

# Can Moral Hazard Be Avoided? The Banque de France and the Crisis of 1889

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In this paper, we recover the history of the panic of 1889, when the Banque de France quickly intervened, ensuring that a run on the Comptoir d'Escompte, one of the largest banks in France, did not turn into a general panic. The remedy for this banking crisis, the most severe in late nineteenth century France, was not a British Bagehot-style lender of last resort operation but a divisive and contested intervention, resembling more a modern “lifeboat” or “bailout” operation. Thus, it was similar to the rescues of Long Term Capital Management in 1998 or Baer Stearns in 2008. Such modern interventions have led critics to complain that central banks that deviate from Bagehot’s rule create moral hazard, inducing greater losses in subsequent crises. Yet, in 1889, the risk of moral hazard was mitigated by ensuring that the banks, including their management and directors, that had contributed to the debacle were compelled to immediately absorb losses arising from the collapse of the Comptoir. Afterwards, many officials were purged and other penalties imposed. This surprisingly strong action seems to have sent the correct signal, and there was no major crisis in France for the next quarter century.

We first describe the origins of the crisis, arising from an effort to control the world copper market and measure the enormous damage inflicted on the Comptoir. In the second section, we examine whether the run on the bank had begun to spread before the authorities intervened and detail the debate at the Banque de France over the Finance Minister’s plan to rescue the Comptoir with a lifeboat. In the third part of the paper, we determine that the Banque’s intervention was almost exclusively a lifeboat operation with little extra liquidity supplied to other banks or the markets. Fourthly, we analyze the determinants of membership in and contributions to the guarantee syndicate, intended to absorb losses from the lifeboat operation, finding that, in addition to capacity to pay, responsibility for the debacle was important. In the final section, we discuss the penalties imposed on institutions and individuals in the aftermath of the crisis to minimize the moral hazard of the Banque’s actions.

## **I. Origins of the Crisis**

### **I.A. Banks and the Copper Scheme**

After the Crash of 1882, the French economy entered a long period of relative stagnation. The failure of the bank Union Générale precipitated a stock market crash, and

prices of the Paris Bourse did not return to the pre-crash peak until 1896. But the malaise was widespread and after peaking in 1882, real GDP declined and remained 2 to 3% below the peak for the next six years. As the economy was in the doldrums, French banks saw their profits squeezed and their dividends decline

In the 1880s, the French banking industry was split into two basic groups: (1) the large limited liability banks known as ‘deposit banks’ that raised substantial funds from deposits and engaged in a wide range of commercial and investment banking activities. Crédit Lyonnais, Société Générale, the Comptoir d’Escompte, the Banque de Paris et de Pays-Bas, the Société de Dépôts et de Comptes Courants, Crédit Industriel et Commercial dominated this group. (2) the private banks that focused on merchant and investment banking, financed by capital. The biggest private banks were known as the *haute banque*, the greatest of which was Rothschild frères. In this period, there was no deposit insurance or implicit guarantees of banks, and rumors of a bank’s troubles could cause a run.

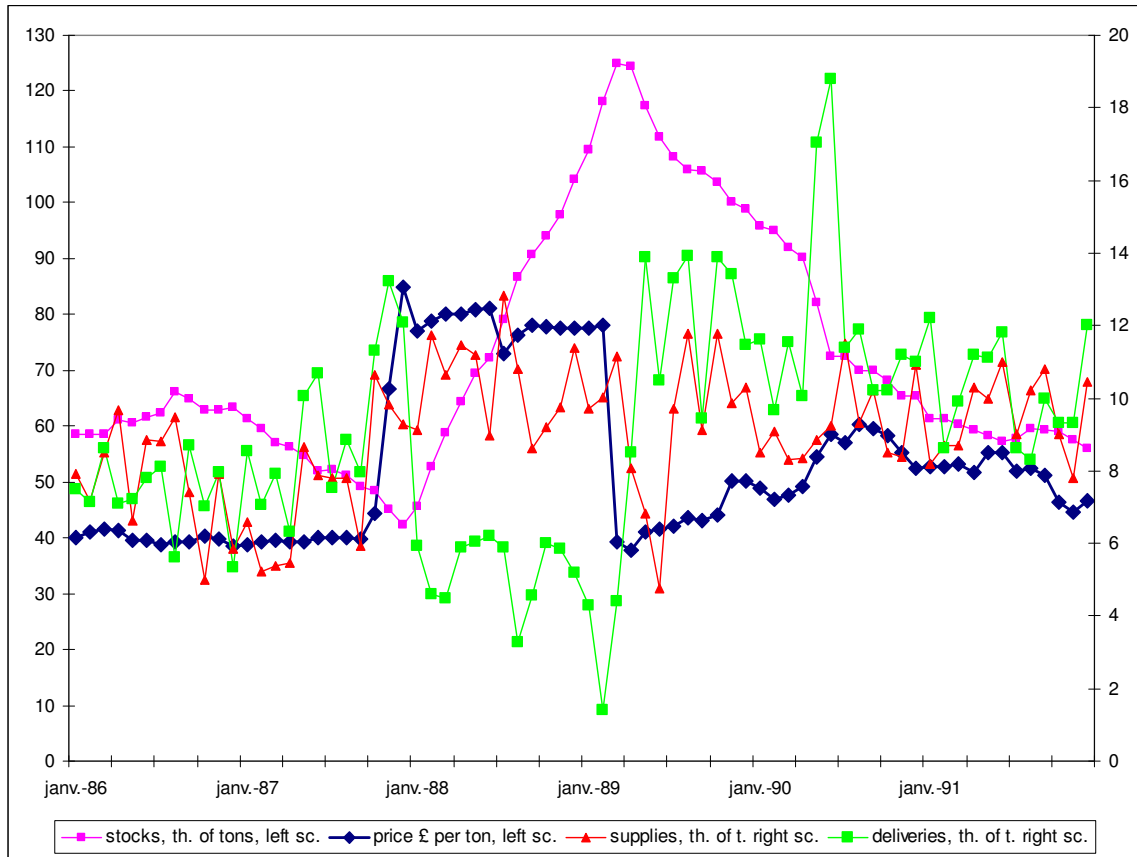
The uncertainty and weakness of the banking sector was mirrored in politics. Truly republican leaders had governed the Third Republic only since 1876, and threats by Monarchists and Bonapartists were still present. In the midst of this dismal picture, the Republicans saw the Universal Exposition of 1889 – the centenary of the French revolution – as a welcome means to project the economic and political accomplishments of France under the Third Republic. Further scandals or a financial crisis were the last thing that the Republican government wanted in early 1889.

The Crisis of 1889 had its origins in the efforts of Pierre-Eugène Secrétan, head of the Société Industrielle et Commerciale des Métaux to engineer a monopoly of the worldwide supply copper and drive up its price. His acquisitions of existing copper stocks and purchases of contracts for future delivery from mines around the globe were widely known and discussed in the press, even though the details of his machinations remained obscure and the subject of rumors. In essence, the SM was a highly leveraged commodities company that used off-balance sheet derivatives to speculate in copper.

Industrial and agricultural demand for copper expanded rapidly during the 1880s. New uses were found for copper, including cables for transmission of electricity to copper sulfate to battle the scourge of phylloxera in the vineyards. Worldwide production increased from approximately 20,000 tons per year in the middle of the

century to 250,000 tons by 1888. Although Chile and Australia had traditionally been the dominant suppliers, an increasing share of production was coming from the U.S., where new mines were opened in Montana and Arizona in the 1880s. This increase in production led to a steady fall in prices from over £70 a ton in the early 1870s a low of about £40 a ton in 1886.

**Figure 1**  
**Copper Prices, Stocks, Supplies and Demand**  
**1886-1891**



Source: Archives du Credit Lyonnais

In the fall of 1887, Secrétan organized a syndicate of bankers to provide credit to purchase existing stocks of copper. This syndicate included the Comptoir, Crédit Lyonnais, Paribas and the Rothschilds as well as a number of smaller members of the haute banque such as André, Girod & Cie and Lécuyer. The news of this “secret” agreement led to a run on copper by manufacturers, driving up prices from £40 per ton in September 1887 to over £80 by December 1887. As seen in Figure 1, British and French stocks reached a minimum at the end of December 1887. Secrétan’s cartel backed by the

bankers' syndicate was able to stabilize prices at £80, which led copper stocks to rise again. By 1888, the SM had purchased 232,000 tons of copper, roughly one year's output, and was writing futures contracts to secure control of the next year's output.

If support for Secrétan's scheme had remained within a circle of metals companies, wealthy investors and private investment banks, there would have been large losses, but it is unlikely there would have been a banking crisis. However, from the start, Secrétan drew upon the support of several of the most important limited liability commercial banks. Support of these banks was essential, as the modest capital of the SM did not provide a credible guarantee to buy the copper when the futures contracts fell due---guarantees from the banks were necessary.

