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The Influences Affecting French Assets Abroad Prior 1914

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THE INFLUENCES AFFECTING FRENCH ASSETS ABROAD PRIOR TO 1914[1]

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Abstract*: In this study we show that French foreign investment from the end of the nineteenth century until the eve of the First World War was driven by economic and financial considerations. This refutes the hitherto accepted thesis that French capital exports were motivated by diplomatic and political factors. By using economic modeling which combines microeconomic and econometric approaches, we show that the geographic distribution of French financial flows was consistent with rational economic behavior.*

By the late nineteenth century the French *Bourse* was a well-developed capital market: both Foreign and French assets enjoyed equal access to the market and both required the same amount of administrative paperwork and approval. (Courtois, 1910) Foreign government bond quotations at the *Cours Authentique de la Bourse de Paris* were first authorized by the Royal Order of November 12, 1823. For foreign assets other than government bonds, the order of "6 February 1880" stated that "The *Ministre des finances* may always forbid the trading in France of a foreign asset." An order on "1 December 1893" added that, "Foreign companies issuing shares or debentures in Paris must present proof of the *Ministre des Finances'* agreement" (Courtois, 1910). However on the whole, these orders remained a mere formality: in practice the French capital market accommodated the selling of foreign assets with virtually no real official restrictions.

Although there were not regulatory restrictions, historians of the Paris market, most notably Lévy-Leboyer (1977), asserted, however, that the financial information available to investors regarding

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foreign assets was routinely compromised by the informal and ongoing contact between the financial community in Paris and the French Foreign Office or the French government. It is difficult to ascertain, however, whether these contacts led to a systematic bias in the dissemination of inaccurate information because part of the risk and uncertainty associated with some foreign investments would have been deliberately hidden. Certainly financial literature, like Neymarck's Report (1903) provided investors with advice that mixed political considerations with rate of return estimates. Today, one would consider the content highly suspicious due to their surprisingly optimistic and enthusiastic style. However, one could also consider these papers as one of the rare sources of information that attempted to rationalize the decision-making of investors by taking into account all the available information concerning a particular foreign investment.

The pre-war period was exceptional for French foreign asset purchases. Between 1892 and 1913 foreign asset issues made up nearly 50% of the total issues in Paris: ranging from 30% in 1900 to 66% in 1904. (*Crédit Lyonnais,* 1963) In contrast, foreign asset issues were never above 15% of the total issues during the inter-war period with the maximum occurring in 1930 and 1931. Two important points influenced the proclivity for French investment in foreign assets before the First World War: first, the relatively low level of French public issues at this time; and secondly, the role of French banks in foreign asset distribution.

Before 1914, the success of foreign issues may be related to the low level of domestic government borrowing between 1890 and 1912. The French government only borrowed 65 million *francs* in 1896 for the Paris World's Fair in 1900 and 265 million *francs* in 1901-02 for the Chinese military campaign. No other government loan was issued prior to a 302 million *franc* loan[2] in 1912.

French banks played an important role in the diversification of financial assets held by French residents. As the market discount rate banks could charge commercial customers decreased regularly from 5% in 1872 to 2% in 1892, banks sought activities that were more profitable than intermediation and credit. Fees on security purchases became an important source of profit, the *Crédit Lyonnais* earning 14.4 million francs from 1910 to 1914 as opposed to 2.5 million francs from 1888 to 1892, for example. At the same time, French banks developed a network of foreign subsidiaries and created "bank associations" to promote foreign security purchases. The *Crédit Lyonnais,* although well-known for its cautious strategy of safeguarding liquidity, became the leader of a banking group to place *Emprunts russes*: from 1888 to 1894 Russian government bonds became common on the Paris *Bourse*. Between 1895 and 1901, debentures and share purchases took the place of foreign government bonds.

[2] Note that local community borrowing requirements were covered by contract with the *Crédit Foncier* or the *Caisse des dépôts.*

The *Banque Ottomane* invested in the Ottoman Empire and in the Asian part of the Russian Empire; most notably in railroads. The *Société Générale* and the *Crédit Lyonnais* invested in Ukrainian raw mineral production. Between 1902 and 1904, the *Banque de Paris et des Pays-Bas* was in charge of the Sultan of Morocco's loans. The *Banque de l'Union Parisienne* funded the Russian iron and steel industry and took control with *Schneider* of the Russian civil and military semi-finished goods sector. Finally, the *Banque pour le Commerce et l'Industrie*, the *Périer des Mines d'Anzin* holding company, the *Crédit Mobilier*, and the *Banque Rothschild* took shares in foreign industrial companies in Egypt, Spain, Norway, Belgium and Latin America.

To date the estimates of French capital exports prior to 1914 have generally been constructed by aggregating current balance of payments surpluses and estimating capital income. The geographic distribution of French investment abroad deduced from these statistics provides the central argument in the prevailing literature: by comparing the differences between British and French investment, the currently accepted view assumes that French investment, which was too committed in the "old continent" and absent from emerging countries, was politically, not economically driven. It has become clear however, that both inappropriate earning estimates and questionable methods have been used to reach these conclusions.

We provide a new set of calculations of investment earnings and estimates of overseas capital stock. Our estimate of the stock of overseas assets is added to the data found in the *Archives du Crédit Lyonnais* concerning new issues in Paris market. In addition, we point out that estimates of the stock of overseas assets should incorporate adjustments for changes in the market value of the outstanding assets weighted by the geographical distribution of French foreign assets. In order to make the adjustment for changing market values we compiled indices for the values of stocks and bonds from security market transactions reported in the financial press, notably *L'économiste français*. With these new data, we are able to address the issue of whether French capital exports appear to respond to economic forces. This involves exploring a portfolio view of the flow of French assets abroad. We have found that yield differences and demand for capital in "Europe and its periphery" explain French foreign investment. Econometric testing, using new and improved estimates of French capital exports, reveals that economic variables that influence portfolio choice successfully explain variations in French foreign investment between 1890 and 1914. This finding is in contrast to the existing literature that maintains that political considerations determined the flows of French investment overseas. As a result we conclude that economic not political forces dominated the process of French foreign investment.

EXISTING ESTIMATES OF FRENCH CAPITAL EXPORTS

The flow of capital between France and the rest of the world from 1850 to 1913 is not limited to the balance of payments recorded in the *Tableau Général des Douanes*. Indeed, only customs statistics for material goods, services and gold transfers are included in the customs records. The net capital balance actually consists of:

Yearly net purchases of foreign financial assets (portfolio) by residents;
Yearly net purchases of French financial assets (portfolio) by non-residents;
Yearly net French foreign direct investment abroad;
Yearly net foreign direct investment in France;
Yearly net French commercial and bank loans abroad; and
Yearly net foreign commercial and bank loans received,

which equals the net balance of capital movements.

Unfortunately, available primary sources only provide us with the annual net French purchases of foreign financial assets for a few years. This, however, is not a good indicator of the overall movement of capital during this period. To date, three different methods have been used to estimate the overall balance of payments: White's Method, the Financial Analysts'Direct Method, and Lévy-Leboyer's Indirect Method.

White's Method

White (1933) used data on outstanding stock compiled by financial analysts at the end of the nineteenth century and published in contemporary financial journals (Neymarck, Leroy-Beaulieu, Raffalovitch, and Théry). From these figures, based on five-year averages, White deducts 1% of the outstanding stock each year and calculates a time series of the stock in overseas assets. By assuming a rate of return on this stock, he obtained an estimate of French annual earnings from foreign capital and an estimate of annual capital flows. However, there are some problems with this approach: notably, White assumed higher returns on foreign assets than on French assets.

INSERT Table 1
Some estimates of the French Foreign Asset Stock (in billions of *Francs*)

Furthermore, it is difficult to defend the premise that French international assets and incomes increased regularly without any regard to the changing economic environment: for example, the depression which beset France from 1876 to 1895. Normally, one would expect French capital exports to mirror these cycles, yet White's (1933) statistics do not reflect this.

Lévy-Leboyer (1977) criticized White (1933) for accepting the data provided by these financial analysts who he claimed were not only biased but also guilty of artificially boosting figures in order to retain resident subscribers' confidence.

Financial Analysts' Direct Method

The Financial Analysts'Direct Method is based on data for new foreign issues in Paris which analysts assume were held in France. However, this is not necessarily the case: assets issued in Paris may have been purchased by investors outside of France which could lead one to over-estimate the movement of capital. Neymarck makes the ad hoc assumption that non-residents purchased one tenth of the assets issued in Paris and subsequently others have followed his lead when calculating estimates. Ultimately this unsupported assumption leaves the appraisal of France's net external position on shaky ground with little empirical support.

Additionally, as opposed to Great Britain, it is difficult to ignore the fact that French residents may have subscribed to foreign assets from non-domestic markets. We can assume that British residents did purchase foreign assets in their own domestic market (Feinstein, 1961 and Edelstein, 1970) in view of the fact that London was a leading financial market and competitive enough to concentrate the vast majority of foreign issues subscribed to by English residents. Nonetheless, the same argument does not apply in the case of France because of the difference in scale between the two financial markets. Moreover, the French government's well-known interference in domestic capital markets may well have driven French residents to use foreign capital markets for some of their transactions. However, one could consider that a decrease in the French held stock in foreign assets is very likely to have been linked to a contraction of foreign issues in Paris and consider foreign issues in Paris as an approximate indicator of portfolio movements.
Existing estimates of foreign issues include:

- 20-22 billion *francs* in 1898 (Salefranque, 1900 and Renou, 1906);
- 27 billion *francs* in 1906 (de Lavergne, 1908);
- 37 billion *francs* in 1910 (Becqué, 1912);
- 40 billion *francs* in 1912 (Neymarck, 1916); and
- 45 billion *francs* in 1913 for Moulton-Lewis (1922), Meynial (1925), Caillaux (1926), Feis (1930) and White (1933).

