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Raphaël Hekimian

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Université de Paris Ouest Nanterre La Défense
(bâtiment G)
200, Avenue de la République
92001 NANTERRE CEDEX

Tél et Fax : 33.(0)1.40.97.59.07
Email : nasam.zaroualete@u-paris10.fr

université Paris Ouest Nanterre La Défense

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Abstract

The aim of this paper is to provide new insights on the French banking crisis of the1930's. This crisis is usually considered in the literature to have been relatively more limited in France than in other European countries. One feature of the French banking system at that time was the specialization of its activities: French banks were, for the most part, either deposit or business banks. The literature highlights the fact that business banks faced the greatest difficulties because they invested in foreign markets. The purpose of this article is to test this hypothesis with a new dataset of stock prices by estimating the risk on i) the aggregated banking sector; ii) on two sub-samples, one including only deposit banks and the other one, only business banks and iii) on the individual series. We find that during the 1930's, business banks were indeed more risky than deposit banks, relative to the overall market

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*EconomiX-CNRS, UPOND, 200, avenue de la République, 92001 Nanterre, France. Email: raphael.hekimian@yahoo.fr

1 Introduction

The recent global financial crisis of 2007-2008 highlighted the importance of banks in the development and the propagation mechanisms of the US real estate crisis into the global economic crisis. In 2016, European banks raised fears with regards to their solvency and their potential systemic risks. During the summer, Italian banks such as *Banca Monte dei Paschi* raised concerns because of its exposure to bad loans. Especially after UK's brexit, analysts fear the threat of Italy being forced to leave the Eurozone.[1] In late September, it is the Deutsche Bank (DB) that worries international finance. After the US Department of Justice demanded a 14 billion dollars claim to settle allegations of mis-selling mortgage securities, the DB, 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.[2] Earlier this year, 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.[3] Moreover, concerns about a potential relapse of the financial system due to the banking sector's fragility flourished all over the French press.[4]

The most relevant episode of such a long period of international financial stress in economic history is most likely the 1930s. In particular, the French case during the interwar outlines several interesting similarities with the recent times in terms of banking system. 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 much more specialized banking system: most of the big banks had one main activity among either the industrial and commercial sectors or in deposits.

During the Great Depression, banking systems went under a lot of pressure. The Austrian banking crisis of 1931 is often seen in the literature as the trigger of the Central European crisis and the aggravation of the depression in Western Europe.[5] The banking sector during the interwar has been recently studied for several countries. We can cite, among others, Billings and Capie (2011) who state that the British banking system resisted to the exchange-rate crisis thanks to the robustness of the joint-stock commercial banks that permitted the British economy to remain stable. Turner (2014) confirms this result with a very long-term analysis of the British banking system, emphasising its stability in the 1930s. On the contrary, Battilossi (2009) studies the interwar banking crisis in Italy and attributes the instability of this sector, consisting of universal banks, to the weaknesses of their governance. In the case of France, the literature usually states that the banking crisis of the 1930s was limited. Its impact on the origins of the 1930s economic crisis in France is not really examined. Instead, the origins of the 1930s crises, well summarized in Mouré's famous book,[6] opposes Alfred Sauvy, who attributes French difficulties to the Sterling crisis of 1931 and the misalignment of the Franc's exchange rate,[7] and Jacques

[1] http://www.marketwatch.com/story/why-italys-bank-crisis-could-be-ticking-time-bomb-2016-0
[2] Financial Times, September 30^{th} 2016.
[3] http://money.cnn.com/2016/02/05/investing/bank-stocks-worse-than-oil/.
[4] Les Échos, February 12^{th} 2016.
[5] Accominotti (2012) provides empirical evidences of the international contagion of the 1931 crisis.
[6] Mouré, K., Managing the franc Poincaré, 1998.
[7] Sauvy, A., Histoire Économique, 1984.

Marseille who outlines an endogenous crisis of the French industry, unable to match the domestic market with the productive capacity. The role of the banking sector is therefore not so much highlighted in this debate.[8]

The aim of this paper is to understand the role of French banking sector in the 1930s crises. Accordingly, we use a new dataset of individual stock prices for ten French banks with high market capitalization, using different levels of analysis, from aggregated to individual, in order to assess investor risk perceptions on this sector. We show that thanks to its specialization, the French banking system proved resilient to the economic downturn of the 1930s.