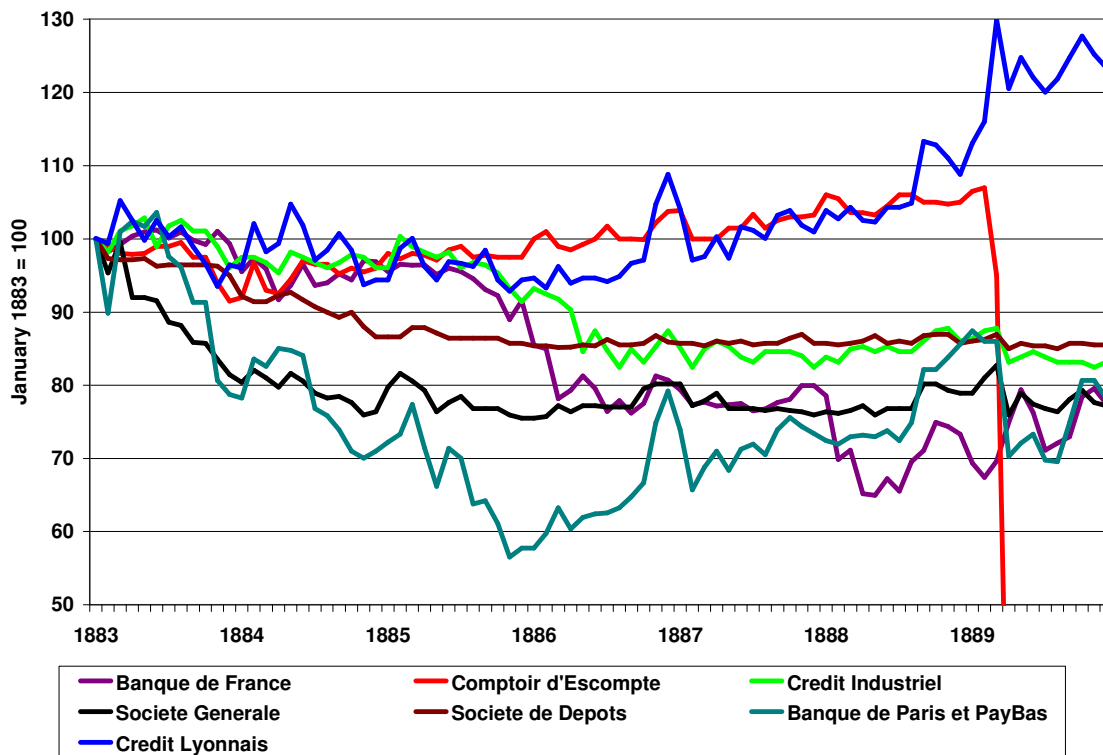
### **I.B. Seducing the Banks**

Normally, commercial banks would not have funded commodities speculation on a grand scale, as their obligation to depositors mandated a lower tolerance for risk; but the overlapping management relationships between the Société des Métaux, private banks, commercial banks, and the Banque de France created conflicts of interest. The opportunity to profit from the copper scheme induced some of the conflicted parties to take advantage of the information asymmetries vis-à-vis their boards, shareholders and the public and bring the resources of their institutions to Secrétan's assistance. Most notably, the Comptoir d'Escompte provided substantial on-balance sheet credits for warehoused copper and vast off-balance sheet guarantees for the SM's forward contracts that put not only its capital but also its deposits at risk. Among the knowledgeable insiders to the scheme were some regents (directors) and *censeurs* (auditors) at the Banque de France. Their silence ensured that the central bank, which had discounted copper warrants, was unworried about threats to the solvency of the Comptoir that might induce a run or even a panic.

One of the central questions about the Crisis of 1889 is how and why the Comptoir and its head Eugène Denfert-Rochereau were seduced by Secrétan into participating in his risky scheme to corner the copper market; and later, why the Banque de France did not perceive the tremendous risks that the Société and Comptoir had absorbed when it discounted warrants of the Société guaranteed by the Comptoir and

other banks. The answer to the first question appears to lie in the remaining records of the Comptoir, which suggest that unbeknownst to some on the Comptoir d'Escompte's Conseil d'Administration (board of directors), Denfert-Rochereau was manipulating profits from the moment that he took over as *directeur* (president) of the bank with the approval of the *président* (chairman) of the Conseil, Edouard Hentsch, of the *haute banque* firm of Hentsch frères. The stockholders of the Comptoir greatly appreciated Denfert-Rochereau's achievement of increasing and then maintaining dividends in a period of stagnation. Figure 2 displays bank stock prices, starting after the Crash of 1882 in January 1883, which is indexed as 100.<sup>1</sup> With the exception of Crédit Lyonnais and the Comptoir, all bank stock prices sagged seriously in the mid-1880s. Crédit Lyonnais' success in this era is attributed to the superior entrepreneurship of its dynamic head, Henri Germain (Bouvier, 1968).

**Figure 2**  
**French Bank Stocks, 1883-1889**



<sup>1</sup> We thank David Le Bris for his generous provision of his data on French bank stock prices.

How Denfert-Rochereau was able to match Germain is revealed on an examination of the Comptoir's accounts.<sup>2</sup> The only element in the Comptoir's earnings report that shows a steady rise is *operations diverses* or other earnings about which no other specifics were given. These appear to have included profits from loan commitments, guarantees and security underwritings, the details of which may have not been provided to the Conseil d'Administration. Between 1878 and 1882, this category accounted for between 8.5 and 11.6% of all earnings, jumped to between 17.1 to 18.8% for 1883 to 1885, increasing to 31.4% in 1886, 29.1% in 1887 and finally 32.9% in 1888. Without this source, the maintenance and then increase of dividend payments would have been impossible.

The Comptoir's involvement to the copper syndicate deepened in December of 1887 when Secrétan engaged the assistance of Denfert-Rochereau to sign the first guarantee for a contract for future purchase of copper. This assistance was a major coup for Secrétan as many mining companies were hesitant to sign futures contracts with his company given its modest capital, doubting its ability to make good on its commitments. Clearly wary of the Conseil, Denfert-Rochereau hid the Comptoir's involvement for several months.<sup>3</sup> The next most seriously compromised bank was the Banque de Paris et de Pays-Bas, which had several directors who had multiple directorships, most notably Hentsch.

### **I.C. What did Banque de France Know?**

Although the considerable connections between the officials of the commercial banks, the *haute banque*, and the regents of the Banque de France presented serious conflicts of interest, they might be viewed as beneficial as they could have provided the Banque with important intelligence about the condition of the banks. However, the temptation to profit hugely from the rise in copper prices seems to have led key regents and *censeurs* of the bank to remain silent. These individuals were involved in the copper syndicate and bought shares in the Société des Métaux and mining companies. When the

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<sup>2</sup> Comptoir d'Escompte de Paris, Compte Rendu des Operations du Comptoir d'Escompte de Paris (Paris, 1878-1888).

<sup>3</sup> When Secrétan finally revealed to his board his huge off-balance sheet guarantees, an uproar ensued; and one board member, Jacques Siegfried resigned in protest.

the Société doubled its capital in 1888 to support the copper scheme, they were among its prominent subscribers.

While these insiders were relatively well informed, the rest of the management and regents of the Banque de France could have learned of the growing speculation and its potential threat through its quarterly examination its major borrowers, both banks and businesses.<sup>4</sup> In the first “Vérification” of the year, on February 23, 1888, the condition of the Société was examined. The examiner was the Baron Alphonse de Rothschild, who given his reported role in the copper syndicate should have been aware that this company was taking large off-balance sheet risks. Nevertheless, Rothschild reported favorably that the company had a paid-in capital of 25 million francs advances of only 600,000 francs. He commented that it was an: “Affaire très sérieuse conduite avec intelligence.”<sup>5</sup> In the next report on March 24, Rothschild reported favorably on the Comptoir d’Escompte.

Left uninformed by these examinations, the “outside” regents slowly gain a window on the copper scheme through the Banque’s exposure to copper warrants---loans to the Société collateralized by warehoused copper that were guaranteed by the signature of a bank. These warrants were part of the Banque’s regular lending; but it granted an exceptional and large request on May 18, 1888. The Banque was approached by Girod, one of the administrators of the Société, about discounting copper warrants. Girod was no stranger to the Régents, as he was a partner of the regent André in André, Girod et Cie. The Société des Métaux was offered a line of credit up to a maximum of 52,000,000 francs for 40,000 tons of copper, valued at 1300 francs per ton (65 percent of the market price---a substantial buffer in the event of a modest price decline). The Banque recognized the unusual nature of the loan and indicated that it would not be renewed.

