

# The French financial sector during the interwar: What lessons can be drawn from the stock market?

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## Abstract

While the banking crisis of the 1930s is traditionally considered to have been relatively more limited in France than in other European countries, the literature highlights however that French investment banks faced the greatest difficulties. The purpose of this chapter is to test this hypothesis with a new dataset including stock prices of all listed companies within the "banks and financial institutions" sector at the Paris Stock Exchange over the period 1919-1939. The main activities of our banks' sample are characterized by a high heterogeneity, spanning from real estate to investment banking, through commercial and deposit activities. Our results show that during the 1930s, investment banks were indeed riskier than deposit and commercial banks, relative to the overall market.

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# 1 Introduction

The recent global financial crisis of 2007-2008 highlighted the role of banks as a propagation mechanism of the US real estate crisis into the global economic crisis. In 2016, one of the greatest concerns was the solvency and the systemic risk of the European banking system. During the summer, Italian banks such as *Banca Monte dei Paschi* raised concerns because of their exposure to bad loans. After the Brexit vote, analysts raised the issue about the long-term viability of the continued participation of Italy in the eurozone.<sup>1</sup> During late September, Deutsche Bank's problems have raised concerns of a potential global financial crisis similar to that of 2008. After the US Department of Justice demanded a 14 billion dollars claim to settle allegations of mis-selling mortgage securities, the DB's hedge funds reduced their exposure to the largest German private bank in late September. It resulted in growing concerns on the whole European banking system followed by a decrease in large European banks' share prices.<sup>2</sup> In the beginning of 2016, banks stocks already suffered from investors' uncertainty on both sides of the Atlantic, and especially European and French banks: in January 2016, *Société Générale* and *Banque Nationale de Paris*' shares dropped by roughly 20%, caused by investors' fear about both energy prices and low interest rates.<sup>3</sup> Moreover, concerns about another financial system collapse due to the banking sector's fragility made the French newspaper pages.<sup>4</sup>

On a historical perspective, the crash of 1929 and the following depression of the 1930s was also a period of extreme financial stress and real consequences to the world economy. In particular, during the interwar period, French banks were similar in many ways to those of today. In addition to a low regulatory environment, French banks benefited from a powerful central bank with large gold reserves, able to play the lender of last resort if necessary. However, one striking difference lies in a more specialized banking system at that time with most banks specialised in one type of activity.

The Great Depression put a lot of pressure on banks. The Austrian banking crisis of 1931 is often seen in the literature as the trigger of the Central European crisis and the worsening depression in Western Europe.<sup>5</sup> Many country studies have examined the banking sector's behavior during the interwar. For example, Billings and Capie (2011) state that the British banking system withstood to the effects of the Sterling crisis thanks to the relative strength of the joint-stock commercial banks. Looking back over the past two centuries, Turner (2014) also emphasizes the stability of the British banking system in the 1930s. However, the picture was rather different in Italy. Battilossi (2009) shows that governance failures in the Italian leading banks enhanced excess risk-taking and made them more prone to crises during the

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<sup>1</sup><http://www.marketwatch.com/story/why-italys-bank-crisis-could-be-ticking-time-bomb-2016-07->

<sup>2</sup>Financial Times, September 30<sup>th</sup> 2016.

<sup>3</sup><http://money.cnn.com/2016/02/05/investing/bank-stocks-worse-than-oil/>.

<sup>4</sup>Les Échos, February 12<sup>th</sup> 2016.

<sup>5</sup>Accominotti (2012) provides empirical evidences of the international contagion of the 1931 crisis.

interwar period. In France, original works tended to underestimate the role of the banking sector in the economic crisis of the 1930s. Its impact on the origins of the 1930s economic crisis in France was not much examined. There were two opposing approaches on the origins of the 1930s economic crisis in France.<sup>6</sup> According Alfred Sauvy (1984), French difficulties could be attributed to the Sterling crisis of 1931 and the misalignment of the French franc.<sup>7</sup> Jacques Marseille (1980) pointed out the downturn of the French industry, due to a small expansion of the domestic market, compared to the increase in productive capacity.<sup>8</sup> The role of the banking sector is therefore not so much highlighted in this debate. However, the difficulties faced by the French Banking system at that time start to become an important issue in the literature of the 2000s. The archives of two of the largest banks in difficulties during the 1930s - the investment bank *Banque de l'Union Parisienne* and the deposit bank *Banque Nationale du Cr dit* were explored by Bonin (2001, 2002). Lescure (2004) by exploiting archives on failures showed that local and regional banks suffered tremendously during this crisis. Finally Lacoue-Labarthe (2005) evidenced that France was experiencing banking panics in the early 1930s which depressed economic activity by raising the cost of financial intermediation.

The aim of this chapter is to give some additional analyzes on this topic by using a new dataset of individual stock prices for all the firms listed at the Paris Stock Exchange in the sector "banks and financial institutions" between 1919 and 1939. More specifically, we assess the risk exposure of the French banking system by distinguishing banks according to their activities. We show that banks with a high risk exposure were mostly investment banks, suggesting that specialization made the banking sector as a whole more resilient to the financial shock.

The remainder of the chapter is structured as follows: Section 2 reviews the literature on French banks during the interwar and the consequences of both the economic expansion of the 1920s and the crisis of the 1930s. Section 3 presents the data we used in this study. Section 4 provides an empirical study of risk exposure of banks, compared to the overall stock market. Section 5 concludes.

## 2 Historical background

In this section, we first focus on the main features of the French banking sector during the interwar, we then describe the course of events by dividing the whole period in the two following sub-periods: (i) the economic expansion of the 1920s, and (ii) the downturn of the 1930s.

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<sup>6</sup>The reader can find a summary in Mour e's famous book: *La politique du franc Poincar e (1926-1936)*, Paris, Albin Michel, 1998.

<sup>7</sup>Sauvy, A., *Histoire  conomique de la France entre les deux guerres*. Paris, Economica, 1984.

<sup>8</sup>Marseille, J, *Les Origines inopportunes de la crise de 1929 en France*, *Revue Economique*, 31(4), 1980.

## 2.1 A specialized French banking sector

One of the main evolution of the French Banking system occurred during the period 1848-1875. According to Bouvier (1973), this evolution was a quantitative "revolution", since the founders of the "new" banks only imported the innovations of the decades 1820's and 1830's coming from Great Britain.<sup>9</sup> This revolution was reflected in the possibility for banks to extend the volume of their total equity (capital and reserves), and by seeking to increase deposits. These "new" banks were then much larger than they were during the first half of the 19th century. Indeed, they sought to increase deposits and at the onset of the World War I, the four largest banks had expended their deposit and current accounts from 285 million francs in 1860 to over 5.5 billion in 1913 (Bouvier, 1973).

While the French banking system kept constant features from the end of the 19th century up to the World War II, it was different from both the system prevailing in Grand Britain or in continental Europe. In France, powerful banks, i.e. with large gathered resources, were commercial and deposit banks with a national network (*Crédit Lyonnais*, *Comptoir National d'Escompte*, *Société Générale* and *Crédit Industriel et Commercial*). In those banks, capital was not so high but deposits were very important<sup>10</sup> and devoted to short term credit with mainly discount operations. Particularly after the crisis of the *Union Générale* in 1882, Henri Germain, founder of the *Crédit Lyonnais*, stressed that short term resources should correspond to short term uses.

Especially before 1914, these banking principles only allowed only small benefits per unit given the low level of interest rates and the stability of prices thanks to the Gold Standard. But overall gains allowed to maintain profits and dividends at a high level. Bouvier (1973) characterises those banks as having small links with large industrial firms, even if some could be both board members of entities in the two sectors.

The literature usually distinguishes commercial and deposit banks from business banks with large investments in the industrial sector in both national and foreign markets.<sup>11</sup> This separation between deposits and investment bank activities is, as we will see, often seen as the main explanation of the resilience of large deposit banks during the 1930s. But the distinction between these two groups of banks (all of which had been created between 1852 and 1875) only rose after the difficulties of the 1880's. Before the crash of the *Union Générale*,<sup>12</sup> all large banks had both

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<sup>9</sup>The law permitting the establishment of joint-stock companies was voted in 1826 (Copartnership Act) in England, in 1825 in Ireland, while Scottish banks already had a quasi-joint-stock status, allowing unlimited liabilities. See Turner (2014).

<sup>10</sup>E.g. *Crédit Lyonnais*. in 1919: capital share of 250 million francs, deposit (à vue) over 1.5 billion francs. Source: Desfossés yearbooks 1918-1921.

<sup>11</sup>*Banque de Paris et des Pays-Bas*, *Banque de l'Indochine*, *Banque de l'Union Parisienne* are the most cited ones.

<sup>12</sup>The famous crisis of 1882, when the decline and failure of one bank put the Paris Stock Exchange under large liquidity difficulties. See White (2007).

investment and deposit activities, and could then be referred as "Universal" banks. In fact, this banking model was dominant in the continental Europe, particularly in Germany and to some extent, in Belgium,<sup>13</sup> while the British system had already made a clear separation between investment and commercial banks. The distinction between the two activities in the French banking model occurred at the end of the 19th century and operated until 1945. Levy-Leboyer and Lescure (1991) explain that from the 1880's, the second stage of France's industrialization provided new opportunities for the banking system. However, the authors note that local and regional banks benefited more from those new investment opportunities than large national banks, more worried about their liquidity. Indeed, Bazot (2014) depicts the French banking system of the *Belle époque* as a combination of three major actors: the central bank and its network of branches, the national deposit banks and the local and regional banks. Despite the potential negative effects of having a central bank at the core of the credit system in terms of banking competition and credit restriction, Bazot (2014) shows that the positive effects of information collecting and local interventions outweighed the negative ones. However, the remarkable growth in France from the late 19th century to World War I, could be more attributed to the mature capital market than to the efficiency of the banking system.

Returning to the interwar period, an important feature was that French banks enjoyed almost complete freedom to operate, a freedom much greater than after 1945.<sup>14</sup> Indeed, the laws of 1863 and 1867 on joint stock companies allowed banks to be freely constituted and without any control from institutions. The State did not legislate on the banking sector before the early 1940's, when the "bank regulation act" of 1941, allowed the *Banque de France* to limit discount facilities and therefore control liquidity, but also when the four largest deposit banks were nationalized in 1945.

## 2.2 The impact of the French economy over banks between the wars

The interwar period can clearly be divided in two phases (i) an economic expansion in the 1920s. and (ii) a long downturn in the 1930s, with different consequences on French banks.