The remainder of the paper is 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 and Section 4 provides an empirical study of the movements of bank share prices relative to the overall market, at both aggregated and individual levels. Section 5 concludes.

2 Historical background

In this section, we first focus on the features of the French banking sector during the interwar, before drawing the course of events that we divide in two sub-periods that have different impacts: (i) the economic expansion of the 1920s, and (ii) the downturn of the 1930s.

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.[9] This revolution applied to the size of the banks with on the one hand, the volume of their total equity (capital and reserves), and on the other hand, the volume of their deposits. These "new" banks were then much larger than 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).

The French banking system is depicted by the author as having constant features from the end of the 19th century up to the World War II. According to the author, the French system differed from both the system prevailing in Grand Britain or in continental Europe. In France, powerful banks, as defined as having 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[10] and devoted to short term credit with mainly discount operations. Henri Germain, founder of the *Crédit Lyonnais*, insisted

[8] Marseille, J, Les Origines inopportunes, 1980.

[9] The law allowing banks to be found as 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).

[10] 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.

on the fact that short term resources should correspond to short term uses.

Especially for the period before 1914, these banking principles only allowed small per unit benefits considering 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, looking for investments in foreign markets.[11] 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*,[12] all of the large banks had both merchant 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,[13] while the British system had already made a clearer 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. This separation between deposits and business activity is, as we will see, often seen as an explanation of the resilience of large deposit banks. 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. Moreover, the remarkable growth of the "Belle époque" in France from the late 19th century and up to World War I, should be more attributed to the now mature capital market than from the banking system efficiency.

Another feature of the French banking system during the interwar was its freedom, much greater than what it became after 1945, and somehow comparable to what it is today. 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

[11] *Banque de Paris et des Pays-Bas*, *Banque de l'Indochine*, *Banque de l'Union Parisienne* are the most cited ones.

[12] 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).

[13] See Tilly (1998).

growth rate was the highest among the European countries.[14] This expansion was driven by a transfer from low (e.g. textile, leather) productive sectors to high (e.g. steel, chemicals, mechanical industries productive sectors. However, even 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. In terms of banking policy, this industrial growth had consequences: 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.[15] 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 State indebted towards the *Banque de France* and finally, (v) difficulties for the Franc on the foreign exchange.[16]

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

[14] See Caron and Bouvier (1979).

[15] Up to April 1925, the main objective of the monetary policy is to keep the fiduciary circulation under 41 billion francs. Because the authorities could not manage to stay beyond this ceiling, it will cause the great scandal of the "fake balance sheets", described in detail in Blancheton (2005).

[16] See Hautcoeur and Sicsic (1999).

A second consequence was the tendency of the banking sector to increase their activity of security issuers 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 during the period 1924-1932, while for the periods 1915-1923 and 1933-1938, the share of State and local government securities were 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,[17] as well as hedging activities against currency risk 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 went up to 8,5% in 1923, 20% in 1926-30 and reached 23,5% in 1939. The author depicts the interwar period as being very important in terms of banking operations' internationalization.

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 than 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[18] reached its peak in June 1931. In the 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, it reached 79 in 1929, 61 in 1934 and 74 in 1938. The author claims that the increase in the late 1930s is 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

[17] Even though the French *Cambistes* were already making arbitrages on foreign exchanges, but gains was potentially low.

[18] *Crédit Lyonnais*, *Société Générale*, *Comptoir National d'Escompte de Paris* and *Crédit Industriel et Commercial*.

banks with regards to failures. Indeed, 276 joint-stock banks[19] failed between 1929 and 1937 but among them only one was considered large, the *Banque Nationale de Crédit*. The addition of small local bankers and *maisons de coulisse*[20] increased the number of failures to 670.

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,[21] 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 *Crédit Commercial de France*) to help the BUP to deal with these cash-flow issues.

Levy-Leboyer (1995) shed lights on the international money market to explain the trigger of the banking crisis: the increase of interest rates in the US, provoking the distress of Wall Street in late 1929, was putting the European capital markets in danger. 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 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 levels of UK and US.[22]

However, in 1932 the cost of credit in France went above the levels of UK and US, 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,[23] 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 shows the large national banks, for the most part, did not experience the worst difficulties while local and regional banks suffered from lots of failures.