Des Essarts (1897) studied a sample group of share deposits in the *Banque de France* and found that the number of foreign assets held by French households in 1897 was 31% of the total portfolio. He

then suggests reducing the proportion to 25% overall, in view of the fact that French owners of deposit accounts in the *Banque de France* were not representative of the average French subscriber.
Essentially, the abundance of questionable statistics prompted Lévy-Leboyer (1977) to propose an alternative method called the "indirect" method.

Lévy-Leboyer's Indirect Method

Lévy-Leboyer reacted to the uncertain estimates of the *Direct Method* with an indirect estimate based on the balance of payments which is similar to the method Imlah (1958) used for Britain. First, he used the *Tableau Général des Douanes* to extract material goods, specie, transports, services, and tourism. Second, he estimated financial income and conjectures the capital movement balance (see Table 2). Although, Lévy-Leboyer (1977) shifted the focus of the problem from asset stock to capital income, he did not resolve the underlying problem.

Financial incomes logically depend on the invested stock of capital, the capital return rate, and the reinvested earnings. Lévy-Leboyer (1977) focused on the capital return rate and assumed that French foreign assets earned between the domestic asset yield in the Paris market and the rate of return on foreign British investment. He identified two periods: during the first period, from 1850 to 1876, he assumed that the rate of return on French capital exports equalled the domestic rate; during the second period, from 1877 to 1913, he considered the rate of return to be the arithmetical average of the French domestic and the British foreign investment rates of return. As opposed to the British, the French rarely invested in new countries with booming growth, therefore their profit on foreign investments must have been less than their British counterparts. After a financial loss correction for several years, Lévy-Leboyer (1977) arrived at the financial incomes in column 4, Table 2. By adding up partial balances (goods, services and specie), we obtain the "net foreign direct investment" balance. The transition from flows to stock is derived from adding up the annual balances in column 6, assuming a net external position equal to zero in 1833.

This choice, however, is arbitrary and needs to be examined[3]. Since, capital flows are deduced from upper balances, an overvalued (or undervalued) rate of return on foreign assets amplifies (or reduces)

[3] In order to improve Lévy-Leboyer's procedure, Saint-Marc (1983) estimated the return rate on French foreign investments using tax paid to the French tax administration. The problem with this method is that, over this period of time, foreign government assets held by residents were exempted from tax. However, according to several sources, they represented approximately 3/4 of total French foreign investments. The rate calculated by Saint-Marc (1983) is only available for shares. Moreover, one must not neglect incorrect declaration for tax evasion purposes. Actually, Saint-Marc (1983) also used a very empirical and questionable method (not theoretically justified) to extrapolate the rate of return on foreign bonds from domestic share and bond prices.

capital flow estimates. Thus, both the direct and indirect estimates of previous authors are inadequate methods of estimating French balance of payments.

INSERT Table 2
The French balance of payments by M. Levy-Leboyer (1977)
(Millions of *Francs*)

CORNERSTONES OF THE CONVENTIONAL WISDOM

The Assertion of French Foreign Investment Economic Inconsistency

On the basis of his statistics, Lévy-Leboyer (1977) developed three major ideas: there were consistent levels of French capital exports; French foreign investment was funded by returns on previous portfolio investments and the geographical distribution of French foreign investments was not driven by economic factors.

First, the hypothesis of consistent French capital exports is no longer tenable. Three different economic periods can be distinguished. First, during the 1860s strong growth of capital exports was associated with global railroad expansion. A period of slowdown followed from 1876 to 1895, corresponding to the great depression affecting France at the end of the nineteenth century[4]. Lévy-Leboyer (1977) noted that, at the same time, French government bond issues attracted part of domestic savings usually devoted to foreign investments. Finally, after 1895 French capital exports expanded again.

Secondly, Lévy-Leboyer (1977) found that French investment abroad was funded by returns on previous portfolio investments. According to his calculations, capital income reached 211% of the total capital exports during the 1880s[5].

The rate of return of foreign bonds is calculated as follows: let Aa@ be the ratio of the domestic bond price index to the domestic share price index; then, the rate of return on foreign bonds is assumed to be equal to: (rate of return on foreign shares/a) x 100.

[4] The term "great depression" we use for the period from mid-1870s to the mid-1890s has long been dropped from American and British economic history since this period cannot be identified securely in either price deflated GDP or unemployment data. It can however be identified in the French data. The French "great depression" is not a global or Western European one.

[5] This amount is deduced from financial income and capital export, which are both estimated.

And finally, Lévy-Leboyer (1977) argued that the geographical distribution of French foreign investments (Table 3) was not driven by economic motives. Comparing the geographical distribution of French foreign assets to that of British foreign assets, there is a clear predominance of French establishments in Eastern and Southern Europe, and a failure to invest in "younger countries" where the British invested 40% of their much larger total investment abroad between 1900 and 1913. In this view, a booming world was closed to French capital, and France remained disconnected from the international dynamics of capital flows to the New World.

Table 3 presents the geographical distribution of French foreign investments calculated by Cameron (1961) for the year 1892 and by Feis (1930) for the years 1900 and 1913, excluding colonial investment, which represented 5% in 1892 and 8% in 1913.

INSERT Table 3
Geographical Distribution of French Foreign Assets in % (without colonies)
Source: Cameron (1961), Feis (1930)

In Lévy-Leboyer's data in Table 3, a European preference seems to dominate. However, this tends to decrease by the end of the period in favor of "emerging countries". According to Lévy-Leboyer (1977), France remained too committed on the old continent, and did not manage to diversify its external investment. He judged this geographical polarization as being inefficient, too risky, and inconsistent with commercial flows. Lévy-Leboyer (1977) maintained that France neglected considerations of profitability in setting up business abroad. In order to corroborate this hypothesis, Lévy-Leboyer (1977) calculated the correlation coefficient (r^2) between the French bond return rate and French foreign capital exports. From 1876 to 1895, when these capital export movements were quite low, French foreign investments seemed to grow as French domestic rates decreased. The correlation coefficient (r^2) had the right negative sign. But for the rest of the period, from 1840 to 1875 and from 1896 to 1913, the coefficient had the "wrong" positive sign. French capital exports grew with domestic yields. Based on these statistical yields, Lévy-Leboyer (1977) rejected the financial explanation of French capital relocation.

Lévy-Leboyer's use of interest rate levels would seem to be an inappropriate indicator to choose when selecting assets.

Political Forces Dominated the Process of French Foreign Investment

The existing literature tends to contrast major creditor countries[6]. Great Britain undertook market-oriented foreign investment directed to North America, Latin America and Oceania, with these three regions accounting for 70% of British investment in 1913. In contrast, investment in Europe and its periphery mainly came from France. This geographical difference was coupled with different priorities when choosing which sector of the economy to invest in. Simon (1967) estimated that from 1865 to 1914, Great Britain allocated 70% of its foreign investment to social overhead capital with mining coming in at 12%, in a distant second place. Railroads alone represented 40% of British asset holdings in 1913. In contrast, during the same period, Paris focused on financing government expenditures in Eastern and Central Europe and in the Middle East. In his study focusing on the period between 1870 and 1914, Feis (1930) developed the thesis that economic considerations dominated British portfolios while political considerations drove French portfolios:

"In short, the financial transactions between Western Europe and the other areas were an important element in political affairs. They became all the more important as the official circles of lending countries gradually came to envisage their citizens' foreign investments, not as private financial transactions, but as one of the instruments through which national destiny was achieved. Financial force was often used to buy or build political friendship or alliance, was often lent or withheld in accordance with political considerations".

The idea that politics and diplomacy were significantly more influential in France than in Great-Britain, a concept first expressed by Feis (1930) and later extended by White (1933) and Cameron (1961), constitutes the core proposition of the "older literature". This thesis relies *entirely* on the geographical orientation of French capital abroad. France neglected booming economies such as the United States, Canada, Australia, or South-Africa while concentrating on less dynamic areas such as South and Eastern Europe, Russia, the Ottoman Empire, and Egypt. Lévy-Leboyer (1977) turned these choices into the thesis of "economic inconsistency" when they were compared to those made by the British. The geographical location of its financial investments abroad indicates that France wanted to underwrite its hegemony within its sphere of influence with private direct and portfolio investments in Russia or in the Balkans to complement its political and diplomatic alliances with these countries.

This one-dimensional explanation of the differences between British and French capital exports overlooks many considerations. First, there are similarities between France and Great Britain: colonial investment was particularly low for France (see table 3) as it was for Great Britain, which weakens the political argument in both cases. Secondly, one should be cautious in accepting the stringent distinction the older literature tends to make between flows to European governments (in other words, characterizing French investment abroad), and flows to the private sector in the New World (in other

[6] Germany is outside the scope of our study.

words, mainly representative of British investment abroad). As Nurkse (1954) noted, British government involvement, notably in foreign railroads, the largest category of private sector borrowing, could have existed indirectly through grants, subsidies or loan guarantees. The British intervention in Egypt could also be explained by the political goal of securing British influence over the Suez Canal. Clemens and Williamson (2000) shed new light on the connection between public and private investment. They concluded that in Great Britain's case, flows to private sector investment opportunities were encouraged by previous investments in government-financed projects. Ultimately, these points may bring the French and British cases closer together.