### 2.2.1 The 1920s: industrial growth, inflation and monetary instability

On the real economy side, the French economy of the 1920s is characterized by a strong industrial growth. The French industrial production doubled from 1921 to 1929 and its growth rate was the highest among the European countries.<sup>15</sup> This expansion was driven by a transfer from low productive sectors (e.g. textile, leather) to high productive sectors (e.g. steel, chemicals, mechanical industries). However, even

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<sup>13</sup>See Tilly (1998).

<sup>14</sup>The seminal work of Bonin (2000) provides a well documented analysis of this topic. See *L'apogée de l'économie bancaire libérale française (1919-1935)*

<sup>15</sup>See Caron and Bouvier (1979).

though the productive industries were boosted by the Great War, the economic consequences for France were overall critical. In fact, Caron and Bouvier (1979) show that if the revenue of those industrial firms rose during the war, their benefits did not because most of the revenue was kept for self-financing. This industrial growth had consequences on banking policy: in the early 1920s, business banks got closer to domestic industries in order to benefit from the reconstruction and the modernization of French equipment. They increased their capital in 1920 (among others, *Banque de Paris et des Pays Bas*, *Banque de l'Union Parisienne* and *Banque de l'Indochine*). Industrials started to sit on some banks' board, while financiers kept a large majority (Bouvier 1979).

The monetary aspect of the period has been well studied and is very interesting to understand its implications on banks' policy. When WW1 started in 1914, France, along with Great Britain, abandoned the Gold Standard to follow expansionary monetary policies in order to finance the war effort. According to Blancheton (2000), France financed the war mostly by issuing debt (74%), the rest being financed by an increase in taxes (15%) and by the advances of the *Banque de France* (11%). The situation of public finance did not recover after the war because the French Treasury (*Mouvement Général des Fonds*) anticipated that Germany would pay for war damages as France did to Germany after the Franco-Prussian war in 1871. At that time, both the Central bank and the Treasury still thought that the return to the pre-war parity of the Franc could be manageable. They tried to adopt a deflationary monetary policy, by containing the circulation of money under a certain ceiling.<sup>16</sup> Once they finally figured out that Germany would never be able to pay the entire amount of the reparations, the Treasury faced its obligations by using indirect advances of the *Banque de France* (via commercial banks) as shown by Blancheton (2000). This increased the monetary base velocity and led to speculative attacks against the Franc in 1925-26. The monetary consequences of the war were then heavy and numerous: (i) the end of the Gold Standard, (ii) the convertibility of the paper Franc suspended, (iii) inflation in the fiduciary circulation, (iv) the government indebted vis-à-vis the *Banque de France* and finally, (v) the Franc under pressure on the foreign exchange.<sup>17</sup>

What were the consequences on the banking sector? First, a share of the traditional customer base of French banks, the bond holders, was hit by inflation. Therefore, banks reached out to other new clients: the sellers and producers, and firms in particular. On the asset side, if the nominal deposits did not increase faster than prices, the depreciation of the Franc affected banks' resources. After a constant growth during the *Belle Époque*, the increase of bank money slowed down during the 1920s, before decreasing during the depression. According to Bouvier (1979), the deposits of the top four French commercial banks decreased from 36 to 26 billion francs from 1931 to 1936. However, business and commercial banks did not equally suffer from inflation. It was easier for deposit banks, thanks to their large national network, to

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<sup>16</sup>Up to April 1925, the main objective of the monetary policy was to keep the fiduciary circulation under 41 billion francs. Because the authorities could not manage to stay beyond this ceiling, it caused the great scandal of the "fake balance sheets", described in detail in Blancheton (2005).

<sup>17</sup>See Hautcoeur and Sicsic (1999).

follow inflation by raising the nominal value of their deposits (and therefore their corresponding volume of credit).

A second consequence was the tendency of the banking sector to increase its activity of security issuer on the stock exchange and the corresponding securities services (holding securities, coupon and dividend detachment, tax levy and so forth). In fact, the share of the volume of issued securities from private companies accounted for the majority of the total of issued securities during the period 1924-1932, while for the periods 1915-1923 and 1933-1938, the share of State and local government securities was higher. This is also confirmed by Hautcoeur (1994), who highlights this evolution in the French banking activity during the interwar: the inflation experienced in the early 1920s made banks looking towards other profits. In particular, Hautcoeur (1994) states that while during the pre-war period, the securities issuing activities were dedicated to business banks, the drop in deposits made also commercial banks turning into these activities, especially because listed companies' financial operations increased substantially during the 1918-1929 period. Yet, Bouvier (1979) relativizes this idea by stating that the securities service had high costs.

A third effect of the monetary instability lies in the activity of banks on the Foreign Exchange market. According to Bouvier (1979), the "stabilization" of the French franc in 1928, by a devaluation of four fifth of its prewar parity, pushed French banks to multiply operations on the foreign exchange market. In fact, the large fluctuations due to the end of the Gold Standard made this market more profitable for speculators,<sup>18</sup> and hedging activities against currency risk became essential. Moreover, France did not put in place foreign exchange controls, even during the 1930s. According to Bouvier (1979), the year 1928 registered the record level for the item *Banquiers et correspondants* which reached 22% of the asset side of the balance sheet. It was even higher for business banks: from less than 4% in 1914, the weight of this item reached 8,5% in 1923, 20% in 1926-30 and 23,5% in 1939. The author depicts the interwar period as being very important in terms of internationalization of banking operations.

### **2.2.2 The 1930s: banking crisis and economic depression in the literature**

The economic crisis of the 1930s did not come forward before the early month of 1931, but lasted longer, compared to many other countries (Caron and Bouvier, 1979). In the literature, the main banking crisis started in late 1931-early 1932 as a consequence of the Sterling crisis of September 1931. Bouvier (1979) studies the sequence of events through the length of deposit volumes for the largest commercial banks. According to the data of the *Crédit Lyonnais*, the highest volume of deposits held by the four largest commercial banks<sup>19</sup> reached its peak in June 1931. In the

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<sup>18</sup>Even though the French *Cambistes* were already making arbitrages on foreign exchanges, but gains was potentially low.

<sup>19</sup>*Crédit Lyonnais, Société Générale, Comptoir National d'Escompte de Paris and Crédit Industriel et Commercial.*

following months, deposits started to decrease, which coincided with the Hoover moratorium on reparations and war debts, and the Sterling crisis of September. The slump in deposits slowly accelerated in 1932 and the following years, reaching a trough in September 1936 before the devaluation of the French Franc and the subsequent end of the Gold Block. On the credit side, a reversal trend occurred at the beginning of the 1930s: from 30 billion francs in 1920, they reached 79 in 1929, 61 in 1934 and 74 in 1938. The author claims that the increase in the late 1930s was more the result of the growing inflation after 1936 than a real surge in economic activity.

An important feature of the French banking crisis of the 1930s is the resistance of large banks to failures. Indeed, 276 joint-stock banks<sup>20</sup> failed between 1929 and 1937 but among them only one was considered large, the *Banque Nationale de Cr dit*. The addition of small local bankers and *maisons de coulisse*<sup>21</sup> increased the number of failures to 670 (Lescure, 2004).

However, important banks also experienced difficulties. The *Banque de l'Union Parisienne* (BUP) is a famous case, detailed in Bonin (2001). The bank suffered from its investment in Central and Oriental Europe. After the failure of the Austrian Creditanstalt, a confidence crisis took place while the BUP was investing in Hungary, Austria, Romania and Czechoslovakia. Despite a drop of 600 million francs in the deposits, the bank benefited from the solidarity of the Parisian place,<sup>22</sup> on the request of the Minister of Finance, to face its obligations in late 1931. A fund was created by six banks (among others the *Cr dit Commercial de France*) to help the BUP to deal with these cash-flow issues. As we already mentioned above, the *Banque Nationale de Cr dit* experienced important difficulties that forced the bank to fail. Bonin (2002) shows that despite the intervention of the authorities to ensure the liquidation of the bank in 1932, a panic taht occurred in February of that year forced its closure. Lacoue-Labarthe (2005) see this event as a starting point of a contagion of failures among regional banks and national bank's branches.

Levy-Leboyer (1995) shed lights on the international money market to explain the outbreak of the banking crisis: the increase of interest rates in the US, causing the panic in Wall Street in late 1929, threatened the European capital markets. American capital flew back to the US and French banks also suffered from those movements. Between 1930 and 1935, the contraction of credit was of the same magnitude than in Germany and in Belgium and twice as high as in Netherlands and in Switzerland (Levy-Leboyer, 1995). But the dramatic distress of 1931, when German and Austrian banks failed and the convertibility of the Sterling pound to gold got suspended, was not seen as contagious for the French banking system. Indeed, the

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<sup>20</sup>A joint-stock bank combines features of a general partnership, in which owners of a company split profits and liabilities, and a publicly-traded company, which issues stock that shareholders are able to buy and sell on an exchange.

<sup>21</sup>Small entities trading securities on the Over the Counter market of the Paris' Bourse.

<sup>22</sup>Banks that could be referred as "private" banks in the sense they are not joint-stock companies but rather old family banks: in French: *Maisons de Haute Banque*. The six banks are: Demachy, Hottinguer, Mallet, Mirabaud, Neufize and Vernes. See Bonin (2001).



reserves of the biggest banks increased substantially in the early 1930s (from 973 million francs to over 5 billion from 1928 to 1932 for the *Crédit Lyonnais*). In addition, long-term interest rates started to decrease with the stabilization of the Franc in 1928, and went from 7% to 3.5% in 1931, while short-term interest rates went below 2% in 1930-32, i.e, below the the english and american levels.<sup>23</sup> However, in 1932 the cost of credit in France went above the english and american levels, and even above the other Gold-Bloc countries (Belgium, The Netherlands, Switzerland, Italy and Poland). The outflow of capital to London and New-York in 1933-34, probably due to investors seeking for profitability after the suspension of the US dollar's convertibility to gold in 1933,<sup>24</sup> raised the difficulties of the French banking system and hence, reinforced the economic crisis up to the devaluation of the French franc in 1936.

While the literature generally supports the idea that the French banking crisis was not as deep as in other countries, Lescure (2004) mitigates, however, this view. According to him, the overall banking system resisted quite well to the crisis from a macro-financial point of view. But Lescure (2004) shows that the large national banks, for the most part, did not experience the worst difficulties while local and regional banks suffered from lots of failures. The resilience of the banking sector was then explained by the strength of large banks, specialized and characterized by a balance sheet's structure devoted to liquidity, while universal and decentralized smaller banks failed. The author adds that the severity of the crisis' issue cannot be answered only by looking at failures. Indeed, numerous banks such as the *Banque de l'Union Parisienne* or the *Banque Nationale de Crédit*, were restructured or dissolved and re-founded without any juridical procedures.