In spite of the problems that Secrétan was encountering in obtaining additional finance to sustain high copper prices, the market did not register any apprehension throughout the Summer and Fall of 1888. As evident in Figure 3, the public did not perceive that there was any danger to the banks from the copper scheme that the popular press had been discussing over the past year. All bank stocks, even those of the Comptoir

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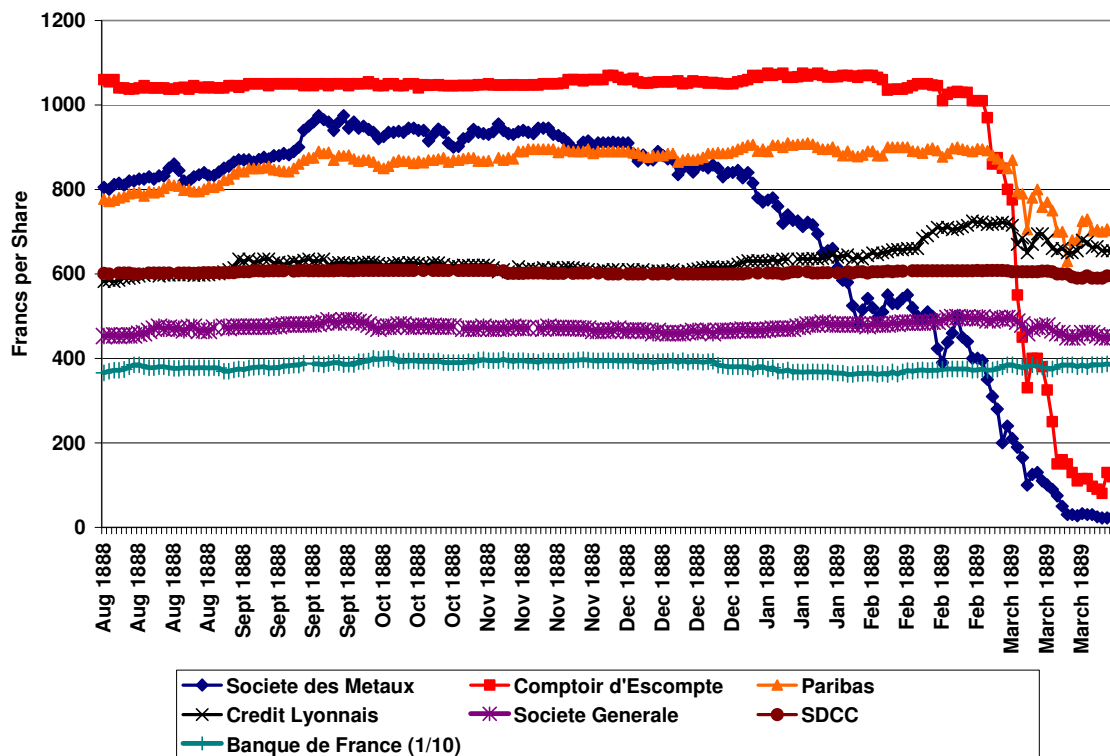
<sup>4</sup> The results of this survey were inscribed as the minutes of the Conseil Général. This *vérification* recorded the credits outstanding to each borrower, basic capital, a simple rating and sometimes some comments. The banks were divided up among the Regents who rotated surveillance of the borrowing institutions, perhaps to improve monitoring.

<sup>5</sup> Banque de France, Conseil Général, Procès-verbal de la séance du 23 Fevrier 1888.



and Paribas, remained essentially flat for the rest of the year. The stock of the SM reached a peak of 975 francs per share in September 1888 and drifted down somewhat but stayed above 900 francs until December, which might have reflected the rising stocks of warehoused copper and weak demand.

**Figure 3**  
**Price of Bank Stocks and the Société des Métaux, August 1888-March 1889**



The risk to the banks might have gone unnoticed by the majority of the regents of the Banque de France if it had not been for the large discounts on copper warrants granted to the Société. As these short-term credits fell due, some banks refused to renew their guarantee and the Comptoir d'Escompte stepped in to guarantee them. On October 31, 1888, it had guaranteed 23.9 million francs out of a total of 46.4 million francs for the warrants, rising to 30 million out of 51.5 million at the beginning of January 1889. The regents who were outside the circle of speculators took note and worried about the Comptoir's disproportionate share of guarantees as prices for copper began to dip in February 1889. A further alarm was sounded when Sécretan, desperate for more funds to sustain copper prices, tried to organize a new enterprise, the Compagnie Auxiliare des Métaux. As was soon realized, it was only a shell company, largely underwritten by the Société, with little new equity.

On February 27, several regents asked the Governor to interview Joubert of Paribas and Girod of the Comptoir about the “Affaires des Warrants.” The Governor reported the worsening situation the following day and some limited credits were renewed. Rothschild proposed sending telegrams to the American mines to request a renegotiation of the futures contracts on copper and announced that his bank had lent the Comptoir 6 million francs so that it could meet rising withdrawals. The Governor promised to interview Denfert-Rochereau. The next day, March 2, 1889, the Governor presented the results of his meeting and the answers to the questionnaire he had sent the *directeur*. The facts revealed were shocking, as the complex financial maneuvers of Secrétan and Denfert-Rochereau had left the CE insolvent.

To determine the condition of the Comptoir and its prospects during the crisis we draw upon Denfert-Rochereau’s March 1, 1888 declaration to the Governor of the Banque de France and two other documents: the April 13, 1889 balance sheet of the Société given to the judicial tribunal by Secrétan when he filed for bankruptcy and the April 29, 1889 estimate of the Comptoir’s liquidators, Moreau and Montchicour.

Panel A of Table 1 gives an estimate based on the March 1 information. Line 1 represents the credits of the Comptoir, largely discounts on copper warrants to the Société. In addition, the Comptoir was liable for the Société’s copper warrants that were discounted at the Banque de France because it had given a guaranteeing signature. This obligation is shown on Line 2; so that the total obligation of the Société to the Comptoir was 96.2 million francs. Line 3 shows the total liabilities and capital of the Société, 276.3 million. From this sum, credits from the Compagnie Auxiliaire des Métaux in line 5 and the capital invested in the Société in line 4 need to be subtracted. The debt of the Société to outside creditors was thus 224.6 million francs, as seen on line 6. The 96.2 million francs due to the Comptoir represented 43% of this total, shown on line 7. Against these liabilities, the Société had 154,900 tons of copper (line 8), which if valued at the prevailing price of £40 per ton, represented assets of 156.1 million francs listed on line 9. If we suppose that the bank’s share of this collateral is the same as its share in Société’s debts (an optimistic hypothesis), the Comptoir’s share of these assets would be 66.9 million francs on line 10. Then the loss to the bank was 29.3 million francs. In addition to these direct losses, the Comptoir had also guaranteed payment at

**Table 1**  
**Losses to the Comptoir d'Escompte**  
**(in millions of francs unless otherwise indicated)**

<b>Panel A</b>		
1	CE credits to SM	68.1
2	SM Warrants Guaranteed by CE	28.1
3	Total Liabilities and Capital of SM	276.3
4	Capital of SM	37.4
5	Debt to CAM	14.3
6	Debt of SM to outside creditors (3-4-5)	224.6
7	Share of CE (1+2)/6	43%
8	SM's copper (tons)	154,900
9	Value of (8) at £40 per ton	156.1
10	CE share of copper (7*9)	66.9
11	Direct Loss to the CE (1+2-10)	29.3
<b>Panel B</b>		
1&2	CE credits to the SM	116
6	Total Liabilities of SM	300.4
4a	Unsecured junior debt	43.7
6a	Debt of SM to secured creditors (3-4)	256.7
7	Share of CE (1/6)	45%
8	SM's copper (tons)	124,000
9	Value of (8) at £43 per ton	136
10	CE share of copper (7*9)	61.5
11	Direct Loss to the CE (1&2-10)	54.5
<b>Panel C</b>		
1&2	CE credits to the SM	146.5
9a	SM's copper (tons) serving as collateral	67,827
9	Value of (8) at £40 per ton	67.8
11	Direct Loss to the CE (1&2-10)	78.7
	Additional "minor" losses	2.9
11a	Total Direct Loss to the CE	81.6
<b>Guarantees for forward contracts</b>		
13	To be delivered in 1889 (tons)	43,900
14	To be delivered in 1890 (tons)	52,700
15	Indirect CE Loss if Guarantee for £70 and market price is £40 (30*25FF*(13+14))	115.9
<b>Total Loss including guarantees</b>		
16	Total Loss (panel A)	145.2
16	Total Loss (panel B)	170.4
16	Total Loss (panel C)	197.5

approximately £70 per ton for the Société of the delivery of large quantities of copper in 1889 and 1890 (lines 13 and 14), which if the copper were only worth £40 per ton when delivered would cause a loss shown on line 15 of 115.9 million francs. The total potential loss for the Comptoir was thus 145.2 million francs on line 16.

Panel B estimates the losses of the Comptoir, based on the April 13 balance sheet provided by Secrétan. Total credits of the bank to the Société in line 1 were estimated to be higher, 116 million francs. Total liabilities of the Société were now set at 300.4 million, which when the unsecured junior debt (line 4a) is subtracted, leaves the secured debt of the Société to outside creditors (line 6a) at 256.7 million francs. Line 7 reports the bank's share, 45%. The copper holdings of the Société in line 8, if valued at £43 would give it assets of 136 million francs, shown on line 9. The Comptoir's share of these assets would be 61.5 million francs on line 10 (again assuming its credits are as well secured as the average secured creditors), leaving a direct loss to the Comptoir of 54.5 million shown on line 11 of Panel B, nearly double the direct loss in Panel A. If added to the indirect loss of 115.9 million from line 15, the total loss would be 170.4 million francs on line 16 for Panel B.

