same factorial sign than emerging countries. That's why, according to the French point of view, we can say that countries start to emerge at the end of the 1880's. This concept of emerging countries is related here with the relative importance of the country in the French imports: these different countries are gathered together because they have similar trend in terms of French imports market shares.

We must underline that years from the subperiod 1860-1877 and 1902-1913 are the most contributive to the factor's formation. First subperiod is representative of the influence of "old" countries France signed treaties with in the 1860's.

At the same time, American Civil War between 1861 and 1865 causes imports from the United States to fall. Both phenomenons contribute to explain the opposite evolution of both groups of countries and the importance of the subperiod 1860-1877. Second subperiod confirms the shift from "old" countries to emerging countries.

Following table clearly shows the break in the geographical structure at the end of the 1880's.

Table 7: Average relative share of both groups of countries in the total French imports (%)

	1850-1887	1888-1913
« Old countries »	43,94	27,12
Emerging countries	23,27	36,76

Source: General Table of French foreign trade, own calculation

As we said before, at the end of the 1880's emerging countries start to supplant the old partners in the total French imports.

2nd axis: the "Spanish decade".

Second explanatory factor of French imports structure explains 14.34% of the total variance. Spain, Austria and Greece are opposed to England, Germany, Netherlands, Spanish colonies in America and Egypt. Following table shows the relative contribution of each country to the factor's formation.

**Table 8: Countries' contribution to the 2ⁿᵈ axis formation.**

Countries with a positive sign	Contribution (%)	Countries with a negative sign	Contribution (%)
England	9.33	Spain	47.54
Egypt	5.11	Austria	6.71
Spanish dominions in America	2.67	Greece	4.44
Netherlands	2.52		
Germany	2.48		
Total	22.11	Total	58.69

For the variable, three subperiods must be considered: 1862-1866 and 1906-1913 which are related to the countries with a positive sign; 1880-1891 which is positively correlated to the three other countries. These twelve years of this subperiod participates for 56.21% to the factor's formation.

Considering the importance of the Spanish contribution, we can confirm our heading and say that this factor corresponds to the "Spanish decade". Indeed, Spanish's share in French total imports rises from 3.37% during the period 1850-1879 to 8.25% during the period 1880-1891, to fall then between 1892 and 1913 to 4.29%. We can hypothesize that the Meline's tariffs introduction may have had a negative impact on Spanish exports to France: Spanish's share fall almost by half. A. Fernandez (2009, p.248) reminds that France just after its vineyard's reconstituting breaks the 1882's treaty with Spain and strongly tax the wine from 1892: Spanish exports drop from 8.9 million of hectoliter per year between 1887 and 1891 to only 5.5 million between 1892 and 1897. Both countries are clearly in a trade war in the 1890's. Thanks to a larger products' diversification of its exports to Spain, France seems to be less affected by this conflict.

Following graph illustrates the opposition between both groups of countries which mainly participate to the second axis construction. Both curves represent the relative weight of each group in the total imports from 1862 to 1913.

Figure 18: Evolution of the relative share of both groups of countries in the in the sum of imports of France (%)
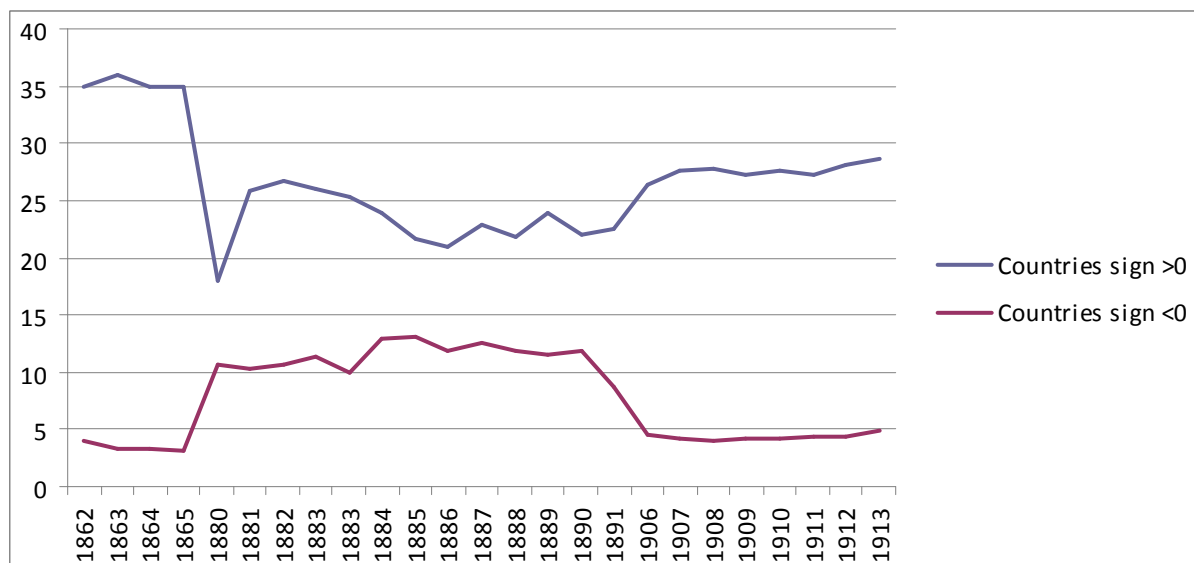
Source: General Table of French foreign trade, own calculation

Correlation coefficient between the curves is -0.79. That shows an opposite evolution between both groups of countries during the three subperiods (1862-1866; 1880-1891; 1906-1913).

The fact that flows from Spain are important and play a structuring role confirms the trade policy's influence on France's international exchanges. We must underline that other trade conflicts with Italy and Switzerland (see Humair, 2004) do not lead to such effects in terms of imports structure: indeed, they're missing in the factorial analysis.