As Fishlow (1985) pointed out, "The vision first expressed by Feis is only partial. Moreover, it impedes rather than facilitates our understanding of capital flows; Unproductive borrowing- different from infrastructure investment, was not necessarily unprofitable lending: high returns on this kind of investment were possible.

"It is important to understand that French investment in Russia did not merely respond to political signals: there was a surge in industrialization dating from the 1890s. The fact that capital flows were channeled from particular countries for overt political advantage does not necessarily imply that the flows lacked economic basis, and that is the second point to remember, capital could be elicited from France not merely because of the warmth of Franco-Russian relations but also because of the obvious improvement in Russian economic fundamentals. Russian revenues, despite Feis's view, were expanding at a favorable rate" (Fishlow, 1985, p. 408).

We intend to follow Fishlow's (1985) lead and test whether or not economic arguments can explain why Europe attracted French investments. Ideally, we would like to be able to include political variables in our test, which would make it easier to evaluate the currently accepted view. Unfortunately, the core proposition of the older literature was not actually tested but simply extrapolated from the geographical distribution of French capital exports. In fact, assessing this thesis directly appears to be impossible as its core proposition is not statistically testable because political assumptions cannot be operationally defined. Explanatory variables cannot be constructed in a way that would permit them to be used in a regression involving either political or diplomatic influences. What dummy variable would capture what Neymarck (1903) described as "informal contacts" between the French government and the *Bourse de Paris*? Did diplomatic or political influences increase or decrease over this period? The evolution of the geographical distribution of French investment abroad seems to suggest that they decreased, but this does not appear to correspond to the international politics before the First World War. However, it is possible to test whether the French foreign portfolio allocation can be explained solely within an economic model (see, section "a portfolio approach").

NEW DATA SETS

The first step in our investigation of French overseas lending consists of estimating an improved series for the stock and rate of return in French foreign assets.

Shares and Bonds Index and Rates of Return on Foreign Assets Held by Residents

On a weekly basis, *L'Economiste Français* indicated the prices of the "leading foreign bonds" *(principaux fonds étrangers*) for fixed income assets and "main foreign shares issued on the Paris Stock Exchange" (*principales actions étrangères côtées à la Bourse de Paris*) from 1873 to 1913. We have used these data to construct two separate indices: one for the price of foreign stocks and one for the price of foreign bonds. The foreign bond index is a simple arithmetic annual average of the prices on the last day of the year for 18 foreign bonds issued in Paris at various times between 1873 and 1913 (Spain 4%, Italy 5%, Austria 4% and 5%, Hungary 4%, Greece 5% and 4%, Germany 3%, Great Britain 3%, Norway 3%, Sweden 3.5%, Russia 4% and 5%, The Ottoman Empire 4%, Egypt 4% and 4.5%, Argentina 5%, and Brazil 4%). The foreign stock index is a simple arithmetic mean of the prices of six European railway shares on the last day of each year, including northern and southern Spain, northern and southern Italy, the Austrian Empire, and Portugal.

These two indices contain the most representative shares and bonds published by *L'Economiste Français*, but they do present certain limitations. First; a very small number of assets represents each country. Additionally, a single asset is often assumed to represent one country. Finally, many countries are not represented in either the stock or bond index. Unfortunately, no other source regularly published the foreign assets issued in Paris from the end of the nineteenth century to the first World War; so we are forced to use the available economic information found in *L'Economiste Français* , and to consider this as leading assets[7].

[7] We obviously have a shorter list than the Dow-Jones 30 industrials but if one makes the usual assumptions about market integration, the short list of assets included in our indices are well arbitraged with all the other important assets actively traded on the Bourse. The fact has to be pointed out that trading across assets means there are strong market currents which are picked up in the valuations of leading assets.

INSERT Figure 1
Indices of Prices of Foreign Bonds and Foreign Stocks in Paris

The observed yield for each foreign bond has been calculated as the ratio of coupon to price and the rate of return index as the simple arithmetic mean. We chose this simplification for three reasons. First, the amount of each subscription is unknown. Second, although calculating the return at maturity on each foreign bond would have been more rigorous, it is not possible as the data necessary for such a calculation are incomplete. In order to do this we would need to know the amount of the coupon , the dates of distribution of this coupon which is unknown for several bonds in this group, the redemption price of the bond if it was redeemable and some were, the price at the end of the year, and the advance redemption possibility, which must not be undervalued because it may significantly increase the return rate. Rather than limit our sample to those bonds on which we can calculate actuarial returns we have decided to consider a larger number of assets because portfolio diversification played a key role. Finally, because we are looking at a period of just over twenty years, from 1891 to 1913, we have decided to consider them as perpetual rents. In this case, the actuarial rate of return can be approximated by the coupon to price ratio. Thus, in this data-constrained simplification, calculating the coupon to price ratio is technically justified.

For stocks, we calculated a similar ratio[8]. But it must be noted that important breaks in dividend series occurred. In the case of missing values, we have used a previous dividend. Over the period, railway dividends tended to be quite steady. Nevertheless, the calculated rate of return on foreign shares couldn't be considered very strong.

INSERT Figure 2
Observed Rate of Return of Foreign Bonds and of Foreign Stocks in Paris

INSERT Figure 3
Yield Difference Between Foreign and French Bonds

[8] The estimator of annual returns adopted here is deliberately calculated as the ratio "dividends / stock price" in order to avoid a risk of statistical correlation in our regressions. Indeed, capital gains and losses are already taken into account in our calculated stock of overseas assets which incorporates adjustments for change in market value of the outstanding assets. As developed in the section "a portfolio approach", this estimator implicitly assumes that the typical investor implements a simple type of holding behavior and portfolio construction.

Stock in French Foreign Assets

Our estimates of French foreign stocks are based on data on new issues: a rehabilitation of the direct method of estimation. Marnata's studies (1973) provided us with residents' foreign shares and bond subscriptions from 1892 to 1913. These data come from the *Crédit Lyonnais* archives and provide detailed information on residents' purchases. For the pre-war and the inter-war period the "Financial Studies Office" of the *Crédit Lyonnnais* registered each and every purchase of French and Foreign financial assets made by French residents. It constitutes a complete and accurate historical source to estimate the foreign financial stock held by residents. Referring to the methodological appendix developed by this office, these statistics were designed to accurately calculate the precise amount French residents paid for each foreign or domestic issue in Paris; the second purpose was to assess the distribution and the evolution of investors' preferences between fixed and variable income assets, and between guaranteed and non guaranteed loans.

The construction of estimates for the stock in overseas assets, however, does raise some statistical problems. First, we need an estimate of the initial stock. Lévy-Leboyer (1977) supposed a stock equal to zero in 1833. This introduces a bias at the beginning of the series as capital flows occurred before that date. However, overtime the bias decreases because the major capital outflows occurred after this date. A more important problem arises because the value of the outstanding assets changes continuously. To account for this, one needs to make the distinction between shares and bonds, as they follow different cycles. Lévy-Leboyer's (1977) stock simply cumulated the sums of annual flows, as follows:

$$S_t = S_{t-1} + F_t$$

where:

S_t is the stock of portfolio outflows at date t, and F_t the corresponding flow.

In order to obtain a stock at market value, which is appropriate for portfolio analysis, we have: (1) set the initial stock in 1891 according to financial analysts= estimates; (2) used the annual flows calculated by Marnata after this date; (3) adjusted the market value of the stock using share and bond prices published by *L'Economiste Français* weighted by the geographical distribution of French foreign assets (from Table3).

Our procedure can be summarized as follows:

$SFB_t = SFB_{t-1}.(FBPI_t/FBPI_{t-1}) + FFB_t$

$SFS_t = SFS_{t-1}.(FSPI_t/FSPI_{t-1}) + FFS_t$

where:

SFB_t is the "Stock of Foreign Bonds" and FFB_t the associated flow calculated by Marnata, with figures expressed in French francs.

SFS_t is the "Stock of Foreign Shares" and FFS_t the associated flow calculated by Marnata, with figures expressed in French francs.

For the year beginning 1891, we consider a stock equal to the simple average of all estimates published for this year by financial analysts, following Marnata's assumed portfolio of ¾ bonds and ¼ shares in 1891.

$FBPI_t$ is the "Foreign Bond Price Index" calculated from *L'Economiste français* weighted by the geographical distribution of French foreign assets (from Table 3).

$FSPI_t$ is the "Foreign Share Price Index" calculated from *L'Economiste français* weighted by the geographical distribution of French foreign assets (from Table 3).

INSERT Table 4
Stocks of Foreign Shares and Bonds Held by Residents
(in millions of *Francs*)

INSERT Figure 4
Shares of Total Portfolio (in %) in Foreign Stocks (KAC)
and in Foreign Bonds (KOB)

Estimating the value of foreign financial assets is a prerequisite to making an appropriate portfolio analysis. According to the portfolio theoretical analysis, arbitrage concerns the portion of the global portfolio[9] held in foreign assets. In the following section, we test whether a portfolio model can account for French foreign financial asset relocation from 1892 until 1913, a period which provides us with reliable data from primary sources.