### **2.2.3 The French banking crisis of the early 1930s as seen by the Central Bank**

In this sub-section, we go through the minutes of the Conseil Général of the Banque de France in order to provide (i) an in-depth investigation of the role of the Central Bank in the management of the crisis and (ii) a first insight on market sentiments at that time.

First of all, the French monetary authorities mention two episodes of banking crisis. The first one occurred from October 1930 to January 1931. In the minute of the Conseil Général of December 26<sup>th</sup>, 1930, we can read: "The banking crisis, which brutally occurred at the end of October, caused numerous failures among banks related to our establishment. No matter how much we supported the ones who asked for our intervention, we could not avoid the failure of banks that had either suffered from losses, or invested their deposit into activities that, according to our statutes, may not justify our intervention".<sup>25</sup> The scope of the crisis seems however limited. Only twelve failures are mentioned: 8 for local and regional banks, four "important"

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<sup>23</sup>Levy-Leboyer quotes sources from the League of Nations.

<sup>24</sup>After the US's departure from gold, American stock prices started to rise again.

<sup>25</sup>Author's translation.

in Paris, among which the *Oustric*<sup>26</sup> bank and the Société Financière de Paris. Only those last two hold the Central Bank's attention. It is said that the liquidation for these two private banks will take some time, but "according to the available information, large losses should not be feared".

The second stage of the banking crisis took place with the Sterling crisis of September 1931. The Central Bank uses the movements in its commercial portfolio to describe the timing of the two episodes of banking crisis: "The first credit crisis (from October 1930 to January 1931) increased the portfolio from 4.7 billion to 7.4 billion francs. The recovery, which occurred during the first semester of 1931, gradually decreased the amount of the portfolio at 4 billion francs on July 1<sup>st</sup> 1931. The second credit crisis (September 1931) provoked a movement of a similar magnitude. The portfolio went from 4.2 billion to 6.7 billion within a month. This increase of 2.5 billion is made of 1 billion francs of commitments only for the *Banque Nationale de Crédit* (...). Since November 1<sup>st</sup>, the portfolio constantly decreased until reaching its level of the first semester of 1930, before the first credit crisis occurred."<sup>27</sup> A description of the portfolio is then presented in detail. After mentioning three banks that could generate risk because of their very specialized activities (i.e. *Marret Bonnin* and *Messein Bedarrides*, specialized in the diamond business, and the *Banque d'Extension Commerciale & Industrielle*, specialized in refinancing commercial paper), it is clearly said that: "Besides those three banks, the composition of the portfolio does not contain any particular risk". Here we will focus on the first three (and main) cases in terms of "commitments" to the *Banque de France*.

#### ***Banque de l'Union Parisienne:***

The bank, which had an equity capital of 200 million francs at that time, was engaged towards the Central bank to the amount of 391 million francs: "The discounted bills, insignificant during the first semester of 1931, increased following the treasury needs due to massive deposits withdrawals. The maximum was reached on February 16<sup>th</sup> with 421 million francs and it seems like it will be quickly reduced." The Central bank does not seem to be worried about this case: "The situation is improving, especially thanks to recent cash inflows, rising stock prices and finally with the upcoming merger with the *Crédit Mobilier*".

#### ***Banque Nationale de Crédit:***

This bank was already in liquidation since February 26<sup>th</sup>, and the amount engaged was of 145 million francs: "Discounted bills that amounted to 200 million in the course of 1930, reflected twice but in different moments, particularly sharp increases, owing to numerous refund claims from customers. In the aftermath of the first crisis during winter in 1930-31, commitments rapidly returned to their previous value, thanks to restored trust and confidence from depositors. In contrast, a much

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<sup>26</sup>This famous case is depicted in Sauvy (1984).

<sup>27</sup>Minute of the Conseil Général, March 17<sup>th</sup> 1932. Author's translation.

more serious panic took place at the end of September 1931, which led to a sudden dramatic increase in commitments. Between September, 16<sup>th</sup> and October, 16<sup>th</sup> 1931, pledges went from 291 to 1.497 million. Since then, they have been gradually reduced to their current amount of 257 million, the latter being broken down into 185 million various commercial prints and 72 million prints representing receivables' fundraising. These commitments are guaranteed as follows: on the one hand, those that were assigned before December, 31<sup>st</sup> 1931, amounting to 108 million, a guarantee totaling 205 million has been given to the Bank of France and provided by the main credit institutions. On the other hand, commitments subsequent to December, 31<sup>st</sup> 1931, currently about 144 million, are guaranteed up to one-fifth of their amount, by blocked funds in a particular account opened at the *Banque Nationale de Cr dit*. The ensemble is supported by a pool of securities whose value seems to be set to 40 million. Hence, commitments do not put the Banque at endue risk."

#### ***Cr dit Commercial de France:***

"After moving around 50 million francs, the engagements quickly raised during the last quarter of 1931. The maximum was reached on November 1<sup>st</sup> with almost 523 million francs. Since that date, this amount is in constant decline. Commercial paper and bank acceptations are related to the Northern and Eastern textile industry, as well as large firms in the chemical and metalworking industry".

The *Cr dit du Nord* is also mentioned for having important difficulties during the second semester of 1931. "Its engagements rose from 63 to 605 million francs between July the 1st and November the 1st, following the panic of depositors and the worsening of the textile industry crisis."

According to the minutes of August 25<sup>th</sup>, by the summer of 1932, the French banking crisis was over: "For the last two month, it (the portfolio of discounted bills) shows a relative stability after the large decrease of the first months." From 6.5 billion on January 19<sup>th</sup>, it went down to 3.2 billion in late August. The Central bank explained this reduction by "the ending of the banking crisis, which was the reason for easing access to liquidity".

The descriptions detailed above confirm the view of a banking crisis that was, as a whole, contained, but also a crisis that only hit certain types of banks, more prone to lend to industrial businesses. In the following sections, we aim at completing this picture by examining stock market's perceptions on the banking sector which, to the best of our knowledge, has not yet been done with high quality data.

### **3 Data and banks' classification**

To empirically address the issue of the French financial sector's stability during the interwar period, we rely on stock price data instead of either balance sheets or failures, which are usually analyzed in the literature. Lescure (2004) shows that data on failures are incomplete while balance sheets may only be studied in a descriptive

way since data are not available on a regular frequency for a sufficient number of banks.<sup>28</sup> This is why we opt here for a new bi-monthly bank share index including all companies from the "banks and financial institutions" sector listed at the Paris Stock Exchange from 1919 to 1939. We also use the business purpose, as depicted in the yearbooks, as well as balance sheets data in order to define the main activity of the banks.

### 3.1 Prices, number of shares and market capitalizations

The banks index is built by collecting both individual stock prices and the corresponding number of shares for each of the listed companies in the banking sector. The total index includes 106 joint-stock companies among which we identify several different categories of financial institutions. Before getting to these categories, one should note that our index does not include insurance companies nor private banks (also called *Maisons de Haute Banque*). Even if the literature shows that the latter accounted for an important share of the banking operations made in Paris at that time, data on those banks are not published and they are not listed on the Paris stock exchange.

The index is weighted by the market capitalization for two main reasons: i) using market capitalization instead of prices alone allows to adjust from the firm's operations on capital such as stock splits or seasonal public offerings without calculating adjustment coefficients;<sup>29</sup> ii) the standard stock price index for the overall Parisian market for our study period is the monthly cap-weighted index developed by Le Bris and Hautcoeur (2010),<sup>30</sup> which includes the top forty market capitalization for each year over the period 1854-2007. It is then more accurate to choose the same type of adjusted indexes if we want to compare our sectoral index to the overall market's one.

However, we are not able to use this standard index for two reasons: (i) we want to keep the bimonthly frequency of our dataset in order to run robust rolling estimations with a sufficient number of observations,<sup>31</sup> as well as (ii) for trading synchronicity because bimonthly data coming from the Data for Financial History (DFIH) database refer to end-period and mid-period while Hautcoeur and Le Bris (2010) use beginning period prices. We then construct a bimonthly CAC 40 for the interwar period, based on the composition of the index developed by Hautcoeur and Le Bris (2010).<sup>32</sup> We also use the number of securities to adjust the series from operations

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<sup>28</sup>Two projects aim at filling this gap: The DFIH project collects yearly balance sheets for every listed company through the yearbooks of the Exchange (*Annuaire Desfossés*), while the Sysri-30 project collects balance sheets data coming from the archives of the *Crédit Lyonnais*. The latter gathered information on more than 400 banks between roughly 1900 and 1940.

<sup>29</sup>See Chapter 1.

<sup>30</sup>The author would like to thank David Le Bris for sharing his data on the 1919-1939 period.

<sup>31</sup>With bimonthly data, a four years' window allows to have almost one hundred observations per estimations.

<sup>32</sup>The index includes the 40 highest market capitalizations listed at the Paris Stock Exchange at

on the capital.

To assess the price of risk, we calculate the equity premium which measures the excess return above the risk-free return. We use bimonthly prices of the asset considered to be the risk-free asset at that time at the Paris' Bourse: the Rente 3%.

To evaluate the statistical properties of our series, , we run both the Augmented Dickey-Fulher and the Phillips-Perron unit root tests on the returns series on both sub-periods. The results of both tests indicate that all of the return series on both sub-periods are stationary.<sup>33</sup>

## 3.2 Business purposes, balance sheets and banks classification

The definition of bank activities is a sensitive issue. Indeed, if the law does not even allow to differentiate financial and non-financial corporations, it certainly does not help to differentiate financial institutions between themselves. As Brambilla (2010) shows for the period from mid-19th century up to 1914, investment banks often adopted different patterns among continental European countries such as France, Germany and Italy. The author uses a comparative quantitative approach to distinguish between banks according to their activities by calculating the proportion of investment activities in total asset. Nevertheless, he first excludes banks according to their "relevance in investment banking, in fostering industrial development and for their significant role of their respective financial systems". The issue is different for us since we include all banks and financial institutions listed at the Paris Stock Exchange between 1919 and 1939. Here, we first look at the business purpose for each of our companies as it is reported in the yearbooks of the stock exchange. Then, for the companies that cannot be classified according this criterion, we use the balance sheets of 1929 to differentiate the banks that are more invested in securities and financial participations before the crisis of the 1930s.