3.3 Products' structure of the imports

As for the exports, imports have been classified into three groups: agricultural products G1, primary products G2, manufactured goods G3.

Manufactured goods' share is small at the beginning of the period (around 5%) that is in keeping with the international labor division at that time. Then it slowly progresses during the first globalization to reach 10% on the eve of the World War I. This rise is correlated with the development of an intra-industry trade with European partners in particular in the textile industry (see section 4).

Agricultural imports' share is high at the beginning of the period (around 30-35%), it appears to be fluctuating and decreasing at the end of the period influenced by the drop in wine and cereals imports as the following graph shows (it reaches more than 20% before the World War I). Cereals' imports peak in 1879 is explained by the drop in national production. (see figure 20).

Primary products' share is 35% in 1850 and strongly drop to 10% before the 1880's, and then regularly increases to reach 30% in 1912 whereas at the same time France exports more primary products.

Figure 19: Evolution of the three groups' relative shares in the in the sum of imports of France (%)
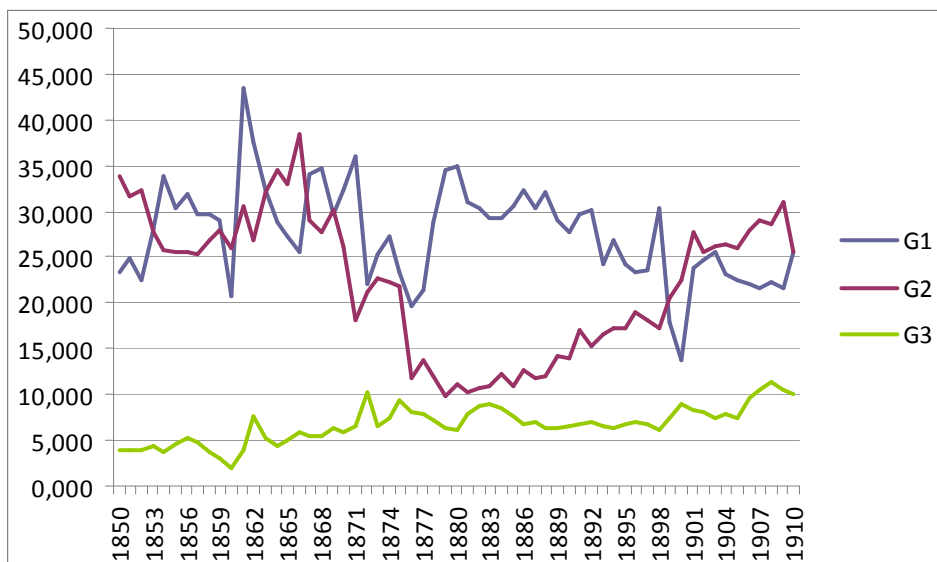
Source: General Table of French foreign trade, own calculation

Figure 20: Evolution of the Wine and Cereals' relative share in the in the sum of imports of France (%)
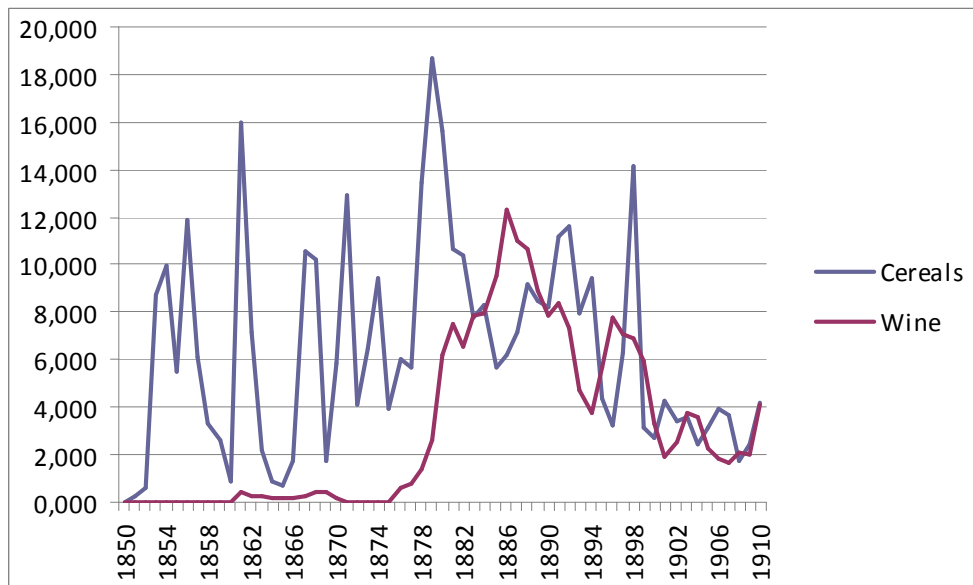
Source: General Table of French foreign trade, own calculation

IV. Bilateral flows' study: the intra-industry trade emergence.

Study of bilateral flows should highlights geographical and sectorial diversification of the French economy.

4.1 Coverage ratio heterogeneity

Following table shows the evolution of the France's coverage ratio of imports by exports. After reaching a peak at 1.61 in 1859, France balance of trade is structurally in deficit from 1876. In 1913, coverage ratio equals 0.8. Between 1850 and 1876, global coverage ratio faces large-amplitude fluctuations. For example, it decreases from 1.61 in 1859 to 0.78 in 1861. Between 1876 and 1913 it is more stable but smaller than 1.