PORTFOLIO APPROACH

Our goal is to test the significance of economic factors in the determination of France's foreign investment by using a portfolio model. We follow the pioneering work of Edelstein (1974) on British capital exports in the age of "high imperialism". After reviewing the previous uses of portfolio models

[9] The non-foreign asset holding in the overall portfolio refers to the Paris domestic stock and bond market capitalization; the data can be found in Saint-Marc (1983) and Bourguignon, Lévy-Leboyer (1986).

which are both influenced by relative yield and applied to a particular historical context, we discuss the challenges we were faced with and the technical solutions we found.

Previous Use of this Methodological Framework in Historical Analysis

Edelstein (1974) developed a portfolio model evaluating the microeconomic foundations of English foreign investments during the period from 1870 to 1913. In his model, Edelstein (1974) focused on English demand for stock in American railways which was Great Britain's main investment abroad during this period. He found that there was a positive correlation between British holdings of American railway and the railway asset return rate, the British domestic investment return rate as well as with British wealth. We cannot focus our analysis on individual financial assets because we do not have the data to replicate this procedure. Instead we compare the overall returns of our aggregate foreign stock and bond indices to overall returns of French domestic stocks and bonds. Since French foreign investments were targeted to "Europe and its periphery" (see, Table 3) we have chosen variables relevant to that region in our model.

We would like to follow Edelstein's (1974) method of investigating the driving forces behind English capital exports and his formulation of the debate in terms of "push or pull factors". Did English foreign financial asset demand correspond to a wealth effect in the country that exported capital, or was it pulled by the financial needs of host countries (for example, the public debts of issuing countries)? We want to investigate whether French financial investment in Europe and its periphery was pulled by the industrial and financial needs of the host countries that offered investment opportunities in public funds or in share participation with sustained industrial growth perspectives? Were foreign public debt issues a conclusive argument for French expansion abroad? Such questions are a source of debate and controversy. Cameron (1961) and Lévy-Leboyer (1977) attempted to point out a sort of crowding-out effect of domestic investment by foreign investment. We do not share this view: arguing that foreign investments are a pure loss for domestic growth seems to be an extreme point of view. Instead, we consider foreign investment as part of a portfolio optimizing strategy. International savings transfers are logically motivated by expected yield return. Moreover, the return on investment ultimately increases domestic wealth. In addition, it cannot be assumed that foreign investment reduces domestic investment by the same amount. If domestic returns are not profitable, domestic investment may not occur. We also consider a potential "push effect" by assuming that the behavior of international investors depends on their desired wealth level. If wealth held in foreign financial assets decreases, because of a drop of foreign stock market prices, the investor is motivated to save more in order to restore his desired wealth, which implies an increase of the domestic rate of savings. On the other hand, an increase of stock market prices, which raises the investor's wealth, may discourage domestic savings.

Issues in Applying Economic Modeling to Historical Data

Basic international portfolio models (CAPM) give the appropriate framework to answer our questions. The microeconomic basis of the portfolio approach establishes that asset demand functions in foreign currencies depend on speculative and hedging investment behavior. The optimal portfolio is divided into two parts: one non-sensitive to yields (usually qualified by minimum variance) reflecting risk aversion; the other, called speculative portfolio, sensitive to yield expectancies (Adler and Dumas, 1983). In the case of an international portfolio, an exchange rate risk must be introduced (Kouri, 1976), which motivates investors to hedge against it. The demand function of foreign assets is composed of three arguments, which reflect portfolio choice:

- A constant hedging against inflation;
- An exchange rate level to hedge against exchange rate risk; and
- A yield difference for speculation.

Implementing this theoretical framework requires the following: The shares of foreign funds and equities in the global portfolio, the exchange rate of the *Franc* against a panel of currencies, and domestic and foreign observed yields.

Collecting appropriate data on these variables presents some practical problems.

One might conclude that exchange rate hedging is a simple problem because this period is situated during the Gold Exchange standard, an era characterized by fixed exchange rates. However, Flandreau and Le Cacheux (1996) showed that in Europe, during the Gold standard and despite gold convertibility, exchange rate risk existed. There were concentric circles of stability: The *Franc* belonged to the first group of steady currencies, the *Lira* and the *Peseta* to a second group, characterized by a +/-10% fluctuation amplitude against the *Franc*; the *Ruble* to a third group, characterized by extreme volatility. One can easily suppose that the more volatile the currency, the greater its variances influence portfolio choices. Therefore, according to theoretical predictions and observed exchange rate fluctuations, in our regressions, we use an average exchange rate of the *Franc* against a panel of main currencies[10] reflecting the global geographical structure of French capital export (as illustrated in Table 3).

[10] The exchange rate estimator of the *Franc* is quoted *au certain* against a panel of currencies, according to the global destination of French capital export. The countries included in this panel are: Great Britain, Austria, Switzerland, Germany, Netherlands, Belgium, Spain, Italy, Russia, the Ottoman Empire, Egypt, the USA, each currency being identically weighted by 1/12 over the 1890-1913's period. Thus the constant weight of each currency over the period reflects the global structure of French capital export, not its change through time. This choice can be explained as follows: weighting each year the exchange rate estimator by the year geographical

A second problem concerns the relationship between observed return rates (calculated above as the ratio of coupon to price) and expected return rates appropriate for investment decisions. Here, we are restricted by data and forced to make a difficult choice. We assume, as others have, that economic agents have rational and true expectations (in other words, what they plan actually occurs). Therefore, in our econometric test, this enables us to take the calculated rate of return of the t+1 year as an indicator of the expected rate of return in t.

Last but not least, objections can be made concerning the relevance of a portfolio approach applied to an annual series of capital stock and yields. Arbitrage and portfolio choices are usually supposed to concern a short term horizon (a monthly or even daily adjustment). Nevertheless, as legitimate as this objection may be, we feel that the periodicity of historical data should not prevent one from learning about the past by using economic modelling.

Empirical Investigation

Given the models presented above, two tests have to be carried out: One concerning foreign fixed income financial assets and the other concerning foreign variable income financial assets held by French residents. In the former case, the endogenous variable is the "ratio of foreign bonds to total French and foreign assets held by French residents". In the latter, it is the "ratio of foreign equities to total French and foreign assets held by French residents". In both cases, two kinds of variables will be tested as explanatory factors of the variations in these shares:

- *Financial variables:* The expected rate of return on domestic and foreign assets. According to international CAPM models, these two rates of return emphasize speculative behavior. Very often, empirical portfolio models wrongly take only short-term yield differences into account; Here, only long-term yields are used, which is economically justified as specie, with short term capital flows are excluded from the calculated stock; and
- *Nominal variables:* A weighted exchange rate and variables for "pull factors" (Public Debt Index (PDI) in "Europe and its periphery area" in the case of foreign fixed income assets, and Industrial Production Index[11] (IPI) of the same area for foreign shares). The Public Debt Index of "Europe

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structure of French capital export could introduce a statistical correlation between "KOB" and "e", which could lead to an overestimation of the impact of the exchange rate in the KOB regression.

[11] The Industrial Production Index of "Europe and its periphery" is an estimator of "pull factors" which can play a role in foreign variable income financial asset allocation. The same source, method and countries as for PDI are used for IPI index.

and its periphery" is an indicator of "pull factors" which can play a role in foreign fixed income financial assets allocation. PDI is built as follows: public debt in local currency of Great Britain, Denmark, Norway, Sweden, Russia, Austria, Hungary, Switzerland, Germany, Netherlands, Belgium, Spain, Italy, Bulgaria, Serbia, Romania, the Ottoman Empire and Egypt are taken from International Historical Statistics. They are converted into Franc and presented as an index, basis 100 in 1913.

The data set is composed of the following variables, which are all annual series covering the 1890 to 1913 period:

- KOB_t is the share of foreign bonds in the overall portfolio (calculated for this study);
- PDI_t is the public debt index for the area "Europe and its periphery" (International Historical Statistics);
- r_t (r_{t+1} actual) is the expected rate of return on French bonds (Dessirier, 1927) ;
- r'_t (r'_{t+1} actual) is the expected rate of return on foreign bonds (calculated for this study);
- e_t is the exchange rate of the French Franc against a panel of European currencies, plus the US dollar (calculated for this study);
- KAC_t is the share of foreign stocks in the overall portfolio (calculated for this study);
- IPI_t is the industrial production index of the area "Europe and its periphery", (International Historical Statistics);
- rA'_t (rA'_{t+1} actual) is the expected rate of return on foreign stocks (calculated for this study); and
- rA_t (rA_{t+1} actual) is the expected rate of return on French stocks (Dessirier, 1927, data revised by Arbulu, 1998).

RESULTS AND ECONOMIC COMMENTS

Time Series Properties of Variables

The analysis of the stationarity of the series is an essential step to determine the correct econometric specification to implement in our study. A stationary series is characterized by a time-invariant mean and a time-invariant variance. We have implemented three unit root tests[12]. The results of these tests

[12] There are alternative methods to test the non-stationarity of a time series. In this subsection, the following three well-known and widely used techniques are applied to determine whether the variables are stationary or nonstationary: (1) The Schmidt and Phillips' test; (2) The Kwiatkowsky, Phillips and Shin test (KPSS); and (3) The efficient unit-root tests suggested by Elliott, Rothenberg and Stock. An elaborate discussion can be found in Schmidt and Phillips (1992), Kwiatkowsky, Phillips and Shin (1992) and Elliott, Rothenberg and Stock (1996), respectively.

are not reported here because of limited space[13], but they can easily be summarized as follows since clear patterns emerge from them: the unit-root null hypothesis cannot be rejected at the 5% level of significance for most of the nine variables under consideration. The only exception is for r where the KPSS tests indicate that this variable is stationary around a linear trend. However, the Schmidt-Phillips and Elliott tests do not reject the existence of a unit-root in this variable. Tests have been applied to the variables taken in first differences and reject the non-stationary hypothesis for all series. This leads us to conclude that the series in this study are well characterized as an I(1) Process (integrated of order one), some with non-zero drift[14].