Both of these estimates of losses---145.2 million and 170.4 million francs---would have easily wiped out the Comptoir's 80 million francs of capital, but only if the mines' contracts were not restructured, something the French participants had been seeking unsuccessfully in the last month before the collapse. On the other hand, both rely on data provided by interested parties---Secrétan and Denfert-Rochereau---whose incentive was to minimize their losses. The picture from the *liquidateurs* was much worse, as seen in Panel C. Credits of the bank to the Société were higher on line 1, 146.5 million francs. The collateral of the bank credits, on line 9a, valued at £40 in line 9, implied a direct loss on line 11 of 78.7 million, to which another 2.9 million losses should be added for a total direct loss of 81.6 million---which alone would wipe out the Comptoir's 80 million francs of capital. If the guarantees from line 15 are added, the total direct and indirect losses would reach 197.5 million francs on line 16 for Panel C. Consequently, in most optimistic case, the Comptoir needed the guarantees to be abandoned in order to survive;

in the second one it has to be liquidated even if the guarantees were to be abandoned; in the third it would be deeply insolvent even under that hypothesis.

Uninsured depositors would rightly flee, if knowledge of this situation became public. The March 1 information provided to the regents on March 2 was a rude shock, the Banque was owed 78.8 million francs, and they would certainly have suspected that the situation might be even worse. For Denfert-Rochereau, the revelation of this information was too much and on March 5, 1889, he committed suicide; a full-scale run hit the bank with a city-wide perceived to be on the horizon.

## II. The Panic

### II.A. An Incipient Panic?

As will be seen, the Banque de France intervened fairly quickly. Nevertheless, it is important to assess if it acted quickly enough to curtail a wider panic. Empirically, the problem is to measure contagion or spillover. The problem is that even in recent years it is not easy to find deposit data for measuring runs on a bank, so bank stock prices are used (Wall and Peterson, 1990; Goldsmith-Pinkham and Yorulmazer, 2010). Table 2 reports the raw returns for the stocks of the major banks the Société des Métaux for key dates.

**Table 2**  
**Raw Returns for Bank Stocks and the Société des Métaux**  
**February 27-March 11, 1889**

Date	BF	BEP	Paribas	CE	CL	SDCC	SG	BP	SM
Feb 27 1889	0.27	0.36	0.67	0.00	-0.41	0.16	0.00	0.00	0.00
Feb 28 1889	0.54	0.00	-0.11	0.00	0.14	-0.16	0.40	0.00	-1.25
March 1 1889	-0.80	0.00	-0.34	-3.96	-0.83	0.16	-1.41	-0.47	-11.39
March 2 1889	0.27	-0.36	-1.23	-11.34	0.14	0.00	0.00	-0.71	-11.43
March 4 1889	0.54	-0.54	-1.02	1.74	0.28	0.00	1.02	-0.47	-9.68
March 5 1889	1.33	-0.36	-1.38	-2.86	0.28	0.00	-0.40	-1.19	-28.57
March 6 1889	1.32	-0.55	-1.16	-5.88	-0.28	-0.16	0.41	0.00	20.00
March 7 1889	0.00	-1.28	2.35	-3.13	-0.69	-0.33	0.00		-12.50
last price 03 07	0.65	0.00	-2.30	-6.45	-2.10	0.41	-1.01		-4.76
March 8 1889	-1.94	-2.78	-6.47	-24.14	-4.29	-0.41	-0.61	-3.61	-5.00
March 9 1889	-0.26	0.00	-0.63	-18.18	2.24	0.00	-1.44	0.00	-13.16
March 11 1889	0.26	-1.90	-10.76	-26.67	-5.11	0.00	-4.17	-1.25	-39.39
Cum Return 2-27 to last price 3-7	4.17	-2.70	-4.49	-28.22	-3.45	0.08	-1.01	-6.32	-50.00

Although it is clear that both Comptoir and Paribas were afflicted with their shares dropping 26.67 and 10.76 percent between February 27 and March 7, the extent to which this spilled over to other banks or perhaps led to some flight to quality, as might be the case for the Banque de France, is difficult to assess. To examine when the market perceived that the Comptoir and perhaps Paribas were in trouble and whether contagion was spreading to the other leading deposit banks, we examine the abnormal returns for the stock prices of the eight banks for which there is frequent trading. We estimate a standard market model for daily expected firm returns using all the 609 trading day data for 1887 and 1888:

$$(1) R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}$$

where  $R_{it}$  and  $R_{mt}$  are the rates of return for bank  $i$  and the industry index for the eight banks at date  $t$ . The error term is assumed to have a zero mean and independent of the industry return and to be uncorrelated across banks. An OLS regression was performed to estimate  $\hat{\alpha}_i$  and  $\hat{\beta}_i$ . The abnormal returns,  $AR_{it}$ , reported in Table 3, are calculated as the difference between the realized return and the estimate return:

$$(2) AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt}$$

The significant abnormal returns suggest some answers to the questions of about the run on the Comptoir and the possibility of a panic. Bad news for the bank arrived every day pushing the price of its stock downwards. The Banque de Paris et Pay-Bas was the only other bank that was seriously comprised by conflicts of interest, although it was apparently never threatened with insolvency. Its abnormal returns are largely negative but nowhere in the territory of the CE. The public—at least the stockholders—do not appear to have been worried about the other banks and there may well have been a flight to quality—to the stock of the Banque de France. A safe bank, Credit Lyonnais, was not threatened. Intervention by the Banque was thus timely in that there was no spread of the run on the Comptoir to other banks.

**Table 3**  
**Abnormal Returns for Banks**  
**(t-statistics are below the return)**

	4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	11-Mar
BF	-0.0472	1.48905	1.754724	0.442082	4.822883	0.485936	5.141677
	-0.08489	2.678147	3.155979	0.795112	8.674251	0.873985	9.247621
BEP	-1.0536	-0.2429	-0.18368	-0.91524	2.446839	0.627189	2.255526
	-1.64883	-0.38013	-0.28745	-1.4323	3.829169	0.981517	3.529775
BPP	-1.78987	-1.22388	-0.65777	2.86188	-1.03782	0.262397	-4.72575
	-1.37677	-1.85465	-1.5671	3.17108	-11.6182	-0.84762	-14.5007
CE	1.534824	-2.65785	-5.74086	-2.98243	-26.9405	-17.9339	-25.0018
	3.637024	-6.29822	-13.6039	-7.06737	-63.8401	-42.4974	-59.246
CL	-0.50181	1.0264	0.255345	-0.15805	1.535455	3.169419	1.122622
	-1.13532	2.322172	0.577705	-0.35758	3.47388	7.170631	2.539869
SDCC	-0.63395	0.617617	0.276114	0.114406	6.41348	0.766588	5.106195
	-0.6283	0.612108	0.273651	0.113386	6.356274	0.75975	5.060649
SG	0.867448	-0.24864	0.517462	0.112597	-0.0328	-1.24527	-2.90539
	1.949322	-0.55875	1.162836	0.253028	-0.0737	-2.79836	-6.52896
BP	-1.16038	-0.49304	0.501691	0.505349	3.491532	0.862154	4.410509
	-0.76391	-0.32458	0.330277	0.332685	2.298572	0.56758	2.903561

## **II.B. Persuading the Banque de France to Intervene: A Lifeboat for the Comptoir d'Escompte**

On Saturday, March 7<sup>th</sup>, following two days of steady withdrawals of deposits from the Comptoir, the Governor of the Banque de France, Pierre Magnin informed the Conseil Général des Regents that the Minister of Finance, Maurice Rouvier, had expressed the hope that the Banque would make the greatest effort to prevent the failure of the Comptoir, “which he would consider to be a great disaster for the nation.”<sup>6</sup> Nevertheless, the Banque declined to intervene, leaving assistance to the private sector. The Governor told the Minister that a group of banks was attempting to raise 60 million

<sup>6</sup> Banque de France, Conseil Général, Procès-verbaux de les séance du 7 mars 1889. “*qu’il considerait comme un desastre public des plus douloureux pour le Pays.*”

francs to support the Comptoir but so far the banks had not been successful.<sup>7</sup> However, pressure on the Banque was quickly mounting. The Governor noted that the Banque was now under attack by some journalists who claimed that it had been complicit in the emerging crisis, exhibiting a complaisant attitude towards certain banking houses; but he emphasized that the Banque had abided by its statutes.

However, by the end of the day, the private syndicate failed to materialize. Faced with the Banque de France's apparent passivity as a major financial crisis threatened to erupt on the eve of opening of the Paris Exposition of 1889, Rouvier summoned the directors of leading banks and some members of the Conseil to his office.<sup>8</sup> Although there are no records of this late night meeting, it was certainly tense, lasting from 10 p.m to 2.am. The Minister was blunt: if the Comptoir did not receive 100 million francs before opening, the rising number of withdrawals would force it to stop payments. The Minister expected the Banque to discount 100 million francs of the bank's paper, with its entire assets serving as a guarantee. This request was in violation of the statutes of the Banque, which required that discounts only be provided for three name paper or two name paper for the highest quality securities. To protect the Banque---which had a modest capital---against potential losses, a syndicate of banks would be organized to absorb any losses up to 20 million francs.

At 9 a.m. the following morning, Friday, March 8, 1889, an hour before banks opened for business, Governor Magnin convened an extraordinary meeting of the Conseil Général.<sup>9</sup> The Governor read a letter from the Minister of Finances who acknowledged the risk to the bank but insisted that the risky action be taken. Immediately, one of the most influential regents, Frédéric Comte de Pillet-Will interrupted to ask what collateral would be presented to the bank. The Governor responded that it would be notes issued by Secrétan on the Société de Métaux and endorsed by the Comptoir d'Escompte, revealing that the Minister's involved highly dubious collateral not permitted by the Banque's statutes.<sup>10</sup> paper without the three good guaranteeing signatures required by the

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<sup>7</sup> Banque de France, Conseil Général, Procès-verbaul de les séance du 7 mars 1889.