### 3.2.1 Business purposes

The first step of our classification process consists in identifying the business purpose of each of our 106 companies. This information, available in a short paragraph, is based on the juridical statutes of the company and published on the yearbooks of the stock exchange.<sup>34</sup> We look for keywords to make a first distinction among

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the beginning of each year.

<sup>33</sup>Results are not depicted, however they are available upon request to the author.

<sup>34</sup>We used several issues of the *Desfossés* yearbooks (1931, 1936 and 1945) and one edition of the official "CAC" yearbooks (1918-1921) to cover our whole sample. We use various editions for two reasons: i) because some companies are listed and / or delisted during our period of interest; ii) it allows to check if there is any evolution in the business purpose of a company. For our sample of banks and financial institutions, the business purpose is reported from one edition to the other with the exact same text, suggesting that as long as there are no changes in the juridical statutes, the business purpose remains the same.

the companies' main activities. For example, many companies of our sample have activities mostly in the land and the real estate sectors. Those institutions do not run typical banking operations such as discounting bills or commercial paper, nor loans to industrial firms. They only deal with mortgage loans and land or real estate operations. So, we classify every company with a business purpose including the following keywords: *mortgage loans, land and real estate operations, mortgage backed credit / real estate / land backed loans* and so forth, in the "Real Estate and Land banks" category. This allows to gather 37 firms in this category.

We follow the same method to distinguish banks that enjoyed the privilege of being licensed to issue national bank notes. Entities mentioning in their business purpose *the privilege to issue bills or the right to issue bearer bills or payable on demand*, are gathered in the "Banks of issue" category. This category includes 8 banks and in particular the Bank of France and the colonial banks.

Finally, we do the same in order to identify "Investment funds" banks. This latter is composed of firms that invest their capital in securities (stocks, corporate or government bonds), provide their advice when companies want to go public or pool their capital to participate in subscription of newly issued shares on the market. As those entities are not involved in usual banking operations such as discount or lending, we exclude from this last category the remaining banks of our sample that do not mention in their business purposes keywords such as: *discount operations, credit and advances, every banking operations*; but instead mention keywords like: *buying and selling securities, pooling capital or financial participations*. This category covers 7 companies.

Finally, a further 54 banks still remain to be classified in another way. As balance sheets data are also available in the same yearbooks, we run a cluster analysis based on these data, as in Bambrilla (2010).

### 3.2.2 Balance sheets

France did not adopt generally accepted accounting principles before 1943. Therefore, there are no standards for the balance sheets' items during the time period of our study.<sup>35</sup> Nevertheless, we are mainly interested in information about securities and financial participations. More specifically we seek to discriminate between banks that have a higher involvement in the real economy and in industrial development ("Investment banks") and banks that are more devoted to usual banking operations such as discounting bills or collecting deposits. To make this distinction, we compute, for each of our 54 remaining banks, the ratio of securities and financial participations over the total asset.

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<sup>35</sup>Balance sheets have been standardized in the *Desfossés* yearbooks from 1936, but it became less precise as the standardization reduced the number of published items. Moreover, most of our accounting data were retrieved from the yearbook of 1931 which displays the balance sheets of the end of the year 1929, so before the banking crisis.

The value of this ratio is reported in Table 9. It seems difficult to identify a clear distinction between what we will call "Investment banks" and the remaining observations. Indeed, the distribution of this ratio within this sample does not allow to observe a clear cut between what we will call "Investment banks" and the remaining observations. Moreover, there is no threshold identified by the literature above which a bank should be considered as an investment bank. To circumvent this problem, we split our sample of 54 banks into two sub-samples, according to the average value reached by the ratio: "Investment banks" correspond to banks with a ratio higher than the average ratio and the other banks are considered as "Deposit and commercial banks". We do not propose a classification based on the median ratio. Indeed, it would lead us to consider the *Crédit Industriel et Commercial (CIC)* as an "Investment bank" while this bank is traditionally seen as one of the most important French deposit bank even though its network of branches is not as widely spread as the ones of the *Crédit Lyonnais* or *Société Générale* (Bazot, 2014). On the other hand, our classification leads us to include the *Banque Transatlantique* in the "Deposit and commercial" category while it is sometimes seen as an investment bank (Thiveaud, 1997).

### 3.2.3 Final classification

Finally, the mix of qualitative and quantitative approaches described above leads us to distinguish between five categories of banks and financial institutions. Table A.1 to A.5 report, for each category, the names of these banks and financial institutions as well as their average market capitalizations over the period 1919-1939 for each categories. We also report the average annualized historical volatility over the same period in order to get a first overview of the variations in the banks' market value.

The realized volatility has been calculated as:

$$\sigma_i = \Omega_R \times \sqrt{24} \quad (1)$$

Where  $\sigma_i$  stands for the realized volatility for the bank  $i$ ;  $\Omega_R$  the standard deviation of the past 24 observations (i.e. one year considering the bimonthly frequency of our dataset).

Instead of computing the mean of these realized volatilities per category, we first compute sub-indices weighted by market capitalization and then compute an average realized volatility for each of the sub-indices.<sup>36</sup> The results, reported in Table 1, are quite in line with our initial intuition: banks that have the less volatile market value are the commercial and deposit ones, while the investment banks and investment funds, both more invested in securities and financial participations, have the most volatile market value.

However, the average annualized volatility is not the best criteria to assess the risk exposure of a company or a group of companies. First, this measure is not stable over time and second, it does not take into account the volatility of the overall market.

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<sup>36</sup>For a similar variation, we give more weight to large market capitalizations. We consider this method as a better way to estimate the average realized for a given category.

Table 1 – Average annualized volatility per sub-indices: 1919-1939

EMISSION	23.11
DEPOSITS AND COMMERCIAL	16.19
INVESTMENT	25
INVESTMENT FUNDS	31.57
LAND AND REAL ESTATE	18.93

Source. Author's calculation.

The next section presents a measure of the risk exposure that overcomes these issues.

## 4 The French banking sector seen by the stock market

In this section we seek to evaluate the risk of the French banking sector during the interwar period. We first measure this risk on an aggregated level in order to quantify the risk of the sector as a whole. The second step consists in analysing the risk according to our five types of banks. In doing so, we can assess the differences in investors' behaviour with respect to bank specialization. Finally, we study the risk relative to the overall market on a more disaggregated level, i.e. at the firm's level.

### 4.1 The banking sector

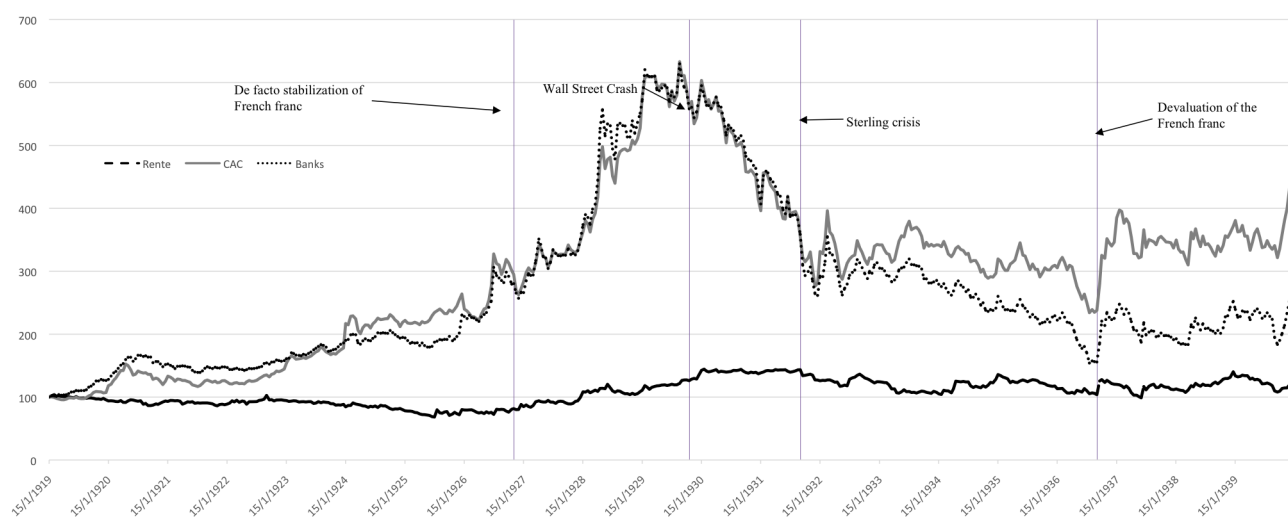
A first glance at the data in level gives us an overview of our three series. Figure 1 represents the share index of the overall market, of the banking sector and the risk-free security index over the period 1919-1939.

Both the overall and the bank-share indices seem to fluctuate together, while the Rente 3% varies only very slightly. It is interesting to observe how the data capture historical events. We can see that the *de facto* stabilization of the French franc boosted the banks stock prices, as well as the devaluation of 1936. On the contrary, the sterling crisis seems to accelerate the decrease in stock prices in late 1931. Finally, the impact of the Wall Street crash of October 1929 over the banking sector index does not seem straightforward.

In order to assess the stability of the banking sector, we rely on the methodology of Reinhart and Rogoff (2009), also used by Turner (2014) for the English case. It consists in using bank-share prices relative to the overall stock market. Reinhart and Rogoff (2009) consider this method superior to the study of failures, but difficult to implement over the long-run due to data availability. We then compare the returns of our banking sector index calculated on a bimonthly basis relative to the overall market.