Parsimonious Dynamic Models and Economic Interpretation

Having demonstrated the presence of a unit-root in all series of our data set, we now test whether these variables are cointegrated. We present the results of the two Error Correction Model appropriate for the analysis of cointegrated times-series. The former concerns the share of foreign bonds, and the latter the share of foreign stocks held by French residents. More precisely, the objective is to study the interdependence between these variables taken in level, without making any *a priori* hypothesis on the value of the coefficients linking them, and testing the existence of long-term relationships.

For each hypothesis to be tested, the database is respectively composed of *KOB, r', r, PDI, e*, and *KAC, rA', rA, IPI, e*[15].

The econometric methodology adopted here (see Appendix 1 for further details) yields our two final models (estimated with Maximum Likelihood) with parsimonious dynamics[16], and fully identified long- term relationships, which conform to our theoretical priors[17]. These models are both consistent

[13] They are available upon request.

[14] Note that this result must be taken with some caution given the small number of observations used for implementing unit-root tests (23). Indeed, attempts to conclusively prove the existence of such unit-roots usually require a great number of observations (over 100). In spite of this restriction, we think however that these tests, which we only apply for purely descriptive purposes, can give a first indication on the statistical properties of the data.

[15] In the estimations reported below, the variable "e" does not appear in the equation for KAC because it turns out not to be significant neither in the short and long run of the ECM model.

[16] This means that in our regression presented here all coefficients not significant at the 5% level have been eliminated. To see the complete equation, see Appendix 1.

[17] We confined ourselves to a limited number of explanatory variables because the Maximum Likelihood Methods require a small number of variables to give efficient results.

with the theory and congruent with the data[18].The first concerning the share of foreign fixed income financial assets in the global portfolio is given by[19] :

$$\Delta KOB_t = -0.443\ \Delta KOB_{t-1} + 0.015\ \Delta r'_{t-1} + 0.001\ \Delta PDI_{t-1} + 0.002\ \Delta e_{t-1}$$
$$(-3.22)^{20} \qquad (3.69) \qquad (2.91) \qquad (9.18)$$

$$+ 0.057(KOB_{t-1} - 0.007\ r'_{t-1} - 0.002\ PDI_{t-1} + 0.022\ r_{t-1} - 0.093) + \varepsilon_t$$
$$(6.10) \qquad (-3.62) \qquad (-3.15) \qquad (5.10) \qquad (-0.039)$$

This model enables us to reconstruct the economic motives of French financial property abroad:

In the long- term, French assets invested abroad follow the level of public debt in "Europe and its periphery", indicating a "pull effect". One may think that the importance of international public debt issued by these nearby countries as well as its broad diffusion in Paris guaranteed strong liquidity for these assets, and constitute a factor of safety for French investors. In addition to this economic factor, one also finds financial components explaining French foreign asset behavior. The share of foreign fixed income financial assets in the global portfolio is positively correlated to the expected return on foreign assets and negatively correlated to expected returns on domestic investment, which is consistent with the portfolio theory[21]. It reveals an underlying logic based on the search for profit: French investors neglected French investments as the expected rate of return decreased, and turned to foreign assets when the anticipated rates of return on these investments increased. They restructured their portfolio in response to this yield difference.

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[18] It must be underlined that the constant, included in both estimated models, either in the short or the long run, catches the influences of omitted variables (like political or diplomatic variables, which are nearly impossible to measure correctly, see conclusion).

[19] Let us notice that in this canonical representation of Error Correction Models which includes both the short and long run dimensions, the signs of the long run coefficients are of course reversed in comparison to the long run structural expression presented in appendix one, ie:

$$KOB = 0.007\ r' + 0.002\ PDI - 0.022\ r + 0.093 + \varepsilon_{1t}$$
$$(3.62) \quad (3.15 \quad (-5.10) \quad (0.039)$$

[20] T-stats in parenthesis are for the null hypothesis that the estimated coefficient is equal to zero.

[21] We recall that we made a strong rational expectation assumption according to which agents correctly anticipate in the year n the effective rate of return which will occur the year n+1. The expected rate of return series that we calculated takes this *a priori* assumption into account. The econometric results produce the expected results of the portfolio theory since the share of Foreign assets in the global portfolio is positively (negatively) correlated with Foreign (Domestic) expected rate of return.

In the short-term, we notice the influence of public debt variation, which means that the French demand for this kind of asset grows with European public supply. The exchange rate emerges as a short-term explanatory variable but it is insignificant in the long-term. In dynamics, the portfolio of foreign fixed income financial assets positively reacts to the variation of the French exchange rate: an increase in the value of the French Franc against that of other currencies of the panel facilitates foreign asset purchase by residents. Finally, one finds in dynamics the positive impact of the variation of the expected rate of return on foreign assets: The more this expected rate of return increases, the more likely it is that residents will hold foreign assets, which conforms to theoretical predictions.

Our results are consistent with the following mechanism: The long-term objective of the French investor (here, the share of foreign bonds in the overall portfolio) is negatively correlated with the level of domestic expected rates of return; it is however; positively correlated to the anticipated level of foreign rates of return, and also positively correlated to the public sector borrowing requirements of "Europe and its periphery". In the short term, the investor corrects the distance to this long-term target according to the variation of the domestic rate of exchange, the variation of the public sector borrowing requirements of the area, and the variation of foreign assets' expected rate of return (all signs correctly oriented). Thus, it has been possible to highlight the economic and financial arguments underlying the diversification of French capital abroad at the turn of the nineteenth century until 1914.

For the second model concerning the share of foreign stocks held by French residents in the overall portfolio, we obtain the following parsimonious dynamic specification :

$$\Delta KAC_t = 0.096 - 0.334\Delta KAC_{t-1} + 1.473\,(KAC_{t-1} - 0.012\,rA'_{t-1} - 0.001\,IPI_{t-1} + 0.001\,rA_{t-1}) + \eta_t$$
$$(4.38)^{22} \quad (-2.75) \qquad (4.18) \qquad (-7.63) \qquad (-4.14) \qquad (4.35)$$

Here again, the estimated model conforms to theoretical predictions. In the long-term relationship, it appears that the share of foreign stocks held by French residents in the overall portfolio responds positively (resp. negatively) to the level of the foreign (French) expected rate of return. As previously seen, beside financial components of the French asset demand, one finds a "pull effect", which is linked in this case to the level of the industrial production in the area. This result seems very logical as growth perspectives in the area sustain the residents' demand for foreign shares. In the short term, it must be noted that the lagged dependent variable is the only one to intervene in the relationship. Investors adapt their behavior according to the past variation of the portfolio held in foreign shares. Moreover, one can note that the adjustment to the target is relatively short (one period).

[22] T-stats in parenthesis are for the null hypothesis that the estimated coefficient is equal to zero.

CONCLUSION

The current study has attempted to investigate the influences affecting French assets abroad prior to 1914. Our findings are not far from Clemens and Williamson's (2000) concerning British capital exports. In their study, the authors concluded that "British capital exports especially that invested in private enterprise went where it was most profitable, chasing natural resources, educated populations, migration flows, and young populations". Our Industrial Production Index of "Europe and its Periphery", which appears as a strong positive "pull factor" in our regression, encompasses these factors insofar as growth is the result of demographic factors and availability of natural resources.

Contrary to the usual conclusions about France's foreign investment, which insist on political or diplomatic considerations, we have been able to emphasize the role of economic and financial factors in French capital exports prior to 1914 by combining microeconomic and econometric approaches. To reassess the French financial position in the world before WWI, we have used economic or financial explanatory variables exclusively. This study, following Edelstein (1974), has tried to uncover the economic motives of French investors. By using economic modelling we have shown that the destination of French financial flows was consistent with a rational economic behavior. Notably, this study highlights the core role played by the expected returns on foreign and domestic assets, consistent with the portfolio theory. As previously emphasized, the diplomatic thesis of the older literature is not statistically testable. Thus, the purpose of this study has been to test the economic and financial hypothesis. We have shown that the economic and financial hypothesis cannot be rejected, which ultimately calls into question the diplomatic and political thesis.