[19] 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.

[20] Small entities trading securities on the Over the Counter market of the Paris' Bourse.

[21] 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, Neuflize and Vernes. See Bonin (2001).

[22] Levy-Leboyer quotes sources from the League of Nations.

[23] After the US's departure from gold, American stock prices started to rise again.

The resilience of the banking sector was then explained by the strength of large banks, specialized and featured 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 the role of the Central Bank in the management of the crisis and (ii) a first insight on market sentiments at the 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^{th}, 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".[24] The scope of the crisis seems however limited. Only twelve failures are mentioned: 8 for local and regional banks, four "important" in Paris, among which the *Oustric*[25] 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^{st} 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^{st}, the portfolio constantly decreased until reaching its level of the first semester of 1930, before the first credit crisis occurred."[26] 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*.

[24] Author's translation.
[25] This famous case is depicted in Sauvy (1984).
[26] Minute of the Conseil Général, March 17^{th} 1932. Author's translation.

***Banque de l'Union Parisienne*:**
The bank, which as an equity capital of 200 million francs at that time, is 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^{th} 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 has already been in liquidation since February 26^{th}, and the amount engaged is 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 more serious panic took place at the end of September 1931, which led to a sudden dramatic increase in commitments. Between September, 16^{th} and October, 16^{th} 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^{st} 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^{st}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 Crédit*. 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."

***Crédit Commercial de France*:**
"After moving around 50 million francs, the engagements quckly raised during the last quarter of 1931. The maximum was reached on November 1^{st} 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 *Crédit 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^{th}, 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^{th}, it went down to 3.2 billion in late August. The Central bank explains this reduction by "the disappearance of the banking crisis, which was the reason for easing access to

liquidity".
The descriptions detailed above confirm the view of a contained banking crisis, but also a crisis that only hit certain type of banks, more devoted 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

To empirically address the issue of the stability of the French banking sector during the interwar, we rely on stock price data instead of data either on balance sheets or on failures used by the existing literature. Yet, as shown by Lescure (2004), data on failures are incomplete while balance sheets can only be studied in a descriptive way since data are not available on a regular frequency for a sufficient sample of banks.

In this paper, we propose to use a new monthly bank share index including ten highly capitalized banks listed at the Paris Stock Exchange from 1919 to 1939. The index is built by collecting both individual stock prices for each of the ten banks and their corresponding number of shares listed on the official list of the Paris' Stock Exchange. The included banks are the following: *Banque de France*, *Banque d'Algérie*, *Banque de Paris et des Pays Bas*, *Banque de l'Union Parisienne*, *Comptoir National d'Escompte*, *Crédit Commercial de France*, *Crédit Foncier de France*, *Crédit Lyonnais*, *Banque de l'Indochine* and *Société Générale*. The choice of this sample can be justified by several reasons. First, these banks correspond to joint-stock banks. Even if the literature on the French banking shows that private banks, also called *Maisons de Haute Banque*, account for an important share of the banking operations in Paris at that time, data on those banks are not published and they are not listed on the Exchange. Second, securities of highly capitalised firms are usually very liquid: they are traded every day hence we are able to collect transaction prices for each of our observations. In addition, those banks are all listed on both the spot and the forward markets. Therefore they are more prone to speculation than securities only traded on the spot market. Finally, the heterogeneity between the considered banks provides additional information. As highlighted in the previous section, the French banking sector is specialized. In our sample, three banks correspond to deposit and commercial banks: *Crédit Lyonnais*, *Comptoir National d'Escompte* and *Société Générale*. Three are business banks: *Banque de Paris et des Pays Bas*, *Banque de l'Union Parisienne* and *Banque de l'Indochine*. The three last remaining cannot be included in either of the last two groups: the *Banque de France* is the central bank; the *Banque d'Algérie* is not a central bank, but is the one bank authorized to issue notes in the wide Algerian department and in the French protectorates of Tunisia and Morocco; the *Crédit Foncier de France* is a mortgage loan bank with close ties with the State.