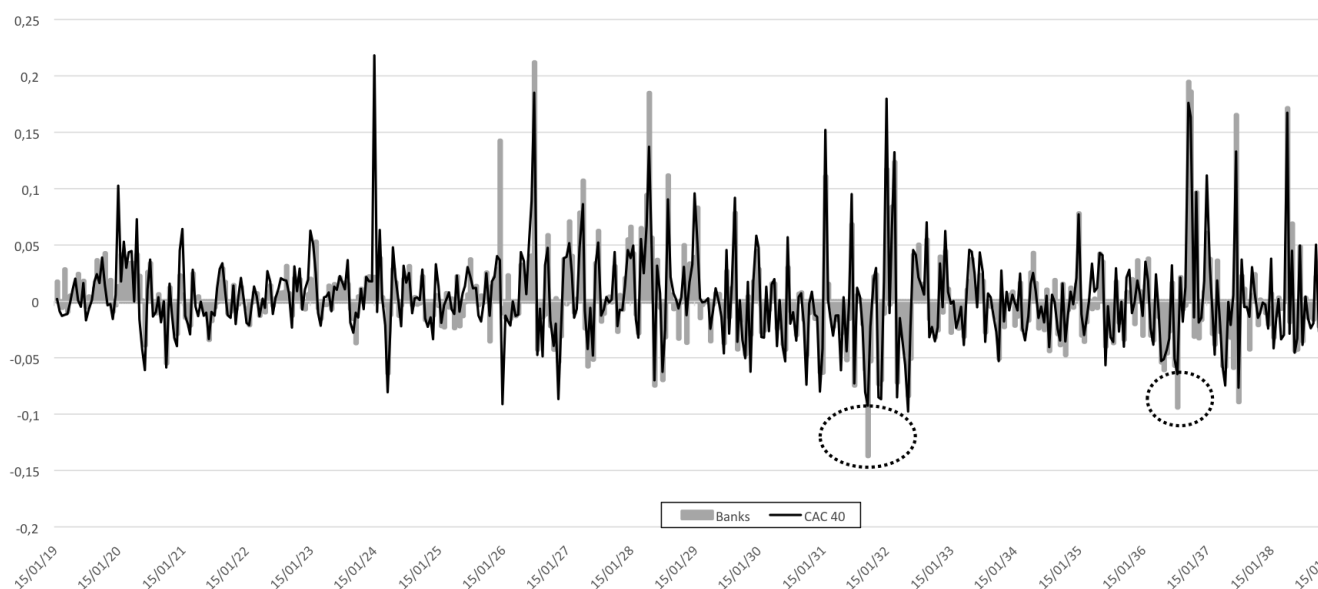


Figure 1 – CAC 40, banks and Rente 3%, 1919-1939, base 100 in 1919



Source. Author’s calculation.

Figure 2 – Monthly returns of the banking sector relative to the overall market



Source. Author’s calculation.

Figure 2 shows three main episodes (circled in dotted lines) of negative excess returns of our bank-share index ( $R_{banks}$ ) relative to the index of the overall market ( $R_{cac40}$ ): i) in late September 1931, right after the sterling crisis; ii) in August 1936, right before the devaluation of the franc and iii) in September 1939, France’s entry into WWII. Those events had indeed a destabilizing effect on banks. But this first

result should be mitigated by banks' excess returns relative to the market. In Turner (2014), the only crisis considered systemic is the recent one of 2007-8. According to the author's calculation, bank stocks fell by almost 80% when the overall market fell by "only" 30%. In our case, the gap between the two figures reaches its maximum in 1931: bank stocks fell by 14% when the market fell by 9%.

This result leads is contrary to the idea of a systemic crisis. To provide a more in-depth analysis, we estimate the risk of the banking sector relative to the overall market by using the portfolio theory. Using the CAPM model, we can get the estimated beta of the banking sector,  $\beta_{banks}$ .

$$\beta_{banks} = \frac{cov(ER_{cac40}, ER_{banks})}{var(ER_{cac40})}$$

With  $ER_i$  the difference between the return of stock or index  $i$  and the return of the risk free asset. This calculation consists in running regressions of the bank's stock return on a risk factor, using the Ordinary Least Squares (OLS) estimation procedure:

$$ER_{banks} = \alpha + \beta ER_{cac40} + u_t \quad (2)$$

The risk is then assessed using the following criteria:

- ◊ If  $\beta > 1$ : the banking sector is more volatile (i.e. riskier) than the overall market.
- ◊ If  $\beta < 1$ : the banking sector is less volatile than the overall market.

We rely on a CAPM framework mainly due to data frequency. Indeed, bimonthly intervals does not allow to measure Value-at-risk (VaR) with the usual 10 days horizon. In fact, according to Alexander (2009), it is not appropriate to base historical VaR models on weekly or monthly data. The issue is similar for example for Stressed VaR (SVaR), which should be relevant in a financial stressed period as the 1930s. However, it has to be calculated on a minimum basis of one week.

We estimate Equation (2) for (i) the full period as well as for (ii) the 1920s (overall expansion) and (iii) the 1930s (overall recession). Table 2 summarizes the results for the estimated betas.

Table 2 – estimated  $\beta$  by periods

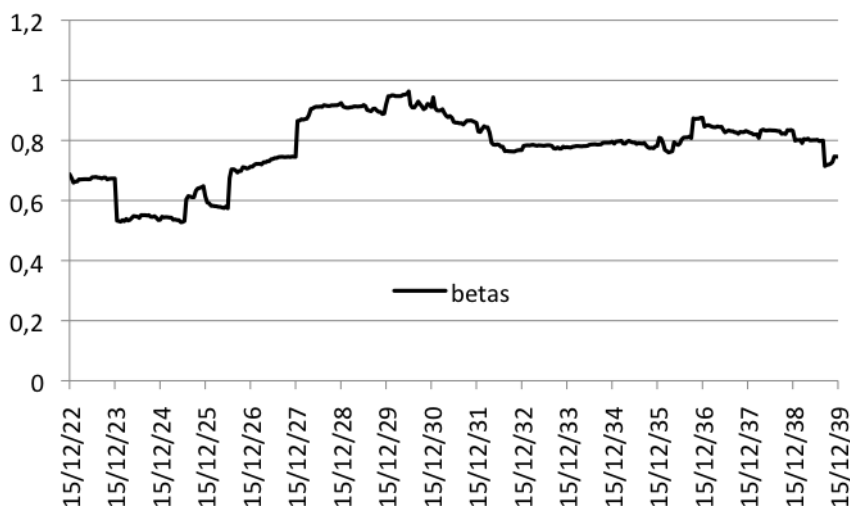
	Full period	1919-1929	1929-1939
$\beta$	0,77 (40,32)	0,75 (28,57)	0,77 (28,44)

**Notes.** The t-statistics (t-stat) are in parentheses. If t-stat  $> |1,96|$ , the coefficient is significant at a 5% threshold.

The first striking observation is that regardless the considered period, the estimated coefficient  $\beta$  is lower than 1, suggesting that bank stocks are on average less risky than the overall market. Surprisingly, the beta remains stable in the two sub-periods, while we would expect a riskier investment environment driven by the Great Depression during the period 1929-1939.

However, beta estimates are known to be unstable and time dependant (Groenewold and Fraser, 1999). We then also rely on rolling estimates to capture the dynamics of the risk over the period. To do so, we estimate betas with a four years' window (i.e. 96 observations). Therefore we are able to observe the time-varying beta for the whole banking sector from late 1922 up to the end of 1939. Figure 3 reports our estimation results.

Figure 3 – Rolling betas for the whole sector, 1919-1939



**Source.** Author's calculation.

Thanks to this time-varying approach, we confirm that the banking sector as a whole is always less risky than the overall market. Nevertheless, given the high heterogeneity among banks of our sample, data analysis can produce misleading results. Then, these first results need further clarification.

## 4.2 Bank's risk exposure: do banking activities matter?

Here we use the sub-indices mentioned in Section 3.2.3 and run a risk analysis for each type of banks.

Table 3 reports the estimated betas for the five sub-indices.

As for the whole banking sector, the estimations results don't evidence a clear difference between the boom phase of 1919-1929 and the depression phase of 1929-1939.

Table 3 – Estimated  $\beta$  according to banking activities

Banking activities	Full period	1919-1929	1929-1939
DEPOSITS AND COMMERCIAL	0,72 (28,7)	0,73 (19,83)	0,69 (21,15)
EMISSION	0,78 (21,58)	0,67 (12,7)	0,94 (19,74)
INVESTMENT	0,95 (24,5)	0,94 (17,37)	0,95 (17,13)
INVESTMENT FUNDS	0,87 (13,65)	0,9 (8,68)	0,82 (12,55)
LAND AND REAL ESTATE	0,73 (27,23)	0,78 (20,84)	0,66 (17,37)
<b>TOTAL</b>	<b>0,75</b> (40,32)	<b>0,75</b> (28,57)	<b>0,77</b> (28,44)

**Notes.** The t-statistics (t-stat) are in parentheses. If  $t\text{-stat} > |1,96|$ , the coefficient is significant at a 5% confidence level.

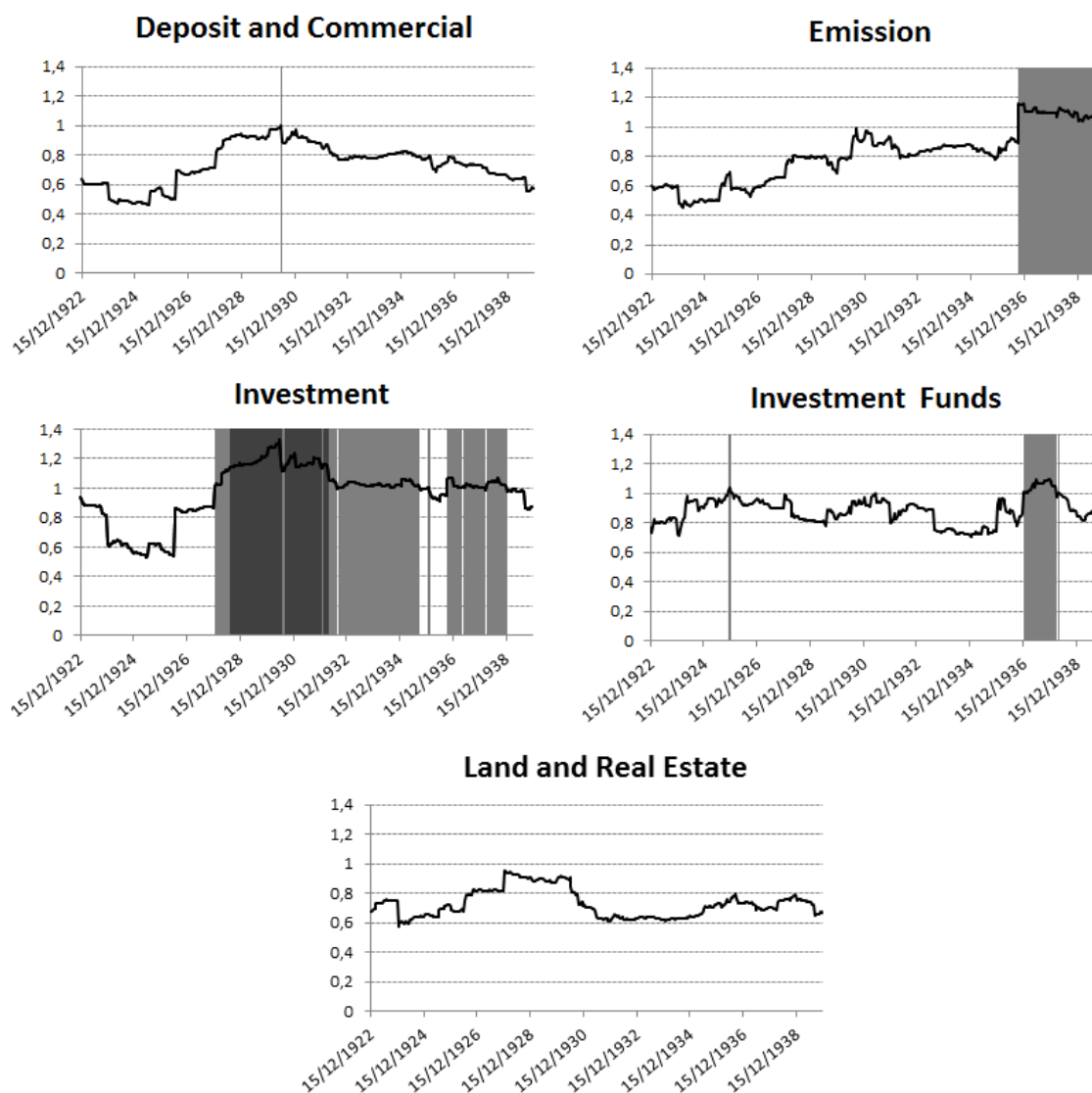
For the same reasons above-mentioned, we rely on rolling estimates to perform a time-varying analysis. Figure 4 displays the results for the five sub-indices.