<sup>8</sup> One notable bank absent was Crédit Lyonnais, which appears to have kept its distance from those conspiring to drive up the price of copper.

<sup>9</sup> Banque de France, Conseil Général, Procès-verbal de la séance extraordinaire du Vendredi 8 Mars 1889, à 9 heures du matin.

<sup>10</sup> The request was *hors-statuaire*.



Banque's statutes. To justify this extraordinary exception, Magnin argued that the failure of the Comptoir d'Escompte would be a terrible blow to the French economy. The minutes summarized his argument:

There is no doubt that this imposes a heavy obligation on the Banque, but M. le Gouverneur hopes that the good faith shown to the Comptoir would ease that responsibility and that the Banque would be rewarded for its self-sacrifice and confidence. He chose the word good faith because a moral guarantee [underlined in the minutes] is, perhaps, what is required. A standard approach is not sufficient. If the Bank agrees to come to the aid of the Comptoir under these conditions, the Banque will have rendered a great new service to the Parisian financial market, business in general, and the nation.<sup>11</sup>

Following this declaration for the need for the Banque to aid an insolvent institution to prevent a general crisis, the Governor faced hostile questioning rarely seen in the minutes of the Conseil.<sup>12</sup>

The industrialist Fernand Raoul-Duval rose to observe that some of the guarantors of the collateral were “notoriously involved in the copper syndicate” and asked whether there was reason to fear that the guarantees for the discounted paper were adequate. This question was inflammatory, given that some of the signatories were regents. One target, the regent André, responded simply that the guarantees were sufficient. Unappeased, Raoul-Duval proclaimed that he was “*extrêmement frappé*” by the Governor’s presentation. He denounced the copper syndicate as a menace to the economy, emphasizing that copper was a vital commodity for both industry and agriculture---including the use of copper sulfate to combat phylloxera. By raising the price of copper, the syndicate was levying a tax on manufacturing and agriculture. For his part, Raoul-

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<sup>11</sup> “La responsabilité que la Banque encourra peut être fort lourde, on ne peut pas en douter, mais M. le Gouverneur espère que la bonne foi du Comptoir allègera cette responsabilité et que le dévouement de la Banque sera récompensé de sa confiance. Il vient de prononcer le mot de bonne-foi parce qu’en effet la garantie morale est peut-être la principale dans cette affaire. La garantie effective est insuffisante pour pouvoir servir de base à la détermination du Conseil; mais si la Banque consent à venir au secours du Comptoir dans les conditions qui se présentent, elle aura fait un acte dont les conséquences, tant pour la place de Paris que pour les affaires en général, et elle aura ainsi rendu au pays un immense service qui viendra s’ajouter à tous ceux dont il lui est déjà redevable .”

<sup>12</sup> Banque de France, Conseil Général, Procès-verbal de la séance Jeudi 14 Mars 1889. Significantly, Rothschild, the heaviest of the heavy weights on the Conseil who gave later his complete approval was absent.

Duval opposed the credit, and emphasized the importance of protecting the interests of the stockholders of the Banque.

Next, Pillet-Will spoke of the great risk to which the Banque would be exposed by this credit. He refrained from attacking his fellow regents, but did not dispute the quality of the guarantee, which he called “excellent” though he would have wished for it to be greater. What concerned him was the failure of the Banque to abide by its statutes:

The fall of the Comptoir would be an immense disaster, everyone agrees on that, but the first task of the Bank is to remain faithful to its rules. It must not act upon emotion. Its self-sacrifice moreover, would soon be forgotten by the public and government, and the Banque must therefore seek to do nothing but what is regular and statutory. It is difficult to have a carefully considered discussion on a matter of such great and unexpected urgency; but what seems essential is that the Bank not venture forth into such a huge undertaking without the simple precautions that prudence dictates.<sup>13</sup>

Furthermore, Pillet-Will pointed out that even if the Comptoir’s assets were acceptable as collateral, their transfer to the Banque might be contested by other creditors of the Comptoir, notably the copper mines. Taking this into account, he estimated that a guarantee of 75 not 20 million francs was necessary. The Governor replied that the Minister had declared that it was a one-time operation and there was no problem with the mining contracts, though he admitted that this was a special case where *garanties morales* mattered not *garanties juridiques*. In this argument he was backed by André who opined out that it was impossible to follow the rules, which is why the Banque would take all of the Comptoir assets as collateral. The key was to stop the panic. Both Pillet-Will and Michau demanded further assurances for the Banque, but Baudelot, backed by

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<sup>13</sup> “La chute du Comptoir serait un immense désastre, tout le monde est d’accord là dessus; mais le premier devoir de la Banque est de rester fidèle aux règles de son institution. Ce n’est pas par des considerations de sentiment qu’elle doit agir; son dévouement d’ailleurs, serait vite oublié du public et du gouvernement; elle doit donc s’attacher à ne rien faire que de régulier et de statutaire. Il est difficile d’apporter un avis bien réfléchi dans une discussion qui présente un tel caractère d’urgence, et qui vous saisit, pour ainsi dire, à l’improviste; mais ce qui paraît le plus essentiel, c’est que la Banque ne s’aventure pas dans une affaire aussi grosse sans avoir pris les précautions que la simple prudence commande.”

Magnin and André, argued that there was no time left. The Governor pressured the Conseil to vote.

The proposition was then placed before the regents: “The Banque will provide an advance of 100 million francs to the Comptoir d’Escompte against collateral of all of the bank’s assets.” Eleven voted for and four---Pillet-Will, Legrand de Villers, Raoul-Dival and Michau---voted against it, barely making the required super majority for a motion to pass. The defeated regents were enraged. Pillet-Will felt that he and the Banque had been betrayed by the insiders---including Rothschild. In an act without precedence since the founding the Banque, Pillet-Will resigned in protest.

The Comptoir quickly began to draw on its loan to meet the demands of depositors. Monitoring this situation the Banque de France’s Comité de Livres et Portefeuilles, a subcommittee of the regents, reported that on March 11<sup>th</sup> the bank had taken 74 million of the 100 million francs.<sup>14</sup> Two days later, the Comptoir had received 83 million and on March 15<sup>th</sup>, 94 million francs.<sup>15</sup> Even though it was initially believed that the Comptoir had sufficient good assets to cover any liabilities beyond the 100 million franc loan, it quickly became obvious there was a gaping hole in its balance sheet.

On Saturday, March 16, 1888, the Governor and representatives of the leading banks were again summoned to a meeting the Minister of Finance at 4 p.m. The bankers were informed that the Ministry wanted the creation of a new institution to replace the Comptoir and that a new 40 million francs loan, a “new sacrifice” from the Banque de France was required to prevent the current bank from collapsing. For this credit, there would be a new guarantee syndicate of banks to cover the first 20 million francs of losses.<sup>16</sup> The Banque countered that it was willing to consider offering another 25 million loan provided that it was guaranteed against loss by another syndicate of banks, or if the Banque’s charter was renewed early, the Banque would give up its claim to interest on the loan and the syndicate would be released.<sup>17</sup> That wish, dependent on Parliament’s vote, could not be promised by the Minister.

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<sup>14</sup> Comité de Livres et Portefeuilles, Banque de France, Procès-verbal, 11 mars 1889.

<sup>15</sup> Comité de Livres et Portefeuilles, Banque de France, Procès-verbal, 13 et 15 mars 1889.

<sup>16</sup> Banque de France, Conseil Général, Procès-verbal de la séance extraordinaire du Dimanche 17 Mars 1889.

<sup>17</sup> Comité de Livres et Portefeuilles, Banque de France, Procès-verbal, 16 mars 1889

The results of this encounter were presented to the Conseil at an extraordinary meeting the next day, Sunday, March 17, at 1 p.m. Magnin informed the regents that the Banque was expected to provide a 40 million franc loan protected by a 20 million franc guarantee syndicate and that Rothschild had already subscribed to 3 million francs of this new guarantee. The Conseil de Regents voted 13 to 2 to give an additional loan of 40 million francs.<sup>18</sup>

The funds from the 40 million franc loan were immediately drawn upon by the Comptoir, with the Banque's Comité de Livres et Portefeuilles estimating that 116 million of the 140 million francs had been delivered by March 20<sup>th</sup> and 133.2 million francs by March 23<sup>rd</sup>, leaving a mere 7.8 million in available credit for the Comptoir. However, the threat of a panic had abated and the Comptoir had enough assets to satisfy its creditors. On March 26, 1889, its assets were estimated to be 26 million and its liabilities 16 million francs.<sup>19</sup> At the next report, March 30, the Comptoir had 18 million of available assets and liabilities of 13.7 million.<sup>20</sup> This situation was changed little, and the minutes of the Comité de Livres et Portefeuilles recorded on April 10<sup>th</sup> that the Comptoir had available assets of 18.7 million and liabilities of 14.8 million, while it still had 7.8 million francs of funds from the Banque, with 5.1 million in its account and 2.7 million more that it could draw upon.<sup>21</sup>

In summary, the prompt action by the Banque under pressure from the Ministry of Finance halted a fast-growing run on the second largest public bank in Paris that it feared would morph into a general panic. Was it a success? The panic was halted but, as the records of the Banque de France make plain, it was by an unprecedented action. There was no discussion about ensuring that liquidity was generally available to the market. Instead, all attention was focused on whether the Banque should take the dubiously legal action of providing first one and then a second loan to the Comptoir, for which poor collateral was given and where the bank might incur substantial losses. Two syndicates of public and private banks were induced to step forward and absorb the first 20 million francs of losses on each loan.