Appendix 1
Econometric Methodology

1) Test of the Number of Cointegrating Relationships

The lag length choice used in the specification of the two unrestricted Vector Error Correction Model (VAR-ECM) is based on the results of two criteria (Schwarz' Bayesian information criterion and Hannan-Quinn criterion), and on global Fisher tests. These different methods all indicate an optimal value of one year for the two models. Once the lag length used in VAR-ECM model specification has been determined, the next step is to test the number of cointegrating relationships existing between the variables of the two systems. At this stage, a prior point must be emphasized: The asymptotic distributions of the cointegration tests depend on the possible presence of a constant or a linear trend in long-run relationships. To know how to model these deterministic components, one can possibly use the results of the sequences of standard unit-root tests applied previously and especially the Schmidt-Phillips (1992) tests which have not rejected the possibility that some of these series have

a linear drift. That is why all the cointegrating rank tests have been investigated in a system with an unrestricted constant, as well as a linear drift constrained to lie in the cointegrating space. Then the cointegrating rank and the status of these deterministic components have been tested simultaneously. Finally we have retained a VAR-ECM model with a constant constrained to lie in the cointegrating space for the share of foreign fixed income financial assets in the global portfolio, and a VAR-ECM model with an unrestricted constant for the share of foreign variable income financial assets held by residents: the two LR test statistics (trace test and Lambda max test[23]) proposed by Johansen (1988) for cointegration testing and also the critical value taken from Johansen (1995), are reported in Table 1.

TABLE 1 - Estimation of the Number of Cointegrating Relationships over the 1890 to 1913 Period

a) concerning the share of foreign fixed income financial assets in the global portfolio
X_t = (KOB', r'', r', PDI', e')'

Ho against Ha	$\lambda^{adj}_{\max}$ test[24]		λ^{adj}_{trace} test	
	Statistic	Critical value (at 5%)	Statistic	Critical value (at 5%)
r = 0 against r = 1	38.03**	34.4	88.12**	76.1
r ≤ 1 against r = 2	26.41	28.1	50.14	53.1
r ≤ 2 against r = 3	19.71	22.0	31.12	34.9
r ≤ 3 against r = 4	13.62	15.7	14.28	20.0
r ≤ 4 against r = 5	4.26	9.2	4.26	9.2

** *indicates significance at 10 percent level*

b) concerning the share of foreign variable income financial assets held by residents in the global portfolio
X_t = (KAC', rA'', rA', IPI')'[25]

[23] The Lambda max test statistic is the likelihood ratio of the null hypothesis H_2 (*r*) : « there exist at most *r* cointegration relations » against the alternative hypothesis H_2 (*r*+1) : « there exist at most *r*+1 cointegration relations», and the Trace test statistic is the likelihood ratio of the null hypothesis H_2 (*r*) against the alternative hypothesis H_1 (*n*) « there exist *n* cointegration relations », with *r* = *n*,...,0.

[24] Boswijk and Franses (1992) advocated the use of the corrected version of these two cointegration tests, which perform better in the case of small or medium sample size. These small sample corrected versions of test statistics denoted by $\lambda^{adj}_{\max}$ and λ^{adj}_{trace}, are obtained by premultiplying the usual test statistics by (T – np) instead of T, where n is the model variable number and p the VAR order.

[25] The symbol ' denotes the transposition of the series vector.

Ho against Ha	$\lambda_{\max}^{adj}$ test		λ_{trace}^{adj} test	
	Statistic	Critical value (at 5%)	Statistic	Critical value (at 5%)
r = 0 against r = 1	32.34**	27.1	59.68**	47.21
r ≤ 1 against r = 2	10.92	21.0	15.65	29.38
r ≤ 2 against r = 3	4.09	14.1	4.72	15.34
r ≤ 3 against r = 4	0.63	3.84	0.63	3.84

The test statistics indicate in both cases the existence of one cointegrating relationship between the variables being investigated. Note that this result was not straightforward since, as it was shown by Engle and Granger (1987), up to four long-run relationships between five variables can exist. The estimation of the cointegrating vectors and of the adjustment coefficients by Maximum Likelihood will be given later.

2) Weakly Exogenous Variables and Variables Excluded from Cointegrating Space

In order to give reasonable power to the tests on short-run and long-run coefficients to be carried out later, we begin by trying to impose some congruent weak exogeneity assumptions about the model[26]. As shown by Greenslade et al. (1999), imposing weak exogeneity restrictions at the earliest possible stage of the model reduction process, and then restricting the dynamic adjustment of the model, hugely increases the power of tests of over-identifying restrictions on the long-run cointegrating vectors. In practice, this means that a thorough use of economic theory at an early stage, rather than treating a model as a pure statistical artifact, can yield enormous benefits.

Our two theoretical models concerning the share of foreign fixed income financial assets in the global portfolio, and the share of foreign variable income financial assets held by residents in the global portfolio, suggest that 4 out of the 5 variables for the former, and 3 out of 4 variables for the latter should be weakly exogenous. Indeed in both cases the endogenous variable is respectively KOB and KAC. These theoretical predictions are confirmed by data at a 5 percent level of significance since we obtain a test statistic of χ^2 (4) = 8.97 (probability 0.0619) for the joint hypothesis that r', r, PDI, e are weakly exogenous, and a test statistic of χ^2 (3) = 7.82 (probability 0.0502) for the joint hypothesis that rA', rA, IPI are weakly exogenous. On the basis of this evidence, we then assume that these variables are weakly exogenous for the parameters of the conditional model and set up in each case a single equation conditional model respectively composed of KOB and KAC conditionally on the five and four equations describing the evolution of the weakly exogenous variables (r', r, PDI, e) and (rA', rA, IPI). It is actually now well-known that the short-run and long-run parameters of conditional models can be estimated without loss of information from the conditional model alone- without taking the Data Generating Process of the weakly exogenous variables into account.

In a second step, we apply a sequence of tests in order to determine whether some variables of the two estimated VAR-ECM models can be considered as not belonging to the long-run relationship established previously. For our second model related to the share of foreign variable income financial assets held by residents in the overall

[26] See Pradel and Rault (2003) for further details on weak-exogeneity.

portfolio, these tests indicate that at a 5 percent level of significance all the four variables belong effectively to the cointegrating space. On the contrary, as far as our first model related to the share of foreign fixed income financial assets in the global portfolio is concerned, the exclusion hypothesis of the cointegration space of e is easily accepted by data at a 5 percent level, since the marginal asymptotic level is of 45 percent (χ^2 (1) = 0.56 (probability 0.45). The exchange rate of French Franc (e) is thus both weakly exogenous and excluded from the cointegrating space, which means that it has an influence only on the short run dynamic of the share of foreign fixed income financial assets in the overall portfolio[27]. On the other hand, all the other variables are found to belong to the estimated long-run relationship.

Finally in the third step, we normalize the coefficient of KOB and KAC to 1 in the appropriate model, in order to ensure just identification of the unique long–run relationship detected in each case. It is indeed now well-known that if the cointegrating space is of order one, normalization is sufficient to ensure just-identification of the cointegrating relationship, and then, any additional restriction is an over-identifying testable restriction. After normalization, the just-identified long run relation is given by:

For the model concerning the share of foreign fixed income financial assets in the global portfolio:

$$KOB = 0.007\ r' + 0.002\ PDI - 0.022\ r + 0.093 + \varepsilon_{1t}$$
$$(3.62)^{28} \quad (3.15) \quad (-5.10) \quad (0.039)$$

For the model concerning the share of foreign variable income financial assets held by residents in the global portfolio:

$$KAC = 0.012\ rA' + 0.001\ IPI - 0.001\ rA + \varepsilon_{2t}$$
$$(7.63)^{29} \quad (4.14) \quad (-4.35)$$

3) Parsimonious dynamic models and economic interpretation

We now proceed to a model with a parsimonious dynamic structure. We seek a set of data based simplifications on the dynamics of the two estimated VAR-ECM models that do not lead to any undesirable properties of the residuals. This approach leads us to exclude variables with individual t ratios less than 1.96. This then yields our two final models [estimated by Maximum Likelihood, see Johansen (1995)] with parsimonious dynamics, and

[27] The results presented here have been obtained for some of them after several iterations. In fact, one weakly exogenous variable (e) has been shown moreover not to belong to the cointegrating space. We have found it more logical to take step by step these two pieces of information into account : for this purpose, we have first estimated a VAR-ECM in which e only appeared in the short run dynamic, and have then re-tested in this framework, whether the other variables belonged to the cointegrating space or not.

[28] T-stats in parenthesis are for the null hypothesis that the estimated coefficient is equal to zero.

[29] T-stats in parenthesis are for the null hypothesis that the estimated coefficient is equal to zero.

fully identified long-run relationships, which conform to our theoretical priors. These models are both theory consistent and congruent with the data.