Figure 21: Global coverage ratio evolution.
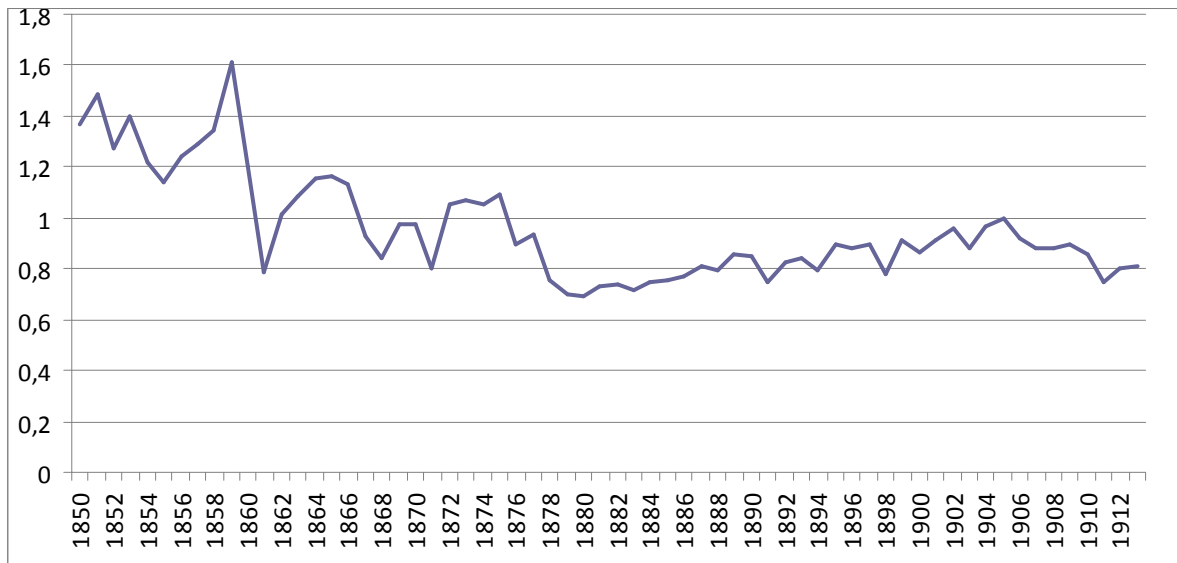
Source: General Table of French foreign trade, own calculation

We will present the French coverage ratio's evolution with each twelve areas that we take into account.

Figure 22: French coverage ratio of imports by exports with England, the United States and Germany
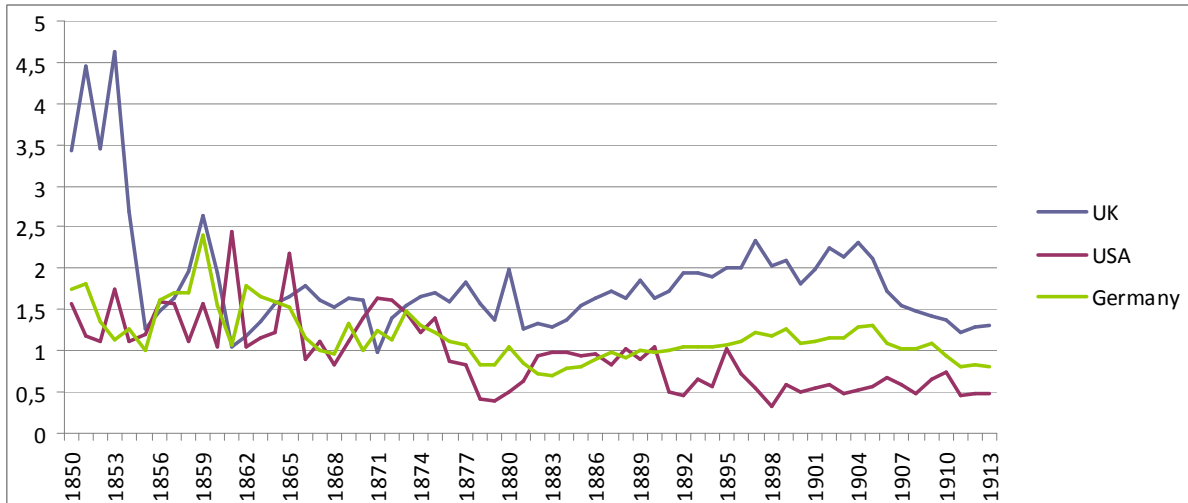
Source: General Table of French foreign trade, own calculation

Figure 23: French coverage ratio of imports by exports with Italy, Belgium, Spain and Switzerland
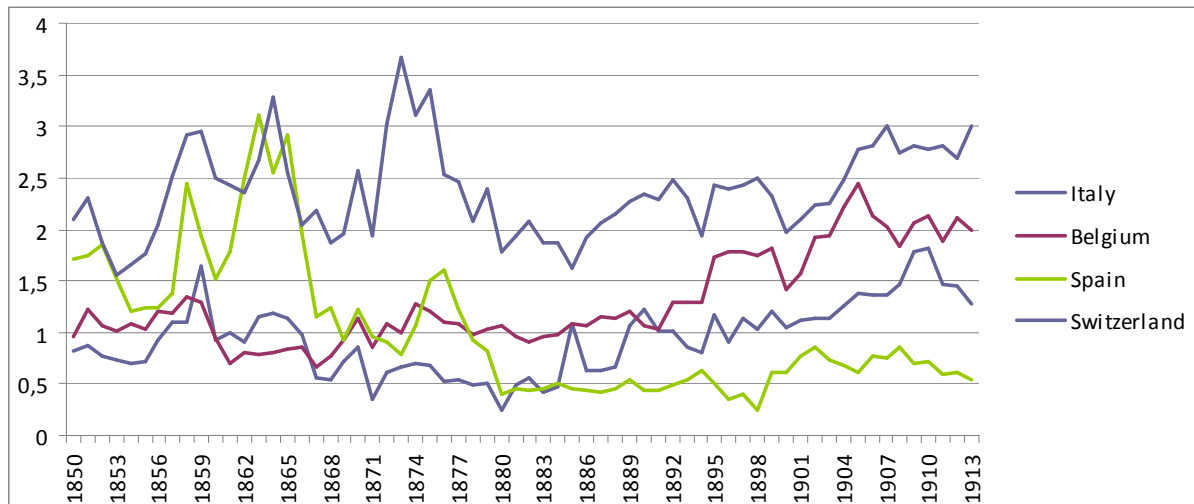
Source: General Table of French foreign trade, own calculation