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<sup>18</sup> Conseil des Regents, Banque de France, Procès-verbal de la Séance extraordinaire du Dimanche 17 mars 1889.

<sup>19</sup> Comité de Livres et Portefeuilles, Banque de France, Procès-verbal, 26 mars 1889.

<sup>20</sup> Comité de Livres et Portefeuilles, Banque de France, Procès-verbal, 30 mars 1889.

<sup>21</sup> Comité de Livres et Portefeuilles, Banque de France, Procès-verbal, 10 avril 1889.

To better understand what the actions of the Banque de France accomplished, two questions need to be addressed. The first question is whether or not the actions of the Banque were simply to produce a lifeboat for the Comptoir or whether there was also a general increase in liquidity, as prescribed by Bagehot to calm the markets. If the former is the case the the Banque achieved a signal success in apparent violation of the standard Lombard Street advice o how to quell a panic. If the latter is true, the effectiveness of this alternate strategy is far less certain. The second question is whether the Banque and the Minister were oblivious to the moral hazard implicit in coming to the rescue of a failing bank. The actions taken boded ill for the future and should have presaged increased risk-taking by the banks. The latter question may be answered by looking how the bankers and other principals in the copper scheme were treated but also at the guarantee syndicate structure to determine whether the bankers and banks that had joined in the copper speculation would have to bear a large portion of the costs of its collapse, with a view to reducing moral hazard.

### **III. Was the Intervention of the Banque de France a Lifeboat Operation or a Bagehot Operation?**

Testing whether the Banque de France solely employed a lifeboat operation to quell an incipient panic in 1889 or provided extra liquidity to the market à la Bagehot requires a determination of whether the discounts supplied by the Banque exceeded any ordinary increase driven by interest rates, the days for clearing and settlement on the Bourse, or other factors.<sup>22</sup> Our focus is on the Paris market, as a panic in Paris, not the whole country, was the immediate concern of the Conseil de Regents.<sup>23</sup> The decisions taken by the Banque must, however, be seen within the context of the increasingly globalized financial markets of the late nineteenth century.

While both London and Paris were world centers of finance in the late 1880s, the market in London was significant larger than that in Paris. The minutes of the Conseil des Regents reveal that the regents immediately discussed every the rate change in

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<sup>22</sup> We owe a debt of gratitude to Patrice Babeau for generously sharing the Banque de France's balance sheets data that he laboriously pieced together.

<sup>23</sup> The Banque de France conducted monetary policy by providing discounts and advances. During the years 1888 and 1889, advances were almost steady at 130 million francs with a standard deviation of 4.5 million, whereas the mean and standard deviation for advances were 313 million and 89.5 million francs.

London. However, while the Bank of England had modest gold reserves, the Banque de France's were massive by comparison. Consequently, while the Banque often responded to changes in London, it did not match them as it could tolerate fluctuations in its gold buffer; and thus while the bank rate was frequently adjusted, the rates at the Banque moved with less frequency, as seen in Figure A.

What did borrowing at the Banque signify? The Banque was not a modern central bank. Like the Bank of England or the First and Second Banks of the United States, its stock was widely held by the public. Its shares were a premiere issue traded on the Paris Bourse. Its shareholders expected healthy dividends and complained to Parliament when the Banque was forced to reduce them.<sup>24</sup> Thus, in setting the bank rates, the regents had both shareholders and larger policy concerns in mind. Any business, financial or otherwise could open an account at the Banque and that entitled them to borrow from the Banque. If the borrower had adequate collateral, meeting the statutory requirements, the discount would be granted, although the Banque closely monitored those borrowers that large or in trouble, reporting their status in the quarterly *Verification*, found in the minutes of the Conseil de Regents. Rarely changing its rates for discounts and advances, the Banque was willing to provide credit and absorb shifts in demand, usually until there was important news from London or a major adjustment in its large buffer of gold reserves.

The longest time series on market rates in Paris are found in the Economist, and rates did not appear to have been recorded in any French newspaper. The source of these quotes is unknown but believed to have come from Crédit Lyonnais<sup>25</sup>. It is generally believed that while the Banque provided discounts to a wide range of borrowers, the Economist's series represents the rates at which big banks could buy the best paper.<sup>26</sup>

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<sup>24</sup> The number of shareholders was reported to be 26,712 in the Banque de France's annual report for 1888.

<sup>25</sup> The Economist's reported rates are for the end of each week, whereas the Banque's balance sheet data is mid-week. For example, the Banque's balance sheet is reported for January 24, 1889 while the date of the Economist's rate is January 26, 1889. The rates for discounts and advances are those prevailing that week or the new rate if there was a change. The rates are similar to monthly rates reported in the National Bureau of Economic Research's Macro History database, <http://www.nber.org/databases/macrophistory/rectdata/13/m13017.dat>. The Crédit Lyonnais is quoted as source of the US Monetary Commission publishing similar rates. This is why, we argue, the source of the Economist for French rates can be the same.

<sup>26</sup> Bazot G, Bordo M., and Monnet E., "The Price of Stability, the Balance Sheet Policy of the Banque de France under the Gold Standard, 1880-1914," typescript.

Consequently, as seen in Figure 4, the reported market rates in Paris were almost invariably below the Banque's discount rate.

**Figure 4**  
**Discount Rates of the Banque de France and the Bank of England**  
**and the Paris Money Market, 1871-1913**