The index is weighted by 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; ii) the standard stock price index for the overall Parisian market for our period of interest is the monthly cap-weighted index of Le Bris and Hautcoeur (2010),[27] which includes the top forty market capitalization for each year over the period 1854-2007. It

[27]The author would like to thank David Le Bris for sharing his data on the 1919-1939 period.

is then obvious to choose the same type of index (cap-weighted) to run our study on a sectorial index relative to the overall market.

Finally, we also collected monthly prices of what is considered as the risk-free asset of the time at the Paris' Bourse: the Rente 3%. This will allow us to measure excess returns relative to the risk-free asset, which is a more precise way to study risk within the portfolio theory framework.

For all our series in levels, we log-differenciate them in order to get returns. The series in level are mostly integrated at the order 1 (I(1)). It is not surprising given the macroeconomic regime of either expansion or recession during the interwar. Especially if one wants to run estimations on both sub-periods, the stationary nature of the series has to be checked. Augmented Dickey-Fulher and Perron tests (not reported) allows us to use the return series as they are all I(0).

4 The French banking sector seen by the stock market

In this section we aim at study the risk of the French banking sector during the interwar. We first measure this risk at an aggregated level in order to qualify the sector as a whole in terms of risk. As a second step, we divide our sample between business and deposit banks to assess the investor's behaviour with regards to the specialization of banking activities. Finally, we study the risk relative to the overall market at the firm's level.

4.1 The aggregated banking sector

A first glance at the data in level gives us an overlook of out 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 in base 100 in 1919.

Both the overall and the bank-share indices seem to fluctuate together, while the Rente 3% only vary very slightly. It is interesting to observe how the data capture historical events that should have an impact on the series. We can see that the 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. However, 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 in Turner (2014) for the English case. The method consists in using bank-share prices and bank-share prices relative to the overall stock market, and is considered by the author superior than the study of failures. Even though Turner (2014) run its analysis of the English banking stability over a much longer period (1830-2010) and by using stocks' annual returns, we also compare the returns of our banking sector index relative to the overall market, but on monthly basis.

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 early October 1931, right after the sterling crisis of September; ii) in June and August 1936, right before the devaluation of the franc and iii) in September 1939, France's in the WWII. Those events are indeed destabilizing for banks, however this first result should be mit-