Figure 24: French coverage ratio of imports by exports with Colonies, Other European countries, Turkey, Russia and Egypt, Central and Latina America and Other countries.
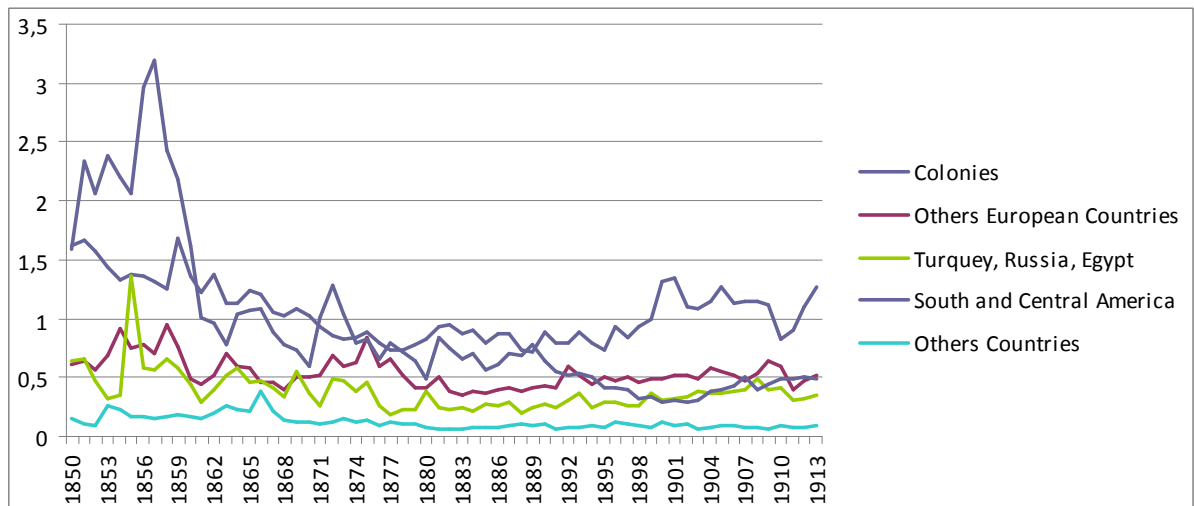
Source: General Table of French foreign trade, own calculation

How does the French balance of trade fluctuate, in relation with each area?

In order to organize in a hierarchy the relative positions of the different areas, we have calculated the ratio: coverage rate toward area i / global coverage rate. On average over the 1850-1913 period, in descending order of importance areas are classified like this: Switzerland (2.56), England (1.92), Belgium (1.42), Germany (1.22), Colonies (1.11), Spain (1.02), Italy (1.00), the United States (0.99), South and Central America (0.90), Other European countries (0.57), Turkey, Egypt and Russia (0.40), Other countries (0.13).

Thus on average over the period, France's coverage rate toward Switzerland is 2.56 times higher than the global coverage rate. On the contrary, the coverage rate with other countries such as Asian countries is 10 times lower than the global coverage rate.

These data are averages over the whole period and hide contrasted evolution depending on areas. Thus, areas which have been considered as emerging areas when we studied geographical

structure of French imports, have a decreasing rate (CRi / CRt) at the end of the period. Rate's values in 1913 are 0.59 for the United States (instead of 0.99 on average), 1.01 for Germany (1.22 on average), 0.67 for Spain (1.02), 0.60 for Central and Latina America (0.90). On the other hand, when we face constant trade deficit with other countries, situation doesn't evolve (ratio equal to 0.12 in 1913).Same things happened with the Other European Countries and the "Turkey-Egypt-Russia" area (respectively: 0.64 in 1913 (0.57 on average) and 0.43 in 1913 (0.40 on average)). Trade with emerging areas is then responsible for the deterioration of the French trade balance. Even with more favorable tendency at the end of the period with Italy (1.58 in 1913, 1.00 on average), Belgium (2.47 in 1913, 1.42 on average) and Switzerland (3.73 in 1913, 2.56 on average) France is not able to offset the deficits with the first quoted areas.

To sum up, we must underline that France has a positive balance of trade with its close partners (except with the colonies), and a negative balance of trade with distant countries which are considered as emerging countries at the end of the period.

4.2 Powerful rise of the intra-industry trade

In order to calculate global French intra-industry trade, we have selected 145 products which have the same heading in the exports nomenclature as much as in imports. We take into account 16 years: 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 have been calculated:

$$GL_i = 1 - \frac{|X_i - M_i|}{X_i + M_i}$$ (with i: the product).

Global intra-industry trade index for France per year corresponds to the average of the GLi indexes.

All the products have been then classified into three groups: primary products, agricultural products, manufactured products. For each group, the Grubel and Lloyd index has been calculated. The following table shows their variations during the considered years.