As can be seen, only the investment banks' betas are, at some point, significantly above one. This means that these banks were the only ones that had assets that were perceived by investors riskier than the overall market. Indeed, we observe dark shaded areas only for investment banks between roughly mid-1928 up to mid-1932.<sup>37</sup> Banks in this category are also found to be as risky as the overall market (i.e. betas are fluctuating around 1 without being significantly different from 1). We note that this also holds true for the note-issuing banks, from September 1936 during the devaluation of the Franc up to the end of the period. This result could be explained by changes in the statutes of the *Banque de France* that occurred the same year, undertaken by the lefty coalition and which can be seen as a first step towards nationalization completed in 1945. We note however that even during this period, note-issuing banks are not significantly riskier than the market, but only as risky as the market. On the contrary, deposit and commercial banks are always less risky than the overall market,<sup>38</sup> while the *Banque Nationale de Cr dit (BNC)* failed during the banking crisis. This analysis corroborates the hypothesis that the specialization of the banking sector could have acted as a buffer to exogenous financial shocks. Indeed, despite the *BNC* only business banks needed intervention of either authorities or bank syndicates in order not to fail. To make comparisons with other banking

<sup>37</sup>Dark shaded areas corresponds to periods in which the rolling-correlation coefficient is significantly higher than one.

<sup>38</sup>Even though there is one point for which the beta is equal to 1, it is not significantly above 1.

Figure 4 – Rolling-correlations of  $\beta$  according to specialization



textbfNotes. Rolling-correlations estimations with 96 observations in each rolling window. Light shaded areas depict observations for which the estimated beta ( $\hat{\beta}$ ) exceeds 1 (i.e. the security's price is theoretically more volatile than the market). Dark shaded areas corresponds to observations for which we rejected the null hypothesis of the following unilateral Student test:  $H_0: \beta = 1$  versus  $H_1: \beta > 1$ .

The Student statistic, calculated as  $\frac{\hat{\beta} - 1}{\sigma_{\hat{\beta}}} \sim t_{(95)}$  (with  $\sigma_{\hat{\beta}}$  the standard error of  $\hat{\beta}$ ), is compared to the critical value 1,66 at the 5% confidence level. Hence, it corresponds to observations for which the corresponding actors were significantly riskier than the overall market. **Source.** Author's calculation.

systems, the work of Richard Tilly (1998) is very insightful. As the author writes: "Neither bank-oriented nor market-oriented financial systems escaped the crisis; and it is not easy to say which system proved the more resilient". The German case is quite interesting. Although German banks suffered a lot from the Government's debt and policy and the weakness of the Reichsmark, Tilly (1998) notes that the competition among universal banks in the 1920s reduced their margin and encouraged them to invest in riskier businesses. As for other countries like Austria, Italy or Belgium, where universal banking was widespread, the crisis of the early 1930s caused Government interventions. For Italy and Austria, the State's ownership continued after the war, whereas Belgium took steps to separate commercial and investment activities, as in the US. Only the German universal banking system survived, but thanks to massive nationalizations. For the US case, the Glass-Steagall act response to the large banking crisis of 1929-1933 could also be seen as a confirmation of our hypothesis. However, the study of Kroszner and Rajan (1994) tempers this view by showing that the comparison between performances of securities underwritten by commercial and investment banks prior to the Act shows no evidence of the need to separate those activities. In our analysis, the French case seems to differ from the American experience.

### 4.3 Robustness checks

As a robustness check, we run the same regressions with individual bank series. Tables 10, 11, 12 (see in the Appendix) report the estimated betas for each of our 106 banks.

Results on individual series are more difficult to interpret. In fact, many coefficients are not significant. Nevertheless, some particularities emerge. For example, the *BNC* case seems rather well captured by our estimations: the beta goes from 0.66 in the 1920s to 1.346 in the early 1930s.<sup>39</sup> Also, the *BUP* case seems relevant, the beta strongly increases from 1.06 to 1.47 between the two sub-periods. We would have expected the same pattern for the *Banque de Paris et des Pays Bas (BPPB)*, however the beta slightly decreases. In this case, rolling estimates may be a relevant alternative but the lack of statistical significance prevents us from running systematic rolling estimates for all series, in addition to the difficulty of displaying the results for such a wide range of observations.

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<sup>39</sup>Data for this bank stops in 1932: the stock is delisted right after the failure in 1932.

## 5 Conclusion

Using a new set of stock price data, we have estimated in this chapter investors risk perceptions on the French banking sector. Our results show that this estimated risk differs among banking activities. They then add new insights on the French banking crisis of the 1930s by relying on a different framework than the usual analysis based on banks' failures. Moreover, our findings go against the argument that a system based on universal banks provides a more stable and diversified financial system. This paper provides an example of a specialized banking system resilient in times of economic and financial crisis. Indeed, during the stressful episode of the early 1930s in France, the specialized structure of the French banking system did help deposit banks to avoid panics and bank runs.

However, this study merits further research. In order to go further, we could use balance sheets data to investigate which items explain the best stock returns. For example, the level of deposits or participations in other firms would probably help to understand the difference in the risk of bank stocks according to their activity, i.e. to their balance sheets. Balance sheets data on the banks' debt structure would also allow us to estimate a market-based measure of risk such as the distance-to-default. As we already have stock prices, it would only require to assess the "default-point" by using short-term and long-term debt data. It should be particularly interesting to see how such measures behave across two very different macroeconomic regimes (i.e. the 1920s and the 1930s). Also, bank level data would allow us to calculate capital and liquidity ratios in order to evaluate investors' interest in the management policy of the banks as well as their market discipline.

The systemic risk of the banking system could also be captured by the degree of connectivity of market participant. The Social Network Analysis should be investigated through the lengths of interlocking-directorates. Such a study is possible because the Desfossés Yearbooks report the names and functions of all board members for every listed company at the Paris' Bourse. Recent studies, such as Billio et al. (2012) use both monthly data on stock returns and different measures of connectedness under the Principal Component Analysis framework, in order to assess the role of different financial institutions (banks, hedge funds, insurances...) in the transmission of shocks.

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## 7 Appendix

Table 4 – DEPOSITS AND COMMERCIAL BANKS

	Average Volatility 1919-1939	Average Market Capitalization (in millions Francs)
Crédit Lyonnais	25,83%	1297,43
Société Générale	16,31%	1140,64
Comptoir National d'Escompte de Paris	21,12%	739,39
Banque Nationale de Crédit	29,17%	541,93
Compagnie Algérienne	24,53%	295,31
Crédit Commercial de France	27,61%	268,57
Sté Générale Alsacienne de Banque	12,56%	152,14
Société Marseillaise de Crédit Industriel	31,3%	117,91
Banque Nationale pour le Commerce et l'Industrie	9,31%	114,75
CIC	15,18%	106,37
Banque de Mulhouse	22,92%	104,63
Comptoir d'escompte Mulhouse	43,69%	98,78
Banque Privée Lyon-Marseille	22,86%	91,11
Banque Française et Italienne pour l'Amérique du Sud	21,4%	78,46
Banque Transatlantique	22,76%	72723107,14
Banque Française pour le Commerce et l'Industrie	20,01%	63,53
Banque Industrielle de l'Afrique du Nord	24,83%	47,27
Banque des Pays du Nord	19,67%	45904331,98
Société Française de Banque et de Dépôts	25,04%	43,75
Etablissement Marret, Bonnin, Lebel et Guieu	60,08%	42,17
Banque Française de l'Afrique Equatoriale	24%	38,84
Banque Franco-Polonaise	10,57%	35159000
Société Française de Reports de dépôts	19,85%	34,77
Comptoir d'escompte de Reims	29,67%	31,82
Crédit Industriel de l'Ouest	17,62%	30,63
Caisse Générale de l'Industrie et du Bâtiment	72,9%	24,13
Société Bordelaise de Crédit Industriel et Commercial et de Dépôts	16,02%	19,42
Caisse Lecuyer	28,8%	17,15
Lehideux et Cie	26,01%	16,30
Compagnie de l'Océan Indien	88,07%	13,86
Banque Commerciale Africaine	76,99%	11,15
Banque Commerciale du Maroc	39,35%	7,31
Banque Franco-Asiatique	50,15%	7,25

Table 5 – EMISSION BANKS

	Average Volatility 1919-1939	Average Market Capitalization (in million Francs)
Banque de France	26,8%	2002,82
Banque de l'Indochine	32,79%	772,74
Banque de l'Algérie	25,46%	395,77
Banque de l'Afrique Occidentale	38,41%	58,87
Banque de la Réunion	26,02%	36,59
Banque de Madagascar	34,93%	32,19
Banque Nationale de la République d'Haïti	15,22%	20,91
Banque de la Martinique	30,11%	12,36