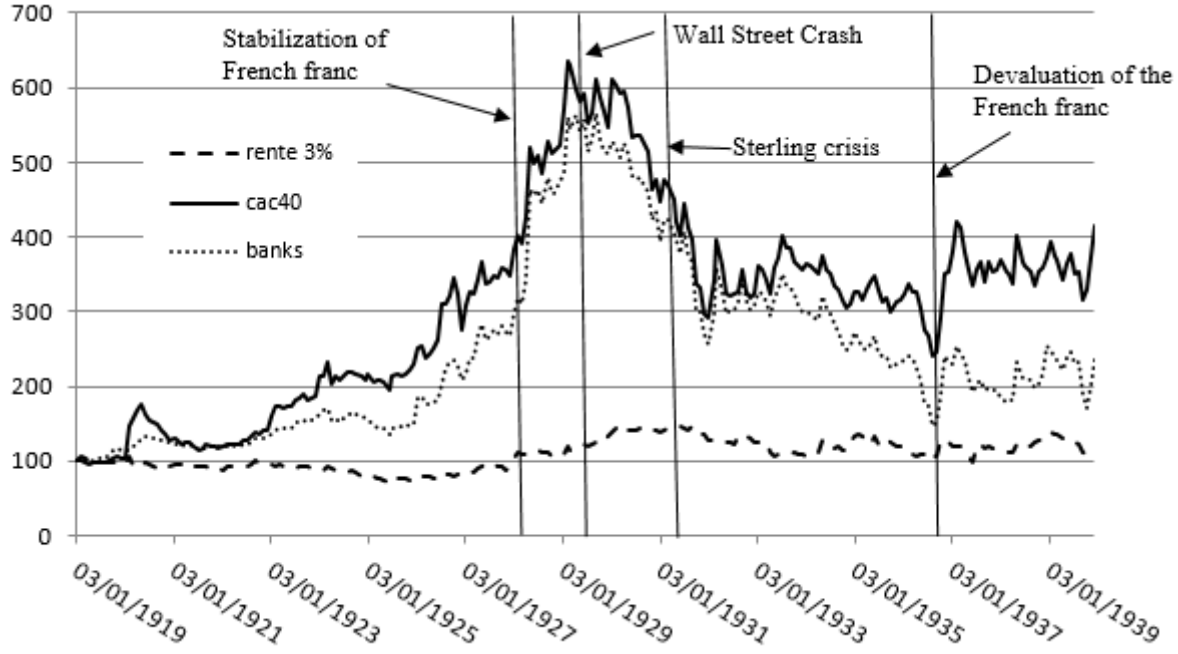

Figure 1: CAC 40, banks and Rente 3%, 1919-1939

Source. Author's calculation.

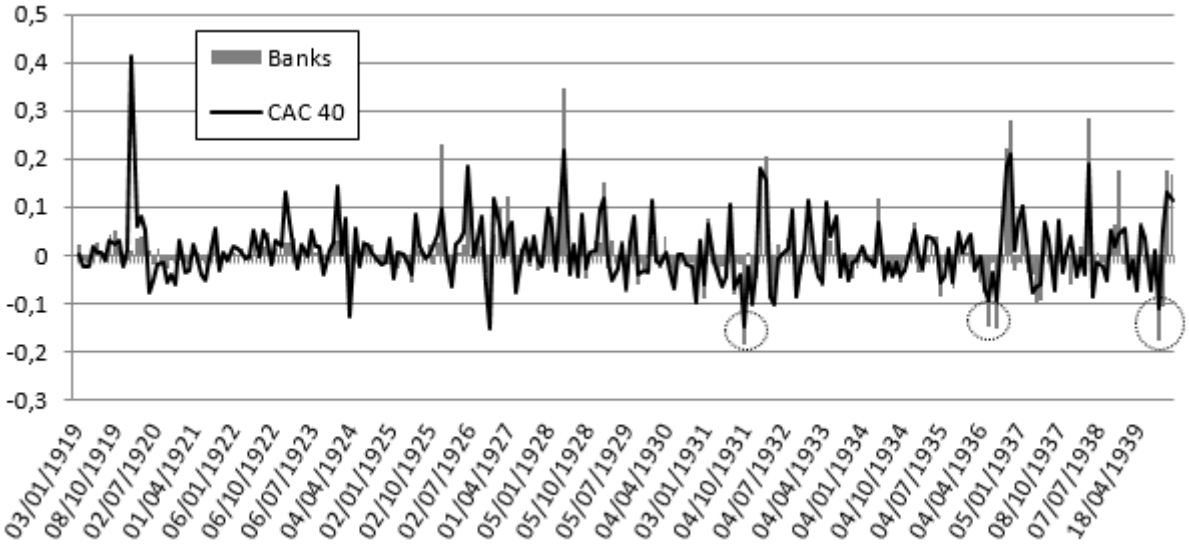

Figure 2: Monthly returns of the banking sector relative to the overall market

Source. Author's calculation.

igated by the magnitude of the banks' excess negative 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 worst negative return occurred in 1931: bank stocks fell by 18% when the market fell by 15%.

This result leads us to reject the systemic hypothesis. 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. We estimate several equations in the Capital Asset Pricing Model (CAPM thereafter) in order to get the estimated beta of the banking sector, β_{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 amounts to estimate the following regression, using the Ordinary Least Squares (OLS) estimation procedure:

$$ER_{banks} = \alpha + \beta ER_{cac40} + u_t \tag{1}$$

The purpose of this calculation is to assess the risk in the following way:

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

We rely on a CAPM framework mainly for data frequency reasons. Indeed, monthly 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 calculate on a minimum basis of one week.

We estimate Equation (1) for (i) the full period as well as for (ii) the 1920s (overall expansion) and (iii) the 1930s (overall recession). Table 1 summarizes the results for the estimated betas.

	Full period	1919-1929	1929-1939
β	0,73	0,55	0,91
	(19,56)	(10,75)	(18,1)

Table 1: estimated β by periods

Notes. Figures in parenthesis are t-stats. 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 β is lower than 1, suggesting that bank stocks are on average less risky than the overall market. However, our risk measure almost doubles between the two sub-periods, confirming the riskier investment environment driven by the Great Depression. Nevertheless, our review of the literature on French banks suggests that one should distinguish banking activities according to their specialization.