Figure 25: Global and per groups of products France intra-industry trade evolution
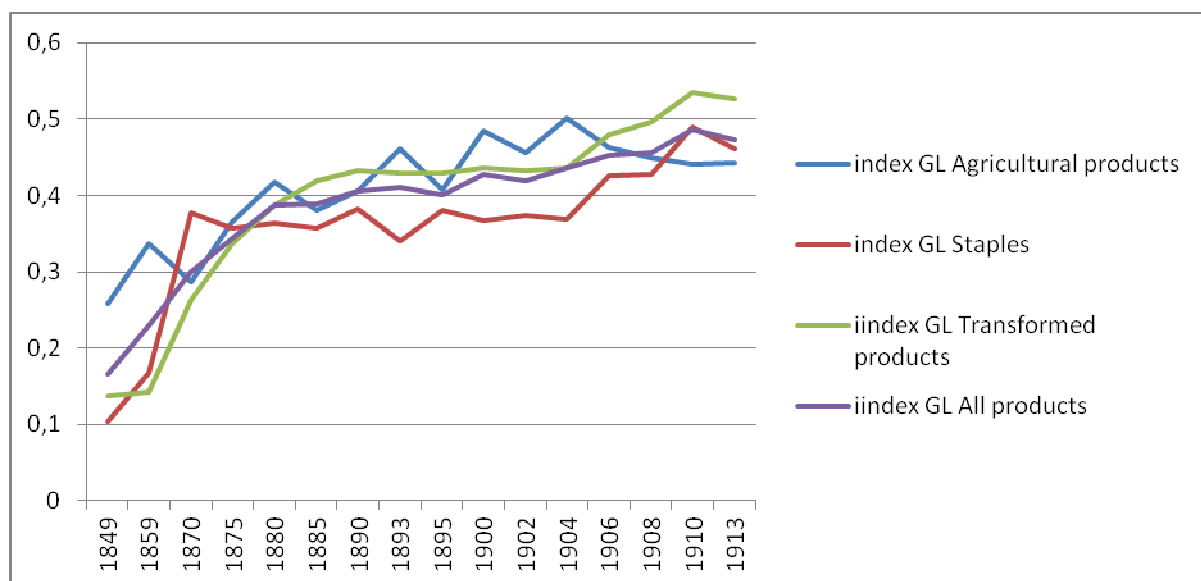
Source: General Table of French foreign trade, own calculation

It is clear that even if the intra-industry trade was discovered by Verdoorn in 1960, it constitutes one of the main contributing factors of the French foreign trade in the 19th century.

On the whole, its relative importance in the total trade rises from 16% in 1849 to 48% in 1913. This fact confirms that France gives up its "Ricardian country" position that characterizes the beginning of the period, and has entered into an intra-industry specialization. But we can't say yet if this specialization was the result of a proactive industrial policy or of a competition in terms of goods' quality.

To help solving these issues we calculated the Grubel and Lloyd index for 10 out of 12 goods[2] France was specialized in. Following table compares the Grubel and Lloyd indexes for these 10 goods with the global index (145 products) for the 1880-1913 period.

Figure 26: Comparison between the GL index for the C4 products and the GL index for all the products.
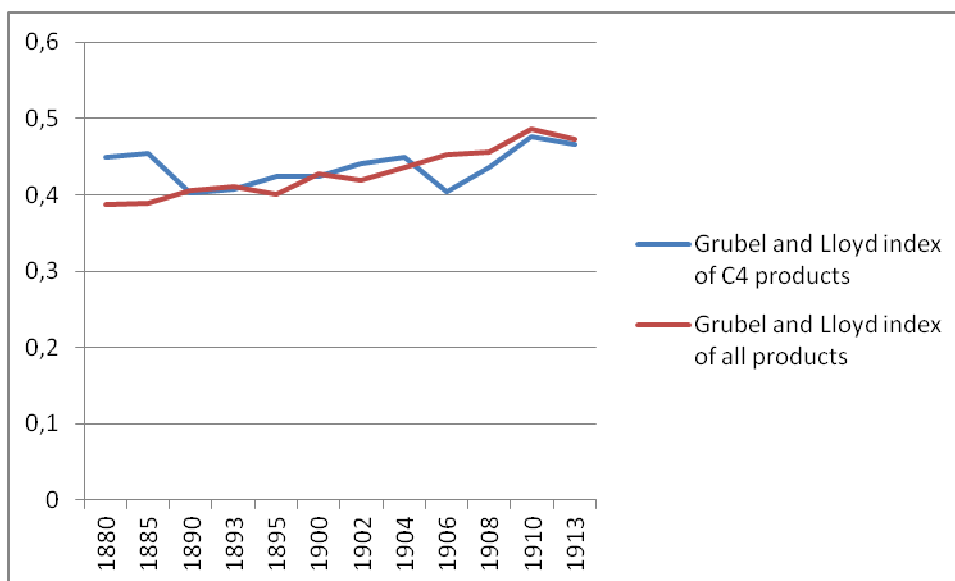
Source: General Table of French foreign trade, own calculation

It seems obvious that French specializations at the end of the 19th century are faced to foreign competition as we can see with the relative importance of their intra-industry trade index compared with the global index. That strongly confirms that the intra-industry trade constitutes one of the main contributing factors of French trade long before its discovery.

To better analyze the link between intra-industry trade and specialization we calculated the ratio: unit value of the exported products where France is specialized on unit value of the imported products which are the same than exports one (VUX/VUM)

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[2] Clothes and lingerie, silk fabric, wool fabric, cotton fabric, skin work or leather work, knick-knacks, marquetery, loose wool, silk, eau de vie, wine.

Table 9: **Ratio between unit value to exports (VUX) and unit value to imports (VUM)**

	1880	1885	1890	1893	1895	1900	1902	1904	1906	1908	1910	1913
Clothes and lingerie	1,64	2,01	3,02	1,98	1,78	2,05	2,16	1,78	2,06	2,07	2,33	3
Silk	1,81			1,09	1,07	1,05	1,07	1,01	0,72	1,01	1,14	1,1
Cotton	0,92	1	0,95	0,9	0,65	0,55	0,48	0,48	0,51	0,53	0,64	0,64
Wool		1,72	1,58	1,39	1,4	1,23	1,2	1,15	1,13	1,15	1,15	1,03
skin or leather work	1,06	2,89	2,75	2,06	2,01	1,4	1,43	1,47	1,53	1,34	1,32	1,41
Marquetry, knick-knacks	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
Loose wool	1,44	1,49	1,45	1,6	1,61	1,4	1,96	1,76	1,65	1,5	1,57	1,57
eau de vie	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	2,9	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: General Table of French foreign trade, own calculation