Table 6 – INVESTMENT BANKS

	Average Volatility 1919-1939	Average Market Capitalization (in million Francs)
BPPB	33,68%	819,85
Comptoir Lyon-Alemand	59,44%	344,03
Banque de l'Union Parisienne	54,22%	308,93
Crédit du Nord	10,93%	199,90
Banque Générale du Nord	17,65%	137,18
Crédit Mobilier Français	20,45%	117,40
Société Nancéienne de Crédit Industriel et de Dépôt	20,56%	94,84
Comptoir Lyon-Alemand Louyot et Cie	27,12%	91,99
L'Union des Mines	44,81%	77,42
Banque Europe Centrale (des Pays de l')	29,57%	69,69
Banque Industrielle de la Chine	53,52%	62,72
Caisse de Liquidation des affaires en marchandises à Paris	30,35%	48,20
Banque Nationale Française du Commerce Extérieure	25,34%	35,46
Crédit Algérien	19,86%	31,57
Société Parisienne de Banque	16,53%	31,14
Union Industrielle de Crédit pour la Réconstitution	48,44%	23,68
Banque Franco-Japonaise	17,66%	20,38
Crédit Français	59,39%	18,06
Banque Spéciale de Crédit pour Fournisseurs de Services Publics	40,75%	14,84
Banque Internationale de Commerce	16,24%	12,91
Naud et Cie	32,84%	6,67

Table 7 – INVESTMENT FUNDS

	Average Volatility 1919-1939	Average Market Capitalization (in million Francs)
Société Financière Française et Coloniale	61,1%	104,72
Société Financière d'Exploitations Industrielles	17,67%	43,40
Société Financière de l'Est	54,14%	41,433
Cuivre et Pyrites	24,62%	27,32
Union Trust	55,75%	25,19
Omnium Colonial	37,64%	19,56
Association Financière pour le commerce et l'industrie	38,61%	4,25

## 8 Data

## 9 Econometrics

Table 8 – LAND AND REAL ESTATE BANKS

	Average Volatility 1919-1939	Average Market Capitalization (in millions Francs)
Crédit Foncier de France	25,79%	1889,41
Crédit Foncier Franco-Canadien	33,07%	460,09
Banque Hypothécaire Franco-Argentine	32,87%	277,62
Crédit Foncier Colonial	39,58%	267,92
Crédit Foncier d'Algérie et de Tunisie	16,32%	167,57
Immobilière Marseillaise	21,96%	132,48
Rente Foncière	33,2%	121,19
Foncière Lyonnaise	27,92%	114,68
Crédit Foncier de l'Indochine	57,96%	113,83
Crédit Foncier du Brésil et de l'Amérique du Sud	48,39%	110,93
Société Générale Foncière	48,79%	98,597103,09
Société Foncière du Nord de la France	81,77%	53,707
Foncière de France	45,61%	47,45
Sous-comptoir des Entrepreneurs	32,49%	46,64
Foncière de l'Etoile	39,92%	38,08
Immobilia "Banque de crédit à long et moyen terme"	37,35%	28,78
Caisse Hypothécaire Canadienne	42,17%	24,78
Crédit Foncier d'Orient	37,26%	23,78
Crédit Foncier Argentin	54,33%	23,34
Foncière Parisienne	15,79%	21,74
Garantie La Foncière	35,04%	19,67
Immobilière des Voitures à Paris	59,9%	18,25
Banque Française du Maroc	62,43%	18,00
Immeubles de France	33,72%	17,55
Caisse Hypothécaire Argentine	28,82%	15,42
Pharos	43,31%	14,49
Fourmi Immobilière (La)	29,17%	14,05
Caisse Générale de Prêts Fonciers et Industriels	39,88%	13,23
Industrielle Foncière (L')	60,81%	10,97
Crédit Franco-Egyptie	19,16%	10,41
Crédit Foncier de Madagascar	36,79%	9,32
Trust Immobilier de France	3,88%	9,30
Foncière et Immobilière de la Ville d'Alger (Sté)	28,53%	6,96
L'immeuble Parisien	42,42%	6,73
Société Immobilière du Comptoir Central de Crédit	29,91%	6,40
Société Foncière de l'Argentine	50,24%	4,37
Immobilière et Industrielle du Bâtiment	27,21%	3,06

Table 9 – Securities’ portfolio ratio

Banks	Securities’ portfolio ratio
Comptoir Lyon-Alemand Louyot et Cie <sup>a</sup>	53,96
Crédit du nord <sup>b</sup>	49,18
Banque Internationale de Commerce	31,32
Union industrielle de Crédit pour la Réconstitution <sup>c</sup>	30,85
Comptoir Lyon-Alemand	26,31
Crédit Mobilier français	23,83
Banque Générale du Nord	20,76
Caisse de Liquidation des affaires en marchandises à Paris <sup>d</sup>	19,64
Société Parisienne de Banque	17,50
Banque Nationale Française du Commerce Extérieure	16,49
BUP	16,30
Union des mines	15,29
Naud et Cie	15,10
Banque Franco-Japonaise	14,35
Crédit Algérien	14,04
Société Nancéienne de Crédit Industriel et de Dépôt	12,22
Banque Europe Centrale (des Pays de l’)	11,58
BPPB	10,95
Banque Industrielle de la Chine	10,78
Banque Spéciale de Crédit pour Fournisseurs de Services Publics	9,80
CIC	8,32
Transatlantique	7,21
Etablissement Marret, Bonnin, Lebel et Guieu	6,73
Lehideux et Cie	4,19
Banque Française de l’Afrique Equatoriale	4,09
Banque Franco-Asiatique	3,66
Banque des Pays du Nord	3,46
Sté Générale Alsacienne de Banque	2,26
Comptoire d’escompte Mulhouse <sup>e</sup>	2,17
Caisse générale de l’industrie et du bâtiment	1,56
Banque Française et Italienne pour l’Amérique du Sud	1,16
Crédit industriel de l’ouest	1,16
Société Française de Banque et de Dépôts	1,12
Banque commerciale africaine	1,11
Crédit commercial de France	1,03
Banque privée Lyon-Marseille	1,02
Banque de Mulhouse <sup>f</sup>	0,95
Compagnie de l’Océan Indien	0,93
Comptoire d’escompte de Reims	0,82
Banque Franco-Polonaise	0,63
Banque Nationale de Crédit	0,62
Banque Commerciale du Maroc	0,49
Compagnie Algérienne	0,46
Société Bordelaise de Crédit Industriel et Commercial et de dépôts	0,45
Société Marseillaise de Crédit Industriel	0,44
Société Générale	0,44
Banque industrielle de l’Afrique du Nord	0,39
BNCI <sup>g</sup>	0,27
Comptoir national d’Escompte de Paris	0,07
Crédit Lyonnais	0,03
Caisse Lecuyer	0,00
Société Française de Reports de dépôts	0,00
<b>Average</b>	<b>9,55</b>
<b>Median</b>	<b>3,87</b>

**Notes.** <sup>a</sup>: balance sheet as per 30/06/31.

<sup>b</sup>: balance sheet as per 31/12/34.

<sup>c</sup>: see the 5th Dec. 1926. This company was involved in many borrowings in the industrial sector.

<sup>d</sup>: Listed in 1934. Balance sheet as per 30/09/34.

<sup>e</sup>: balance sheet as per 31/12/27.

<sup>f</sup>: balance sheet as per 31/12/27.

<sup>g</sup>: balance sheet as per 31/12/33.

Table 10 – Estimated  $\beta$  by periods

	Full	1919-1929	1929-1939		Full	1919-1929	1929-1939
<i>Association Financière pour le commerce et l'industrie</i>	0,229 (2,056)	0,24 (1,55)	0,212 (1,292)	<i>Banque Générale du nord</i>	0,35 (3,68)	0,29 (3,56)	0,399 (1,75)
<i>Banque Industrielle de la Chine</i>	0,411 (2,45)	0,38 (2,23)	0,459 (1,13)	<i>Banque Hypothécaire Franco-Argentine</i>	0,638 (8,2)	0,63 (7,81)	0,643 (4,56)
<i>Banque de l'Afrique Occidentale</i>	-0,094 (-0,94)	-0,54 (-4,1)	0,466 (3,17)	<i>Banque Industrielle de l'Afrique du Nord</i>	0,324 (5,55)	0,299 (3,17)	0,346 (4,873)
<i>Banque Commerciale Africaine</i>	0,258 (0,91)	0,38 (2,33)	0,236 (0,706)	<i>Banque Internationale de Commerce</i>	0,38 (7,13)	0,42 (6,57)	0,354 (4,538)
<i>Banque Commerciale du Maroc</i>	0,11 (0,87)	0,17 (0,66)	0,103 (0,746)	<i>Banque Nationale de Crédit</i>	0,98 (6,62)	0,66 (7,72)	1,343 (2,397)
<i>Banque de l'Algérie</i>	0,54 (10,045)	0,39 (4,93)	0,736 (10,514)	<i>BNCI</i>	0,208 (3,34)	-	0,208 (3,341)
<i>Banque de France</i>	0,584 (11,18)	0,52 (6,48)	0,657 (10,936)	<i>Banque Nationale Française du Commerce Extérieure</i>	0,32 (3,77)	0,28 (2,75)	0,369 (2,718)
<i>Banque de l'Indochine</i>	0,723 (11,18)	0,57 (7,05)	0,914 (8,873)	<i>Banque Nationale de la République d'Haïti</i>	0,39 (2,39)	0,4 (2,39)	-
<i>Banque de Madagascar</i>	0,209 (1,6)	0,31 (1,18)	0,194 (1,375)	<i>Établissement Marret, Bommin, Lebel et Guieu</i>	0,43 (2,14)	0,37 (1,37)	0,443 (1,508)
<i>Banque de la Martinique</i>	0,247 (3,489)	0,31 (2,79)	0,168 (1,931)	<i>Banque des Pays du Nord</i>	0,22 (3,45)	0,26 (2,87)	0,165 (1,81)
<i>Banque de Mulhouse</i>	0,36 (1,96)	0,37 (3,44)	-0,83 (-0,29)	<i>BPPB</i>	1,005 (14,8)	1,03 (9,94)	0,961 (11,366)
<i>Banque de la Réunion</i>	0,374 (4,464)	0,61 (3,59)	0,183 (22,875)	<i>Banque Spéciale de Crédit pour Fournisseurs de Services Publics</i>	0,208 (1,05)	0,408 (1,98)	-0,039 (-0,11)
<i>Banque Europe Centrale (des Pays de l')</i>	0,329 (2,81)	0,34 (1,34)	0,312 (4,16)	<i>Banque Transatlantique</i>	0,58 (12,06)	0,51 (8,53)	0,66 (5,94)
<i>Banque Franco-Asiatique</i>	0,107 (0,54)	-0,25 (-1,17)	0,146 (0,606)	<i>BUP</i>	1,24 (7,47)	1,06 (9,47)	1,47 (4,32)
<i>Banque Française de l'Afrique Equatoriale</i>	0,316 (1,99)	0,36 (4,66)	-0,307 (-0,319)	<i>Compagnie Algérienne</i>	0,641 (12,58)	0,57 (8,19)	0,73 (10,49)
<i>Banque Française pour le Commerce et l'Industrie</i>	0,55 (1,54)	0,55 (1,54)	-	<i>Crédit commercial de France</i>	0,728 (12,08)	0,7 (7,23)	0,75 (11,75)
<i>Banque Française et Italienne pour l'Amérique du Sud</i>	0,43 (8,5)	0,55 (8,49)	0,261 (3,389)	<i>Comptoir d'escompte Mulhouse</i>	0,534 (3,04)	0,49 (3,82)	0,74 (1,06)
<i>Banque Franco-Japonaise</i>	0,345 (7,11)	0,48 (7,12)	0,199 (2,926)	<i>Comptoir d'escompte de Reims</i>	0,454 (2,38)	0,19 (1,56)	1,16 (1,66)
<i>Banque Française du Maroc</i>	0,634 (4,77)	0,28 (1,46)	1,09 (4,698)	<i>Crédit Foncier Argentin</i>	0,384 (2,62)	0,38 (2,97)	0,39 (1,28)
<i>Banque Franco-Polonoise</i>	0,0647 (1,03)	-0,13 (-0,53)	0,09 (1,551)	<i>Crédit Foncier d'Algérie et de Tunisie</i>	0,46 (10,6)	0,52 (7,49)	0,37 (8,35)