4.2 Banks' stocks according to their specializations

We calculate a stock index for aggregated investment banks and for deposit banks. Each sub-indices is measured by taking into account three banks: *Banque de Paris et des Pays Bas*, *Banque de l'Union Parisienne* and *Banque de l'Indochine* for the investment banks index, and *Crédit Lyonnais*, *Comptoir National d'Escompte* and *Société Générale* for the deposit banks index. Figure 3 illustrates the series' evolution in level.

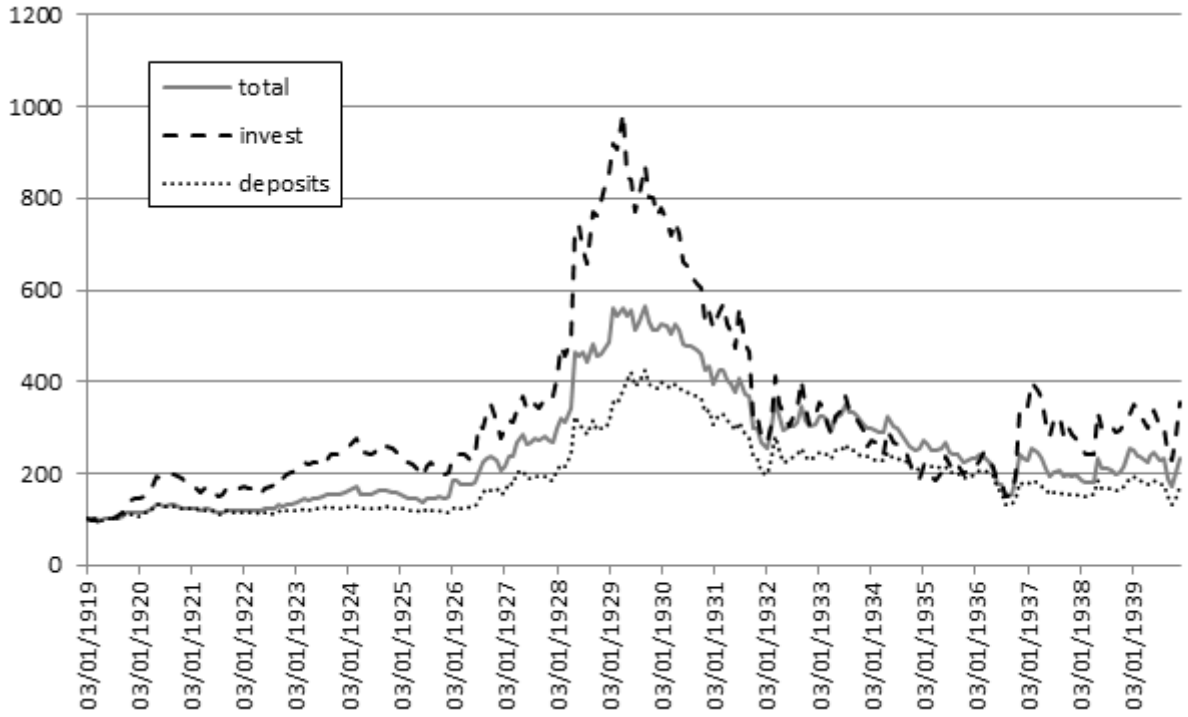

Figure 3: Investment banks vs. deposit banks, 1919-1939

Source. Author's calculation.

A first look at the series outlines the fact that, according to their specialization, bank stock prices do not move within the same magnitude. During the bull phase of the 1920s, investment banks invested more in industrial firms. It seems that, especially after the stabilization of 1928, those banks' share price skyrocketed. It is not surprising since stabilization implied a devaluation of the French franc at one fifth of the pre-war parity. It meant that French exporters had a comparative advantage over England firms, since the UK stabilized its currency at the pre-war parity in 1925. On the contrary, the dramatic slump following 1929-1930 could be explained by the investment of business banks in Central and Oriental European countries. After the sterling crisis of 1931 and the subsequent failure of the Creditanstalt in Austria, runs on business banks such as *Banque de l'Union Parisienne* occurred and the latter seems to be well captured in the data.