Figure 27: **Evolution of the VUX/VUM average.**
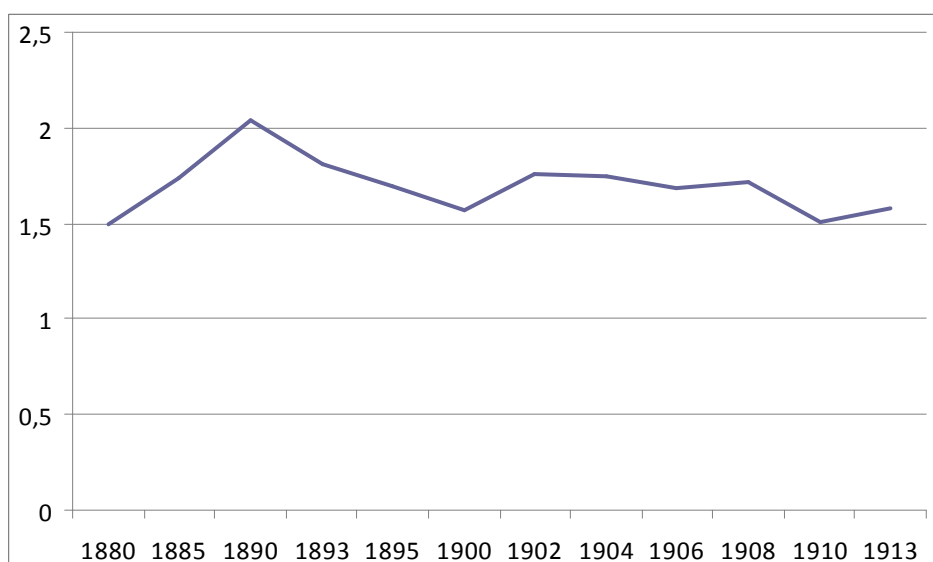
Source: General Table of French foreign trade, own calculation

Except for cotton fabric and silk, all other products which constitute the French specialization have a higher unit value for the exports than for the imports.

Actually, France exchanges with its partners the same products but with different qualities: high quality for the exports, lower quality for the imports. According to us, the Falvey's theory (1981) is relevant for this type of intra-industry trade. Falvey is the only one who explains the intra-industry trade with the classical theory of international trade (No economies of scale, perfect competition…) and it seems that this explanation is plausible with the French economic conditions at this time.

Conclusions

This article shows that France, at the beginning of the period, has intensified its foreign trade despite a relative withdrawal of its exports to close markets. Statistical analysis of the exports brings out the fact that the 1860's treaty between France and England is a breaking point. Indeed, French exports flows are redirected to closer countries (Belgium, Germany, England) at the expense of geographically distant areas: South American countries (Peru, Brazil, Chile), distant French colonies (Reunion island, Guadeloupe, Martinique) and the United States. The relative importance of trade with America goes decreasing between 1860 and 1866. This geographical reorientation is followed by a strengthening of intra-industry trade measured by the Grubel and Lloyd index.

Thanks to the imports analysis, we also underlined that French trade policy influences trade flows. Commercial treaties with other countries parts of the Cobden-Chevalier network – including "the most favored nation" clause – enable "old" European partners to keep their market shares safe during the 1860-1870 period. This result is consistent with recent works at a global level. Lampe (2008, 2009) establishes, like Accominotti and Flandreau (2005), that treaties do not intensify the international trade between 1860 and 1875 and also have a differentiated effect depending on the products. According to the authors, all these facts lead to an increase in trade between European countries.

Then, following a new trade policy scheme – more strategic and discriminatory – (see Becuwe and Blancheton, 2012) tariffs applied to the European products raise. The new strategy associated with a drop in transportation costs lead to a strong rise in imports from emerging countries of America (Argentina, Chile) and Asia (Japan, China). The coverage rate in relation with these areas is still decreasing and falls under 1 from 1860's.

Trade wars between France and some of its neighbors lead to a drastic drop in the imports from these countries. The article shows that trade war with Spain in the 1890's plays a major role in French imports structure. Even if it is not underlined by the statistical analysis, trade war with Italy from 1888 seems to have had a negative impact on the Italian position in France (see Graph 15). These conflicts don't have the same effects on the French exports thanks to a larger diversification.

The article also highlights the necessity of reviewing the way French colonies are considered: indeed, until now, historiography used to treat them as a homogeneous group, while heterogeneity has been pointed out and is relevant in the debate on the relations between the Empire and the colonies.

We can assume that similar factor endowments and shared specializations on textile products and wine promote the claim for protection from several French strategic sectors and countries bordering on France. Such a hypothesis seems relevant considering the relative importance of intra-industry trade in the French total trade. We can say that consumer's interest in terms of product's differentiation was obscured by the interest of producers who felt threatened by foreign competitors, close on a geographical level as well as in terms of exchanged products' characteristics. This hypothesis can also explain the difference in French custom tariffs applied to the same products from close countries (see Becuwe and Blancheton, 2012).

Moreover, our results concerning the powerful rise of emerging countries after the 1880's are fully in line with the results of Jacks (2009) and Jacks, Meissner and Novy (2011) who show the major role played by the fall in transaction costs on the international trade development before World War I.