The former concerning the share of foreign fixed income financial assets in the global portfolio is given by:

$$\Delta KOB_t = -0.443\ \Delta KOB_{t-1} + 0.015\ \Delta r'_{t-1} + 0.001\ \Delta PDI_{t-1} + 0.002\ \Delta e_{t-1}$$
$$(-3.22)^{30} \qquad (3.69) \qquad (2.91) \qquad (9.18)$$

$$+ 0.057(KOB_{t-1} - 0.007\ r'_{t-1} - 0.002\ PDI_{t-1} + 0.022\ r_{t-1} - 0.093) + \varepsilon_t$$
$$(6.10) \qquad (-3.62) \qquad (-3.15) \qquad (5.10) \qquad (-0.039)$$

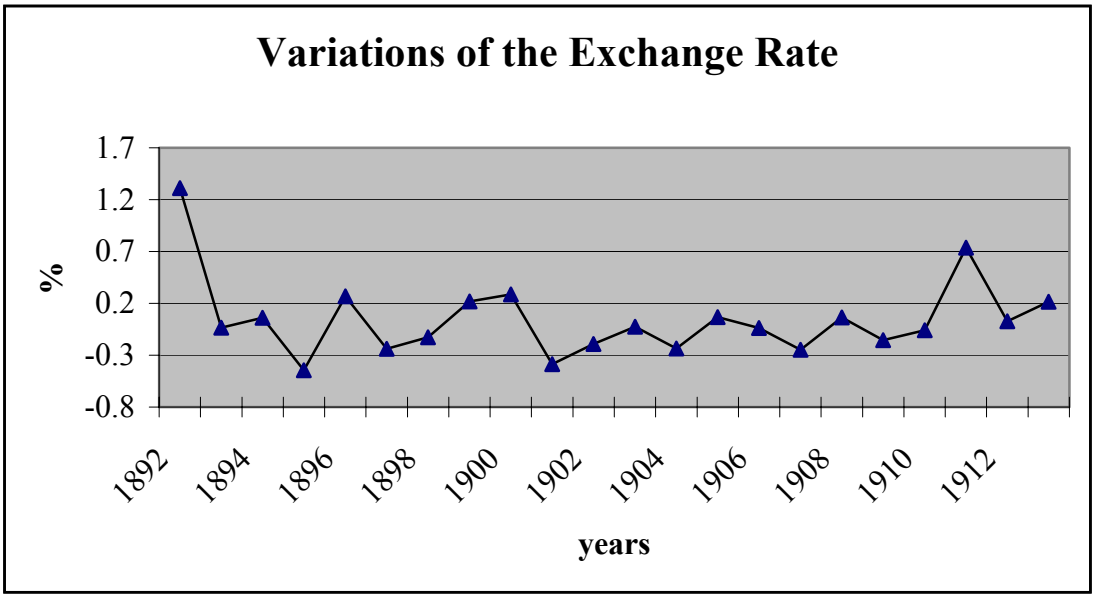
For the latter concerning the share of foreign variable income financial assets held by residents in the global portfolio, we obtain the following parsimonious dynamic specification:

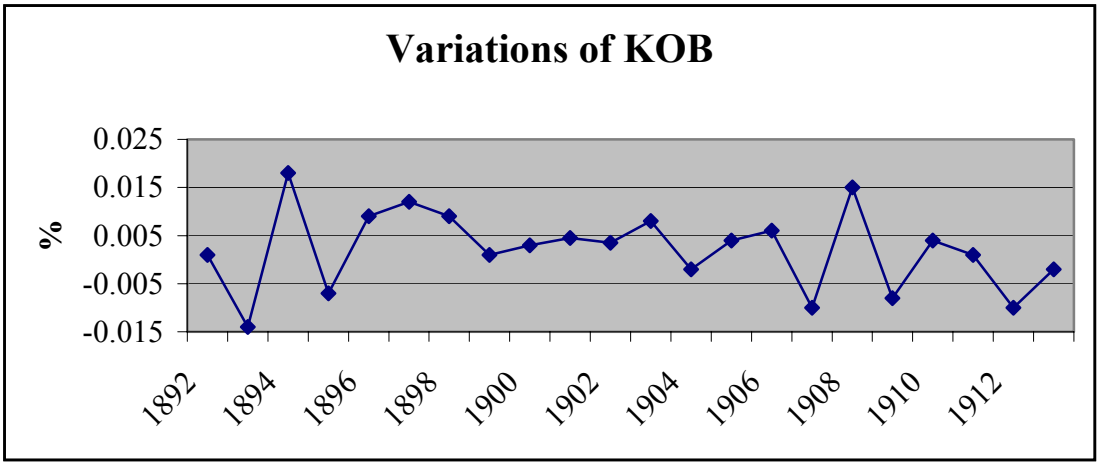
$$\Delta KAC_t = 0.096 - 0.334\Delta KAC_{t-1} + 1.473\ (KAC_{t-1} - 0.012\ rA'_{t-1} - 0.001\ IPI_{t-1} + 0.001\ rA_{t-1}) + \eta_t$$
$$(4.38)^{31} \quad (-2.75) \qquad (4.18) \qquad (-7.63) \qquad (-4.14) \qquad (4.35)$$

[30] T-stats in parenthesis are for the null hypothesis that the estimated coefficient is equal to zero.

[31] T-stats in parenthesis are for the null hypothesis that the estimated coefficient is equal to zero.

Appendix 2
Exchange rate and Foreign Fixed Income Portfolio Shares variations





These two graphs show that the Exchange rate indicator of the Franc calculated against 12 foreign currencies and Foreign Fixed Income Portfolio Shares (KOB) have similar variations over time. This illustrates the correlation between these two series. However, this should not be over-interpreted because the exchange rate is only one of the explanatory variables in the KOB equation.

Appendix 3
Foreign Bond and Foreign Share Price Indices not weighted by the geographical distribution of French foreign assets

	Foreign Bond Prices	Foreign Share Prices
1873	100	100
1874	120.6	129.8
1875	116.4	135.6
1876	108.5	108.9
1877	101.1	114.5
1878	112.7	121.4
1879	120.6	127.8
1880	134.3	153.9
1881	144.8	204.6
1882	140.8	183.9
1883	142.4	165.4
1884	149.4	176.8
1885	141.6	154.6
1886	155	159.1
1887	156.6	142.7
1888	162.6	153.8
1889	171	158.6
1890	159	159.3
1891	150.4	116.9
1892	150.5	107.3
1893	143.7	97.3
1894	153	107.4
1895	149.3	94.5
1896	154.2	99.2
1897	159.5	96.3
1898	157.6	101.5
1899	156.2	115.2
1900	156.6	115.5
1901	160.3	111.7
1902	164.5	116
1903	166.4	119.3
1904	164.9	123.2
1905	166.3	126
1906	164.3	152.7
1907	159.7	134.2
1908	160.2	138.2
1909	163.8	146.8
1910	162.2	152.8
1911	160.5	145
1912	153.1	144.8
1913	151	143.3

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TABLES

Table 1
Some estimates of the French Foreign Asset Stock (in billions of *Francs*)

Year	Thèry (1)	Neymarck (2)	White (3)
1850	2.5	-	-
1869	10.0	10.0	-
1880	15.0	15.0	13.2
1890	20.0	20.0	18.8
1900	27.0	26.9	26.0
1908	38.0	32-35	37.6
1912	-	40-42	43.5

Sources : col. (1) : Thèry (1897), " Valeurs mobilières en France ", p. 50; *Fortune publique de la France*, p. 197.

col. (2) : Neymarck (1911), *Finances contemporaines, VII*, 410; *Bulletin de l'Institut International de Statistique*, xx-2 (1915), 1,406.

col. (3): White (1933), *French International Accounts*, p. 122.

Table 2
The French balance of payments by M. Levy-Leboyer (1977)
(Millions of *Francs*)

	BALANCES					Balance	Capital
	Trade	Invisible earnings			Specie		Stock
		Services	Tourism	Financial incomes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1891	- 1,134	+ 397	+ 311	+ 679	- 126	+ 127	16,297
1892	- 685	+ 357	+ 300	+ 667	- 281	+ 358	16,655
1893	- 572	+ 340	+ 283	+ 670	- 204	+ 517	17,172
1894	- 715	+ 327	+ 267	+ 667	- 324	+ 222	17,394
1895	- 302	+ 347	+ 304	+ 670	- 40	+ 979	18,373
1896	- 309	+ 341	+ 303	+ 703	+ 80	+ 1,118	19,491
1897	- 341	+ 369	+ 302	+ 727	- 109	+ 948	20,439
1898	- 929	+ 380	+ 306	+ 769	- 62	+ 464	20,903
1899	- 322	+ 400	+ 320	+ 795	- 93	+ 1,100	22,003
1900	- 550	+ 418	+ 366	+ 838	- 248	+ 824	22,607
1901	- 332	+ 406	+ 331	+ 884	- 213	+ 1,076	23,683
1902	- 73	+ 412	+ 314	+ 941	- 271	+ 1,323	25,006
1903	- 513	+ 419	+ 326	+ 1,010	- 182	+ 1,060	26,066
1904	- 20	+ 421	+ 343	+ 1,052	- 517	+ 1,279	27,345
1905	+ 120	+ 458	+ 366	+ 1,127	- 644	+ 1,427	28,772
1906	- 298	+ 514	+ 408	+ 1,226	- 235	+ 1,615	30,387
1907	- 574	+ 544	+ 445	+ 1,315	- 410	+ 1,320	31,403
1908	- 556	+ 515	+ 469	+ 1,372	- 998	+ 802	32,205
1909	- 489	+ 569	+ 490	+ 1,390	- 148	+ 1,812	34,017
1910	- 882	+ 612	+ 505	+ 1,483	- 9	+ 1,709	35,726
1911	- 1,942	+ 631	+ 550	+ 1,547	- 153	+ 633	36,359
1912	- 1,463	+ 712	+ 577	+ 1,573	- 176	+ 1,223	37,582

1913	- 1,476	+ 731	+ 603	+ 1,657	- 514	+ 1,001	38,583

Table 3
Geographical Distribution of French Foreign Assets in % (without colonies)
Source: Cameron (1961), Feis (1930)