Notes. Figures in parenthesis are t-stats. If t-stat  $> |1,96|$ , the coefficient is significant at a 5% threshold.

Table 11 – Estimated  $\beta$  by periods

	Full	1919-1929	1929-1939		Full	1919-1929	1929-1939
<i>Crédit Foncier du Brésil et de l'Amérique du Sud</i>	0,25 (0,35)	0,49 (3,14)	-0,66 (-0,96)	<i>Crédit Algérien</i>	0,46 (10,1)	0,49 (7,07)	0,43 (7,3)
<i>Crédit Foncier Colonial</i>	0,35 (3,59)	0,26 (1,54)	-0,45 (6,71)	<i>Crédit français</i>	0,49 (2,04)	0,49 (2,04)	-
<i>Crédit Franco-Egyptien</i>	0,327 (0,57)	0,33 (0,57)	-	<i>Crédit du Nord</i>	0,17 (1,87)	-	0,17 (1,87)
<i>CFF</i>	0,49 (9,86)	0,5 (6,88)	0,47 (7,1)	<i>Cuire et Pyrénées</i>	0,5 (9,86)	0,49 (7,44)	0,52 (6,45)
<i>Crédit Foncier Franco-Canadien</i>	0,89 (11,57)	0,98 (9,18)	0,78 (6,97)	<i>Foncier de l'Etoile</i>	0,212 (0,63)	0,4 (0,79)	0,12 (0,28)
<i>Crédit foncier de l'Indochine</i>	1,278 (10,17)	1,06 (5,28)	1,43 (8,9)	<i>Foncière et Immobilière de la Ville d'Alger (Sié)</i>	0,446 (6,21)	0,63 (5,34)	0,19 (2,93)
<i>Crédit Foncier de Madagascar</i>	0,37 (3,25)	0,57 (3,85)	0,2 (1,22)	<i>Foncier de France</i>	0,46 (4,31)	0,48 (2,78)	0,42 (3,08)
<i>Crédit Foncier d'Orient</i>	0,68 (8,25)	0,49 (5,7)	0,91 (6,2)	<i>Foncière Lyonnaise</i>	0,61 (9,87)	0,62 (6,99)	0,59 (6,91)
<i>Caisse générale de l'industrie et du bâtiment</i>	0,65 (2,07)	0,0067 (0,03)	0,79 (2,025)	<i>Foncier Parisienne</i>	0,127 (1,9)	-	0,13 (1,91)
<i>Caisse générale de Prêts Fonciers et Industriels</i>	0,45 (4,71)	0,37 (5,18)	0,57 (2,99)	<i>Fourmi Immobilière (La)</i>	0,292 (3,92)	0,37 (2,88)	0,21 (2,56)
<i>Caisse Hypothécaire Argentine</i>	0,358 (2,62)	0,21 (2,24)	2,93 (1,54)	<i>Garantie La Foncière</i>	-0,028 (-0,11)	0,57 (0,98)	-0,035 (-0,156)
<i>Caisse Hypothécaire Canadienne</i>	-0,41 (-0,252)	-0,41 (-0,25)	-	<i>Immeubles de France</i>	0,476 (6,18)	0,55 (5,01)	0,36 (3,42)
<i>CIC</i>	0,37 (9,1)	0,46 (4,47)	0,25 (4,18)	<i>Immobilière et Industrielle du Bâtiment</i>	0,286 (4,18)	0,44 (4,24)	0,09 (1,66)
<i>Crédit industriel de l'ouest</i>	0,26 (5,25)	0,33 (4,08)	0,18 (3,19)	<i>Immobilière marseillaise</i>	0,44 (9,18)	0,367 (5,17)	0,54 (8,43)
<i>Crédit Lyonnais</i>	0,8 (14,22)	0,85 (9,54)	0,73 (12,78)	<i>L'immeuble Parisien</i>	0,22 (0,975)	-0,12 (-0,46)	0,25 (1,01)
<i>Comptoir Lyon-Allemand</i>	0,54 (2,91)	0,62 (7,24)	0,31 (0,56)	<i>Immobilia "Banque de crédit à long et moyen terme"</i>	0,3 (3,25)	0,32 (2,43)	0,283 (2,25)
<i>Caisse de Liquidation des affaires en marchandises à Paris</i>	-0,16 (-0,95)	-	-0,17 (-0,35)	<i>Industrielle Foncière (L')</i>	0,32 (2,15)	0,37 (4,15)	0,25 (0,82)
<i>Crédit Mobilier Français</i>	0,57 (5,79)	0,48 (8,37)	0,76 (1,88)	<i>Immobilière des Voitures à Paris</i>	-0,4 (-1,32)	0,46 (2,65)	-0,79 (-1,67)
<i>Comptoir national d'Escompte de Paris</i>	0,59 (12,39)	0,52 (7,36)	0,67 (0,98)	<i>Caisse Lecuyer</i>	-0,102 (-0,98)	0,24 (2,92)	-0,57 (-2,74)
<i>Compagnie de l'Océan Indien</i>	0,26 (0,92)	0,07 (0,19)	0,45 (0,98)	<i>Lehiteur et Cie</i>	0,397 (4,348)	0,03 (0,29)	0,43 (4,27)

**Notes.** Figures in parenthesis are t-stats. If t-stat  $> |1,96|$ , the coefficient is significant at a 5% threshold.



Table 12 – Estimated  $\beta$  by periods

	Full	1919-1929	1929-1939		Full	1919-1929	1929-1939
<i>Comptoir Lyon-Alernand Lougot et Cie</i>	0,37 (1,64)	-	0,37 (1,65)	<i>Société Foncière du Nord de la France</i>	0,57 (1,55)	0,11 (0,43)	0,69 (3,4)
<i>Naud et Cie</i>	0,46 (6,49)	0,41 (4,28)	0,52 (4,92)	<i>Société Française de Reports de dépôts</i>	0,16 (2,8)	0,28 (3,63)	-0,009 (-0,11)
<i>Omnium Colonial</i>	0,133 (0,25)	0,37 (1,06)	-0,15 (-0,15)	<i>Société Générale</i>	0,397 (7,037)	0,41 (4,29)	0,37 (7,73)
<i>Pharos</i>	0,375 (1,8)	0,42 (2,9)	0,34 (0,87)	<i>Sté Générale Alsacienne de Banque</i>	0,33 (7,23)	0,51 (8,13)	0,11 (1,67)
<i>Banque Privée Lyon-Marseille</i>	0,48 (3,72)	0,38 (4,03)	1,12 (1,21)	<i>Société Générale Foncière</i>	0,75 (6,09)	0,26 (1,47)	1,22 (7,42)
<i>Rente Foncière</i>	0,68 (9,72)	0,59 (5,18)	0,78 (1,27)	<i>Société Immobilière du Comptoir Central de Crédit</i>	0,26 (2,99)	0,45 (3,37)	0,14 (1,25)
<i>Société Bordelaise de Crédit Industriel et Commercial et de dépôts</i>	0,28 (3,29)	0,45 (3,8)	0,097 (1,39)	<i>Société Marseillaise de Crédit Industriel</i>	0,36 (2,01)	0,41 (6,67)	0,29 (0,76)
<i>Sous-comptoir des entrepreneurs</i>	0,43 (4,98)	0,46 (4,74)	0,387 (2,55)	<i>Société Nancéienne de Crédit Industriel et de Dépôt</i>	0,25 (4,03)	0,29 (3,61)	0,18 (1,92)
<i>Société Foncière de l'Argentine</i>	0,47 (3,16)	0,58 (3,71)	0,33 (1,2)	<i>Société Parisienne de Banque</i>	0,13 (1,32)	0,16 (1,17)	0,13 (1,18)
<i>Société Française de Banque et de Dépôts</i>	0,22 (2,86)	0,31 (2,21)	0,12 (2,22)	<i>Trust Immobilier de France</i>	-0,44 (-0,45)	-0,036 (-0,068)	-0,31 (-0,21)
<i>Société Financière de l'Est</i>	1,06 (6,49)	-0,0046 (-0,055)	1,06 (6,58)	<i>Union industrielle de Crédit pour la Réconstitution</i>	-0,02 (-0,12)	-0,57 (-0,92)	0,15 (0,58)
<i>Société Financière d'Exploitations Industrielles</i>	0,18 (2,27)	-	0,18 (2,27)	<i>L'Union des Mines</i>	0,58 (4,64)	0,48 (0,86)	0,6 (4,67)
<i>Société Financière Française et Coloniale</i>	1,34 (9,13)	0,92 (4,95)	1,78 (8)	<i>Union Trust</i>	-0,86 (-1,82)	0,06 (0,23)	-0,97 (-1,76)

**Notes.** Figures in parenthesis are t-stats. If t-stat  $> |1,96|$ , the coefficient is significant at a 5% threshold.