On the other hand, a study of French exports highlights a withdrawal to closer areas (close European countries and North African colonies) with a significant statistical change in 1882. France doesn't take advantage of the globalization at the end of the period as it doesn't intensify its exports to emerging countries enjoying a fast economic growth, like the United States, Japan or Argentina. Indeed, some of these countries are under British domination and others are strongly protected as Williamson's work shows (2006). Difference between France and Germany is obvious: Germany's share in the total imports of Central and Latin America is about twice higher than France's and until four times higher with British colonies (Bairoch, 1993). The weaknesses of the market diversification are combined with a still more fragmented specialization structure (both are obviously correlated), as evidenced by the decrease in the Herfindhal index of exports. At the end of the period, France still exports textile products (15% of the total exports), thus facing a strong competition from both emerging countries (Japan for example) and developed countries like Germany, which increases its productivity in this sector and manage to outdo France at the beginning of the 20th century (Dormois, 2006, p.188). Rising French manufactured industries are too numerous to benefit from economies of scale. Indeed, we have identified 9 rising industries: "articles, knick-knacks, brush making industry…and Industrial articles from Paris ", "automobile", "dressed skins", "machine et mechanical", "chemical products", "cast iron, iron, steel, materials", " rubber's piece of work", "dressed peltry or peltry's piece of work".

According to Dormois, in 1907 labour productivity in the « basic metallurgy » sector in France is 13% lower than England and about 35% lower than Germany. Moreover, the rise in primary products in the French exports is an alarming acknowledgment of a move downmarket.

In this article, we have not been looking for a link between France trade policy and exports dynamics. We think that an approach in terms of effective protection at a highly disaggregated level could highlight the question.

Considering all the results, we can finally wonder why French integration into the current trade globalization has so many similarities with the first globalization of the 19th century? Indeed, from the beginning of the 2000's, French market shares in the total world exports quickly decrease and its trade deficit is widening. It fails to establish itself in emerging areas (China, India...) and suffers from a move downmarket of its exports. Does France have structural or cultural difficulties to benefit from an intensification of the globalization?

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Appendix 1: Countries used for the exports

- England
- The United States
- Germany
- Colonies : Algeria, Reunion Island, African West Coast, Martinique, Guadeloupe, Haiti, St Pierre et Miquelon, French Indochina, Morocco, Madagascar and dominions, Mayotte, Tunisia, Congo, Senegal et other Africain West Coast dominions
- Border countries : Belgium, Italy, Spain, Switzerland
- Other European Countries : Netherlands, Norway, Austria, Sweden, Greece, Denmark, Romania, Bulgaria, Portugal
- South and Central America : Spanish dominions in America, Brazil, Argentina, Mexico, Venezuela, Uruguay, Peru, Chile, Equator, Guatemala – Costa Rica – Honduras – San Salvador and Nicaragua, Colombia.
- Russia, Egypt, Turkey
- Other countries : British India, Dutch India, Other African countries, China, Philippines, Japan, English dominions in Africa, Australia.

Countries used for the imports
- England
- The United States
- Germany
- Colonies : Algeria, Reunion Island, African West Coast, Martinique, Guadeloupe, Haiti, St Pierre et Miquelon, French Indochina, Morocco, Madagascar and dominions, Mayotte, Tunisia
- Border countries : Belgium, Italy, Spain, Switzerland
- Other European Countries : Netherlands, Norway, Austria, Sweden, Greece, Denmark, Romania, Bulgaria, Portugal
- South and Central America : Spanish dominions in America, Brazil, Argentina, Mexico, Venezuela, Uruguay, Peru, Chile, Equator
- Russia, Egypt, Turkey
- Other countries: British India, Dutch India, Other African countries, China, Philippines, Japan, English dominions in Africa, Australia.

Appendix 2: Products constituting the French exports' C4 (%)

	1850	1851	1852	1853	1854	1855	1856	1857	1858
Silk fabric and Silk floss	27,01	24,03	26,34	28,36	25,98	27,33	28,76	27,33	23,47
Wool fabric	12,79	11,5	11,28	10,45	11,08	12,18	11,71	11,22	9,68
Cereals	7,57	9,02	-	-	-	-	-	-	7,98
Wine	6,77	8,16	9,17	10,85	15,92	12,81	13	9,98	11,57
Eau de vie, spirits and liquors	-	-	-	6,43	-	-	-	-	-
Articles, knick-knacks, Industrial articles from Paris	-	-	-	-	6,03	6,64	6,25	6,21	-
Sew	-	-	-	-	-	-	-	-	-
Raw sugar	-	-	-	-	-	-	-	-	-
Skin work or Leather work	-	-	-	-	-	-	-	-	-
Loose wool, combed or dyed	-	-	-	-	-	-	-	-	-
Cotton fabric	-	-	6,14	-	-	-	-	-	-
Clothes and lingerie	-	-	-	-	-	-	-	-	-
C4 (%)	54,15	52,71	52,94	56,09	59,02	58,95	59,74	54,74	52,69

	1859	1860	1861	1862	1863	1864	1865	1866	1867
Silk fabric and Silk floss	25,96	23,42	20,48	19,43	16,67	16,57	16,39	17,14	17,78
Wool fabric	9,38	11,81	11,55	11,85	13,22	14,44	11,58	11,05	9,95
Cereals	7,89	6,2	-	-	-	-	-	-	-
Wine	12,05	11,38	12,04	11,23	10,34	9,52	9,96	9,46	10,28
Eau de vie, spirits and liquors	-	-	-	-	-	-	-	-	-
Articles, knick-knacks, Industrial articles from Paris	-	-	5,89	7,52	7,19	7,91	7,72	7,42	7,79
Sew	-	-	-	-	-	-	-	-	-
Raw sugar	-	-	-	-	-	-	-	-	-
Skin work or Leather work	-	-	-	-	-	-	-	-	-
Loose wool, combed or dyed	-	-	-	-	-	-	-	-	-
Cotton fabric	-	-	-	-	-	-	-	-	-
Clothes and lingerie	-	-	-	-	-	-	-	-	-
C4 (%)	55,29	52,82	49,96	50,03	47,42	48,43	45,66	45,06	45,81