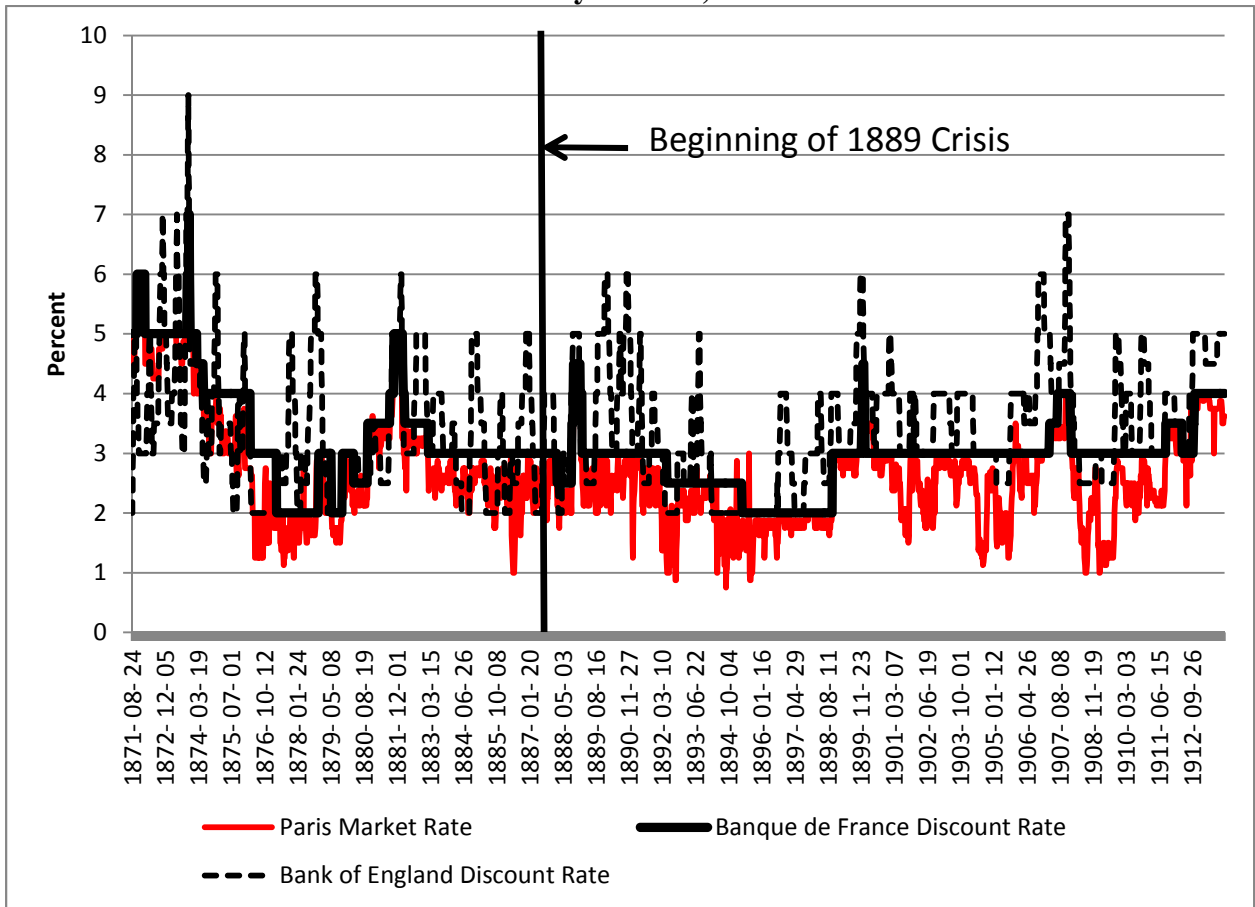
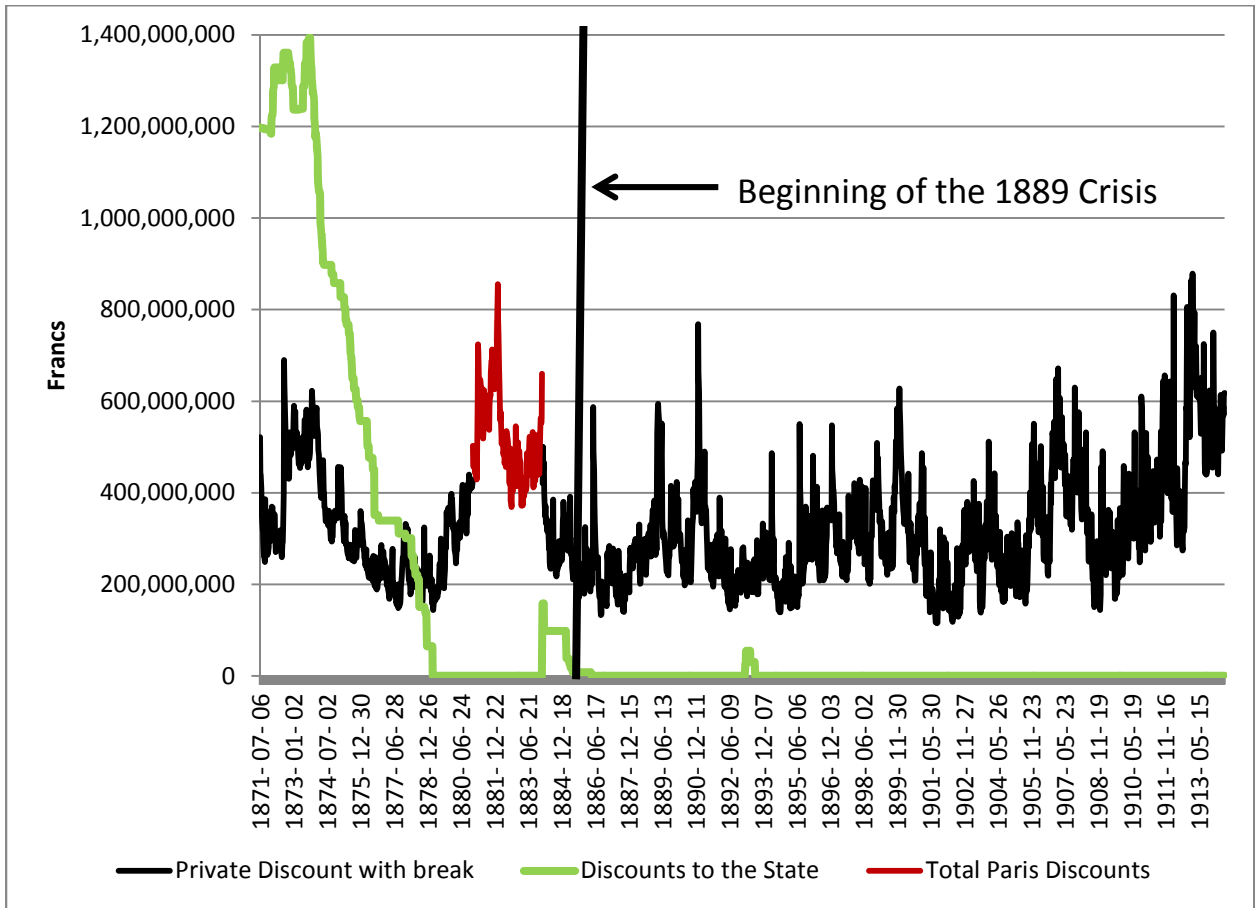


Figure 5 displays the total private discounts in Paris and discounts to the state. Discounts to the state dominate in the early 1870s reflecting the fiscal needs of the state during and after the Franco-Prussian war of 1870-1871, including the need to manage reparations to the new German Reich. Afterwards, discounts to the state virtually disappear. Unfortunately, only the combined private and state discounts were recorded by the Banque from December 30, 1880 to January 31, 1884. As is seen in the graph, discounts to the state had disappeared by March 20, 1873 and, this total series (in red in the Figure B) may just represent private discounts. When private and state discounts are again separately reported in 1884, there is now 158 million francs of government borrowing. The government may have returned to the bank at this point or earlier, so for

the 1880-1884 interval, there may be some state discounts in addition to private discounts in the aggregate series. Total discounts are used to fill the gap for private discounts during the period 1880-1884. This assumption appears to be reasonable as our regression results are not substantially altered if we restrict our analysis to the years after 1884.

**Figure 5**  
**Discounts by the Banque de France**  
**1871-1913**

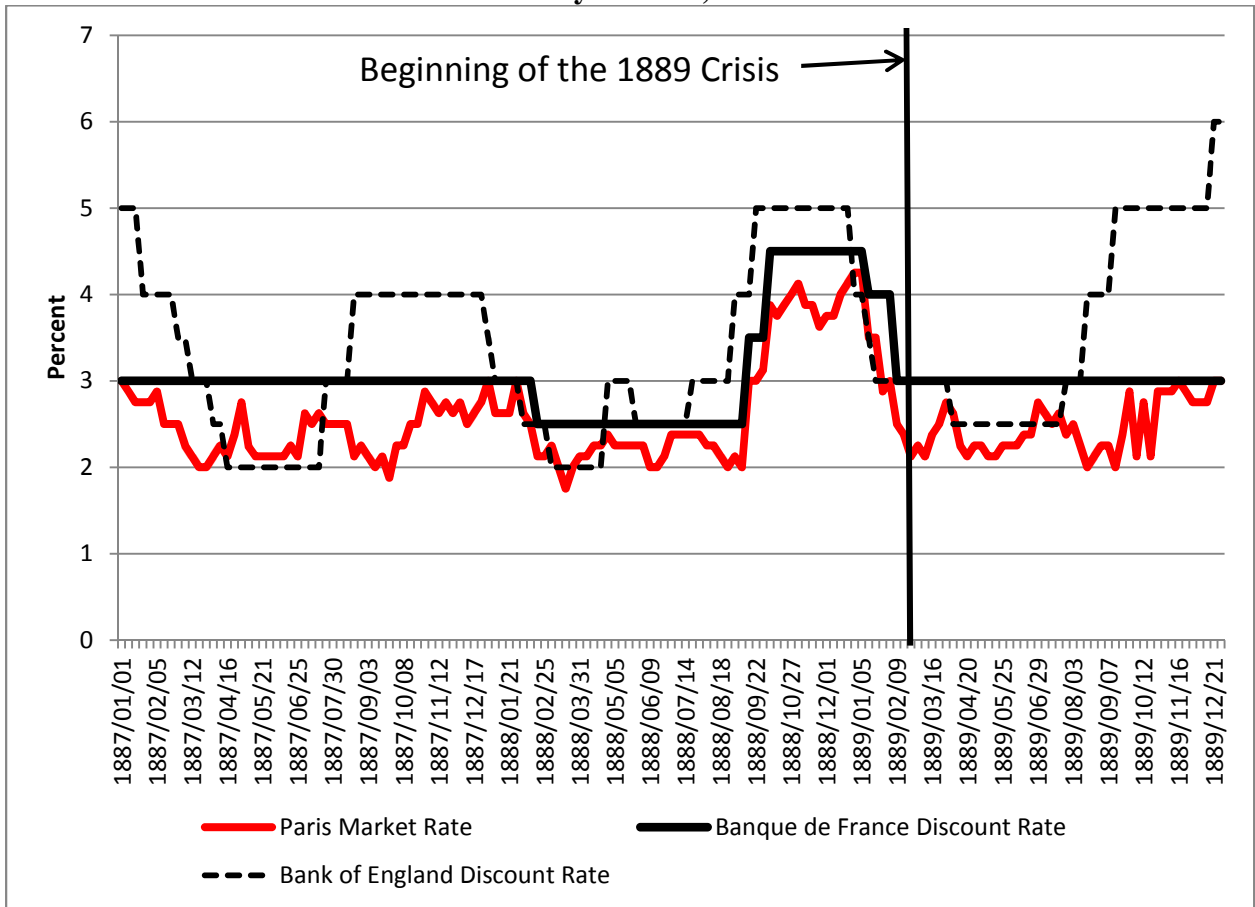


To provide a closer look at interest policy in the period just before and just after the crisis of 1889, we provide Figure 6, which covers the period from the beginning of 1887 through the end of 1889. The Bank of England began to tighten in the summer of 1888 raising its discount rate from 2.5 to 3 percent in July and from 3 to 4 percent in August. Only on September 13 did the regents respond raising the Banque's rates on discounts (taux de l'escompte) from 2.5 percent to 3.5 percent and on advances



(avances)<sup>27</sup> from 3.5 to 4.5 percent.<sup>28</sup> When a dispatch was received that the Bank of England had again raised its rate to 5 percent, the regents, apparently pained by this rapid increase but aware that their gold reserves were falling, debated at length on October 4, 1888 before agreeing to increase the Banque’s discount rate 4.5 percent while the 4.5 percent rate on advances was maintained.<sup>29</sup> These rates remained in force for the next three months.