	1892	1900	1913
MEDITERRANEAN AREA (1)	37.5	22.0	12.5
Including:		17.0	9.5
Spain-Portugal		5.0	3.0
Italy			
CENTRAL Europe (2)	19.5	12.5	11.5
Including :			
Austria-Hungary		10.0	5.5
Balkan countries (Romania, Serbia)		2.5	6.0
WESTERN EUROPE (3) (Switzerland, Germany) (Belgium, Lux-Holland) (Scandinavian countries)	4.0	6.5	7.5
RUSSIA (4)	10.0	27.0	27.5
PERIPHERY (5)	24.0	18.5	16.0
including :			
Turkey		7.5	8.0
Egypt		11.0	8.0
Europe and Periphery (1)+(2)+(3)+(4)+(5)	95.0	86.5	75.0
RDM (6)+(7)+(8)	5.0	13.5	25.0
USA-CANADA (6)	2.0	3.0	5.0
LATIN America(7) (Argentina, Brazil)	2.0	7.5	14.5
ASIA (8)	1.0	3.0	5.5
TOTAL	100.0	100.0	100.0

Table 4
Stocks of Foreign Shares and Bonds Held by Residents
(in millions of *Francs*)

	Foreign Bond Stock	Foreign Share Stock	Foreign Bond Issues	Foreign Share Issues	Total Stock	Difference Parent-Rault / Lévy-Leboyer

	(1)	(2)	(3)	(4)	(5) = (1)+(2)	(6)
1891	13,900	4,600			18,500	2,203
1892	13,959	4,280	275	56	18,239	1,584
1893	13,582	3,940	245	58	17,522	350
1894	15,175	4,490	667	142	19,665	2,271
1895	15,181	4,143	605	194	19,324	951
1896	16,188	4,502	409	153	20,689	1,198
1897	17,007	4,553	135	182	21,560	1,121
1898	17,971	5,149	355	348	23,120	2,217
1899	18,902	6,115	741	276	25,017	3,014
1900	19,317	6,406	258	271	25,723	3,116
1901	20,169	6,394	518	199	26,563	2,880
1902	21,450	6,904	594	265	28,353	3,347
1903	22,656	7,317	271	216	29,973	3,907
1904	22,465	7,589	1,023	36	30,054	2,709
1905	23,752	8,331	1,022	568	32,083	3,311
1906	24,605	10,557	1,141	460	35,163	4,776
1897	24,920	9,664	617	387	34,583	3,180
1908	25,862	10,372	673	422	36,235	4,030
1909	27,855	11,545	977	526	39,399	5,382
1910	29,553	13,048	1,551	1,029	42,602	6,876
1911	30,187	13,407	981	1,026	43,594	7,235
1912	29,337	14,477	424	1,086	43,814	6,232
1913	29,893	15,027	732	706	44,920	6,337

FIGURES

Figure 1
Indices of Prices of Foreign Bonds and Foreign Stocks in Paris

Figure 2
Observed Rate of Return of Foreign Bonds and of Foreign Stocks in Paris

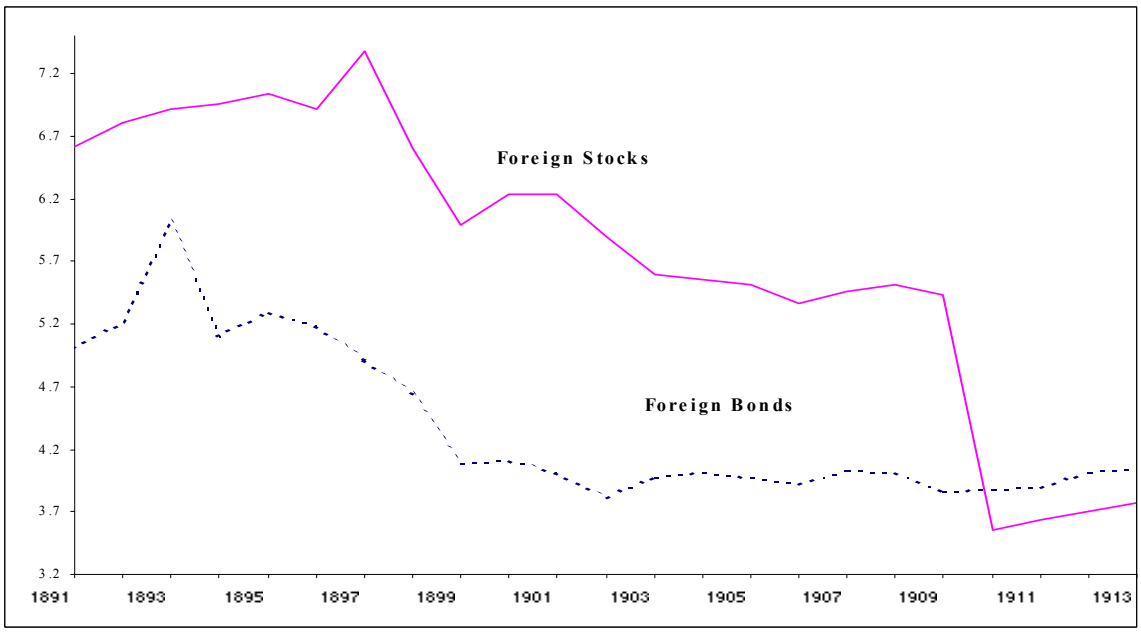


Figure 3
Yield Difference Between Foreign and French Bonds

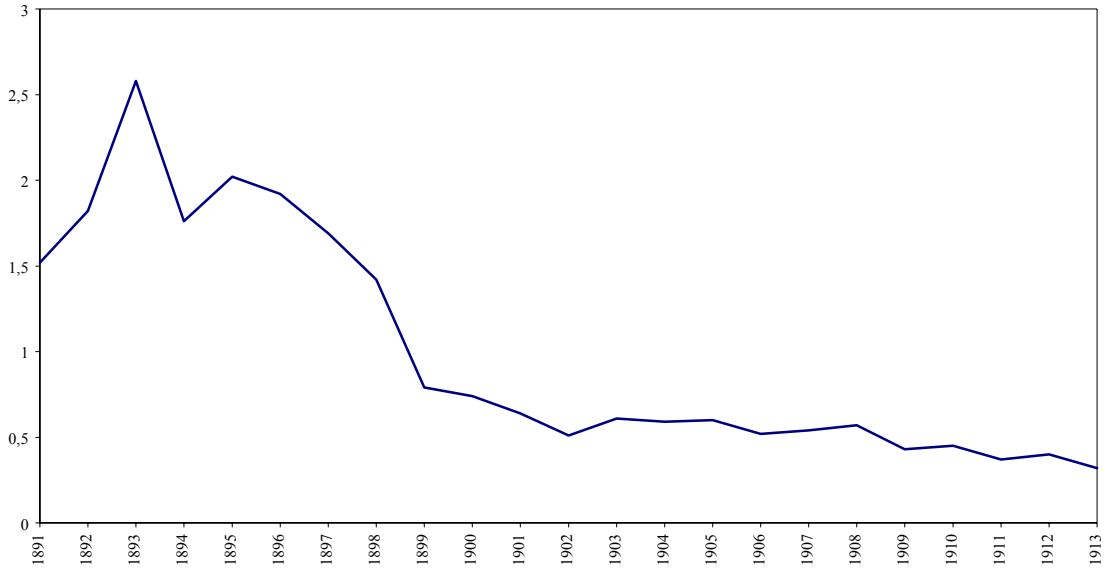
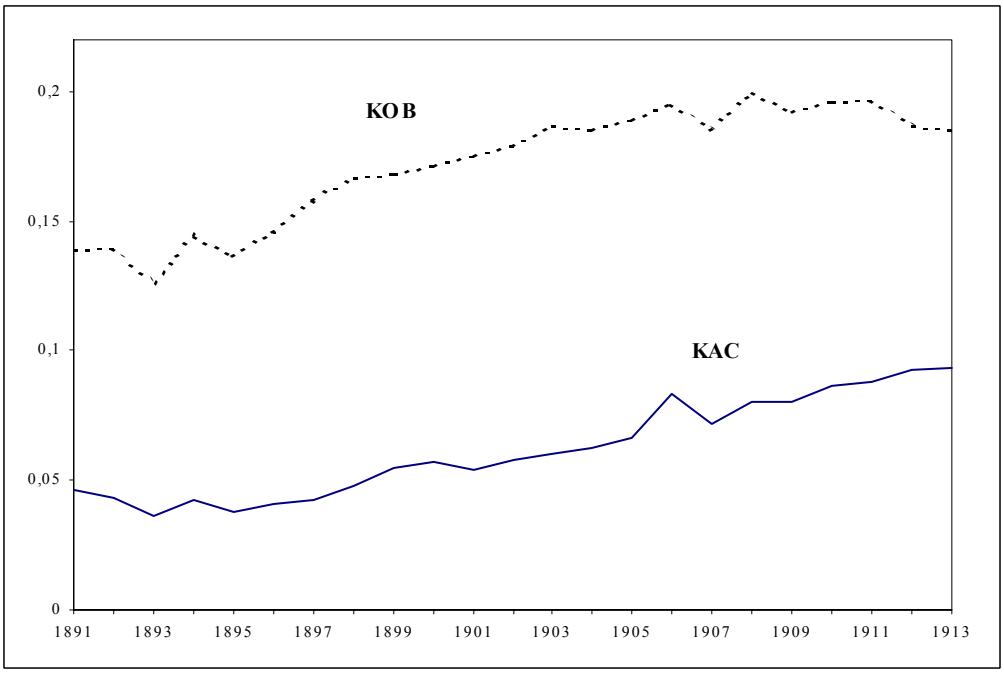


Figure 4
Shares of Total Portfolio (in %) in Foreign Stocks (KAC)
and in Foreign Bonds (KOB)



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