	1868	1869	1870	1871	1872	1873	1874	1875	1876
Silk fabric and Silk floss	19,12	16,87	19,77	19,31	13,64	14,69	13,11	11,18	8,64
Wool fabric	9,51	10,12	9,44	10,71	9,8	10	10,33	10,28	9,24
Cereals	-	-	-	-	7,71	-	-	6,02	-
Wine	9,91	9,84	9,09	9,4	8,51	8,64	7,22	7,34	6,18
Eau de vie, spirits and liquors	-	-	-	-	-	-	-	-	-
Articles, knick-knacks, Industrial articles from Paris	7,38	6,8	-	5,17	-	5,67	5,82		
Sew	-	-	7,37	-	-	-	-	-	-
Raw sugar	-	-	-	-	-	-	-	-	9,8
Skin work or Leather work	-	-	-	-	-	-	-	-	-
Loose wool, combed or dyed	-	-	-	-	-	-	-	-	-
Cotton fabric	-	-	-	-	-	-	-	-	-
Clothes and lingerie	-	-	-	-	-	-	-	-	-
C4 (%)	45,92	43,63	45,68	44,58	39,67	39	36,49	34,82	33,86

	1877	1878	1879	1880	1881	1882	1883	1884	1885
Silk fabric and Silk floss	8,78	9,28	8,14	7,92	8,02	9,43	10,07	8,65	8,55
Wool fabric	11,01	11,48	11,11	12,51	11,8	13,08	12,38	12,21	12,72
Cereals	6,45	-	-	-	-	-	-	-	-
Wine	7,48	7,38	9,25	8,29	8,27	8,03	7,91	8,67	9,86
Eau de vie, spirits and liquors	-	-	-	-	-	-	-	-	-
Articles, knick-knacks, Industrial articles from Paris	-	-	-	5,69	-	-	-	-	-
Sew	-	-	5,69	-	6,45	6,68	4,92	5,67	-
Raw sugar	-	-	-	-	-	-	-	-	-
Skin work or Leather work	-	5,88	-	-	-	-	-	-	5,18
Loose wool, combed or dyed	-	-	-	-	-	-	-	-	-
Cotton fabric	-	-	-	-	-	-	-	-	-
Clothes and lingerie	-	-	-	-	-	-	-	-	-
C4 (%)	33,72	34,01	34,19	34,41	34,55	37,21	35,28	35,19	36,31

	1886	1887	1888	1889	1890	1891	1892	1893	1894
Silk fabric and Silk floss	8,83	7,54	8,01	8,13	7,69	8,18	8,51	8,22	8,57
Wool fabric	13,7	12,59	11,6	11,35	11,22	10,89	11,21	9,11	9,29
Cereals	-	-	-	-	-	-	-	-	-
Wine	9,47	8,4	8,7	7,82	6,79	8,19	7,29	6,9	8,92
Eau de vie, spirits and liquors	-	-	-	-	-	-	-	-	-
Articles, knick-knacks, Industrial articles from Paris	-	-	-	-	4,8	5,08	5,37	5,64	5,91
Sew	5,38	5,08	-	-	-	-	-	-	-
Raw sugar	-	-	-	-	-	-	-	-	-
Skin work or Leather work	-	-	4,85	-	-	-	-	-	-
Loose wool, combed or dyed	-	-	-	5,27	-	-	-	-	-
Cotton fabric	-	-	-	-	-	-	-	-	-
Clothes and lingerie	-	-	-	-	-	-	-	-	-
C4 (%)	37,37	33,6	33,16	32,57	30,49	32,34	32,38	29,88	32,7

	1895	1896	1897	1898	1899	1900	1901	1902	1903
Silk fabric and Silk floss	9,53	8,74	9,1	8,79	8,18	7,22	8,14	9,03	8,79
Wool fabric	11,37	10,4	8,92	7,82	7,76	6,77	6,96	6,76	6,72
Cereals	-	-	-	-	-	-	-	-	-
Wine	7,83	8,57	7,81	7,66	6,18	6,38	6,96	6,76	6,72
Eau de vie, spirits and liquors	-	-	-	-	-	-	-	-	-
Articles, knick-knacks, Industrial articles from Paris	5,41	5,68	-	-	-	-	5,6	-	-
Sew	-	-	-	-	-	-	-	-	-
Raw sugar	-	-	-	-	-	-	-	-	-
Skin work or Leather work	-	-	-	-	-	-	-	-	-
Loose wool, combed or dyed	-	-	5,79	6,51	7,99	6,01	-	7,13	6,73
Cotton fabric	-	-	-	-	-	-	-	-	-
Clothes and lingerie	-	-	-	-	-	-	-	-	-
C4 (%)	34,14	33,4	31,62	30,78	30,12	26,38	27,65	29,68	28,96

	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913
Silk fabric and Silk floss	8,28	6,65	6,94	7,49	6,47	6,63	6,33	5,76	5,24	6,82
Wool fabric	6,06	-	5,05	5,17	-	-	-	-	-	-
Cereals	-	-	-	-	-	-	-	-	-	-
Wine	6,06	5,99	-	-	4,71	4,49	4,63	-	-	-
Eau de vie, spirits and liquors	-	-	-	-	-	-	-	-	-	-
Articles, knick-knacks, Industrial articles from Paris	-	-	-	-	-	-	-	-	-	-
Sew	-	-	-	-	-	-	-	-	-	-
Raw sugar	-	-	-	-	-	-	-	-	-	-
Skin work or Leather work	-	-	-	-	-	-	-	-	-	-
Loose wool, combed or dyed	7,52	6,05	6,15	5,61	5,47	7,06	6,49	6,38	6,5	5,49
Cotton fabric	-	6,15	6,91	7,42	6,73	6,95	6,24	6,59	6,89	6,81
Clothes and lingerie	-	-	-	-	-	-	-	3,9	4,56	4,46
C4 (%)	27,93	24,84	25,05	25,68	23,38	25,12	23,69	22,62	23,19	23,59

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