At the opposite, inflation in France in the early 1920s and the consequences thereof on deposits could be an explanation of the low level of deposit banks' share prices. Indeed, the bear phase of 1929-1939 less affected those banks, given that they were less invested in neither industrial firms nor foreign markets.

This view is confirmed by the risk analysis. Table 2 reports the estimated betas for the two sub-indices.

	Full period	1919-1929	1929-1939
Investment banks	1,1	0,84	1,37
	(17,8)	(10,73)	(14,8)
Deposit banks	0,66	0,49	0,82
	(18,3)	(9,55)	(17,7)

Table 2: Estimated β according to specialization

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

It is interesting to note that even during the boom phase of 1919-1939, investment banks were less risky than the overall market (β = 0,84). Nevertheless, during the depression, these same banks were clearly riskier than the market (β = 1,37). For deposit banks, stock prices variations are only half of the overall variation during the 1920s, despite the very low diversification that a three share portfolio would offer regarding the overall index that includes 40 stocks.

This analysis corroborates the hypothesis that a specialized banking sector may help as a buffer to exogenous financial shocks. Indeed, only business banks needed intervention of either authorities or bank syndicates in order not to fail. To make comparisons with other banking 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. 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 current analysis, the French case seems to differ from the American experience.

4.3 Individual stocks riskiness

As a robustness check, we run the same regressions with individual bank series. Table 3 reports the estimated betas for both the business and the deposit banks included in our sample.

Results on individual series confirm the ones detailed in the previous section: busi-

	Full period	1919-1929	1929-1939
Banque de l'Union Parisienne	1,3	0,87	1,75
	(10,7)	(8,9)	(7,9)
Banque de Paris et des Pays Bas	1,08	0,78	1,38
	(14,5)	(7,4)	(13,9)
Banque de l'Indochine	1,02	0,8	1,25
	(12,1)	(7,3)	(9,8)
Crédit Lyonnais	0,8	0,6	1,02
	(17,4)	(8,6)	(18,1)
Société Générale	0,48	0,38	0,56
	(11,8)	(6,5)	(10,1)
Comptoir National d'Escompte	0,68	0,48	0,86
	(13,7)	(6,8)	(13,2)
Crédit Commercial de France	0,79	0,53	1,05
	(12,8)	(5,6)	(14,2)

Table 3: Estimated β per bank

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

ness banks stocks are all riskier than the overall market during the 1929-1939 period, while deposit banks stocks are all less risky, even during the depression. Only the coefficient β related to *Crédit Lyonnais*'s stocks is slightly above 1. Moreover, this risk measure seems to suit investment strategies well: the *Banque de l'Union Parisienne* exhibits the highest beta. It was indeed more invested in Central and Oriental European markets than the *Banque de Paris et des Pays Bas*. The *Banque de l'Indochine* invested more in Eastern Asian markets and as such, has the lowest β among the three banks. Finally, the *Crédit Commercial de France*, which raised the portfolio of discounted bills of the Central bank after the stress of October 1931 (as seen in Section 2.2.3), is riskier than the overall market during the 1930s with a β of 1.05, compared to the one prevailing during the 1920s (0,53).

5 Conclusion

Thanks to a new set of stock price data, we have estimated in this paper investors risk perceptions, according to the activity of several French banks. Our results show that this estimated risk differs between business and deposit banks. They then add new insights on the picture of the French banking crisis of the 1930s by relying on a different framework than the usual failures analysis. Moreover, this study goes against the argument stating that universal banking provides a more stable and diversified financial system. 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.

In addition, the paper highlights the need for historical microdata in order to get lessons from past financial events. In particular, it provides an example of a specialized

banking system resilient in times of economic and financial crisis.

However, this study needs to be completed. In order to go further, a first interesting way would be to use balance sheets data to investigate which items explain stock returns the best. 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 for our period of interest 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.

Another way to assess the systemic risk of the banking system should also be considered: the connectedness. The Social Network Analysis should be investigated through the lengths of interlocking-directorates. Such a study is possible because the Desfossés Yearkbooks 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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