**Figure 6**  
**Discount Rates of the Banque de France and the Bank of England**  
**and the Paris Money Market, 1887-1889**



At the weekly Thursday meeting of the Conseil de Regents, on January 10, 1889, the Governor of the Banque de France announced that the Bank of England had lowered its rate from 5 to 4 percent and recommended that the Banque reduced its discount rate to

<sup>27</sup> The rate given is the rate of advances on collateral for securities. There was a separate rate (avances sur lingots) for advances on collateral of gold ingots, which was 1 percent.

<sup>28</sup> Conseil de Regents, Banque de France, Procès-verbal de la Séance du Jeudi 13 Septembre 1889

<sup>29</sup> Conseil de Regents, Banque de France, Procès-verbal de la Séance du Jeudi 4 Octobre 1889

4.0 percent with no change in the rate for advance, which the regents then accepted.<sup>30</sup> Informing the regents that the Bank had cut its discount rate to 3.5 percent on January 24, 1889, the Banque immediately followed suit, lowering its discount rate to 3.5 percent and its rate on advances to 4.0 percent.<sup>31</sup> On January 31, 1889, the Governor told the regents at their weekly meeting that the Bank had lowered its discount rate to 3 percent, but the regents apparently did not discuss it and no action was taken.<sup>32</sup> At the following meeting on February 7, 1889, pointing out that the Reichsbank had also cut its rate to 3 percent, the Governor proposed and received the regents' assent to lower the rate to 3 percent, keeping advances at 4 percent. These rates remained unchanged through the crisis, and did not respond to the Bank of England discount rate cut during the first week of April to 2.5 percent; they then remained in force until March 1890 when the rate on advances alone was lowered to 3.5 percent.<sup>33</sup> Thus, while it might first seem that the Banque was anticipating the crisis and lowering its rate in advance, the narrative reveals that it was, instead, responding to changes in the Bank of England's rate.

In addition to the cost of funds, the demand for discounts in the Paris depended on the Paris Bourse. The second largest securities market in Europe in this period, clearing and settlement of trades on the exchange required funding. While most funding could be obtained from other intermediaries, the Banque de France lent directly to market operators who had accounts at the bank. The largest segment of the market was not spot trades but trading in forward contracts, often on borrowed funds (*reports*) and entailing counterparty risk. A quick drop in securities prices could lead to a scramble for liquidity, as happened spectacularly in 1881.<sup>34</sup> There were two settlement periods (*liquidations*)—one mid-month and the second end-of-month. The spikes in the volumes of discounts and advances in Figures 5 and 7 appear are often settlement dates. In Figure 7, some of the first end-of-month settlement day spikes are identified. The biggest surge in

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<sup>30</sup> Conseil de Regents, Banque de France, Procès-verbal de la Séance du Jeudi 3 Janvier 1889

<sup>31</sup> Conseil de Regents, Banque de France, Procès-verbal de la Séance du Jeudi 24 Janvier 1889.

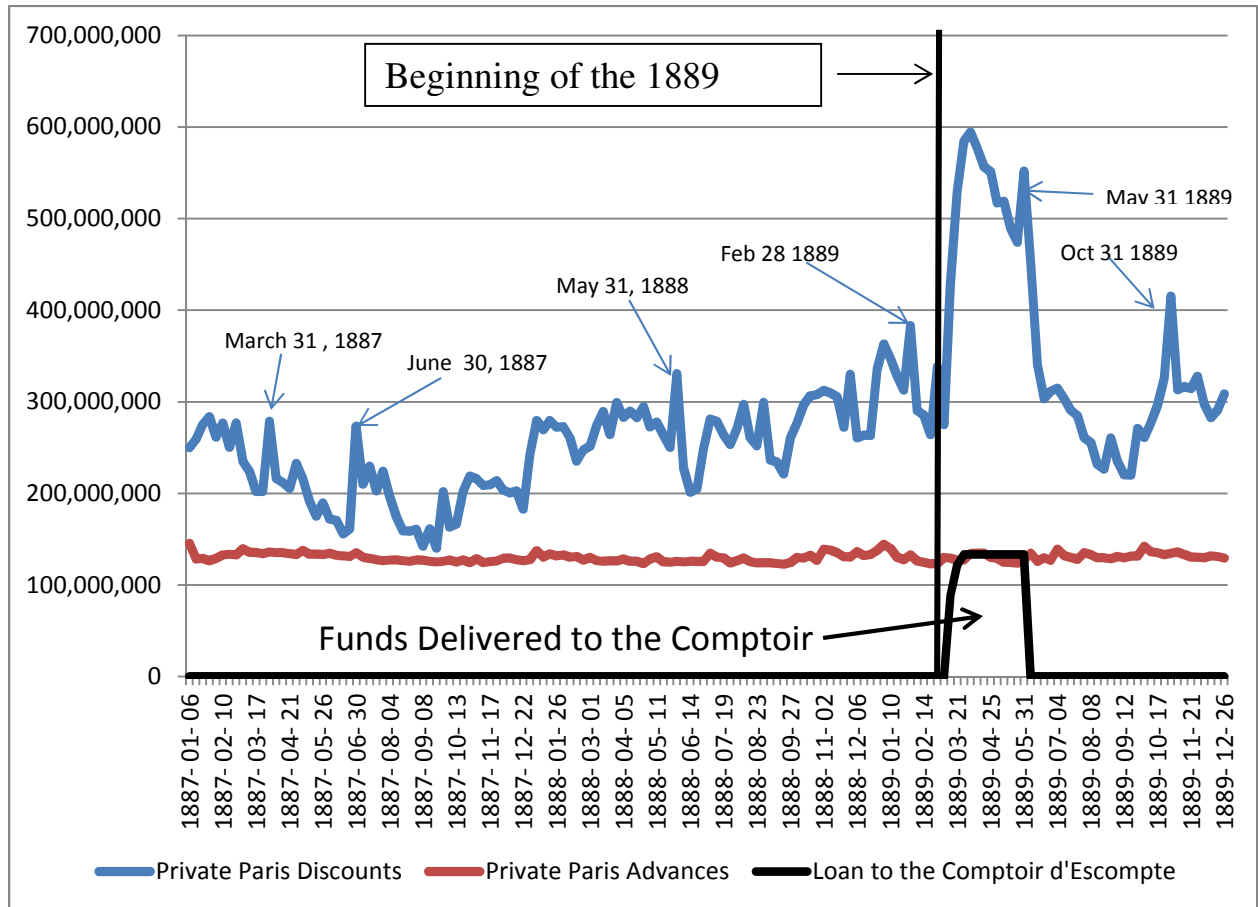
<sup>32</sup> Conseil de Regents, Banque de France, Procès-verbal de la Séance du Jeudi 31 Janvier 1889

<sup>33</sup> Banque de France, *Compte Rendu* (1888 and 1889).

<sup>34</sup> The collapse of the Paris market after the failure of the Lyon bank Union Générale brought about the bankruptcy of the Lyon Bourse and nearly caused the demise of the Paris Bourse, which was avoided by a lifeboat operation by the Banque de France. See Eugene N. White, "The Crash of 1882 and the Bailout of the Paris Bourse," *Cliometrica* 1: 2 (July 2007), pp. 115-144.

discounts in Figure D includes, of course, the discounts offered to the Comptoir d'Escompte, which reached a peak of 133.2 million francs on March 20, 1889.

**Figure 7**  
**Discounts and Advances by the Banque de France**  
**1887-1889**



At this time the liquidators Moreau et Monchicourt were appointed to begin the process of assessing the value of the Comptoir's assets, selling them and paying off the remaining creditors. Appearing before the Comité de Livres et Portefeuilles on May 11, 1889, one of the liquidators, M. Montchicourt gave a presentation of the Banque's position. Owed 140 million, the Banque had been assigned assets that were currently valued at 127.9 million francs.<sup>35</sup> Although the syndicate of banks and bankers would be ultimately responsible for this 12.1 million franc shortfall, Moreau informed the

<sup>35</sup> Comité de Livres et Portefeuilles, Banque de France, Procès-verbal, 11 mai 1889.

committee that there would be no losses if the directors of the Comptoir were declared personally responsible.<sup>36</sup>

Although we have not identified the dates when the assets were transferred to the Banque or sold and the proceeds delivered to it, the record is clear that this was not done before the beginning of June. As seen in Figure 7 the rapid decline in June and July in the discounts from a peak level of around 500 million francs in March, April and May of 1889 left roughly levels of 300 million francs in June and then falling further--which suggests that transfers occurred during this time. However, for purposes of analysis what is important is the ability to distinguish discounts made to the Comptoir from other borrowers during critical month of March and perhaps April or even May, when the Banque may have been providing extra liquidity to the troubled Parisian market. As the Banque's balance sheet data are weekly and do not precisely coincide with information provided by the committee's minutes, some interpolation is required. The minutes reported that the Comptoir had drawn up 83 million francs on March 13<sup>th</sup> and 94 million francs on March 15<sup>th</sup>; so the interpolated figure of 89 million is used for March 14<sup>th</sup>. The figures of 116 million francs for March 20<sup>th</sup> and 133.2 for March 23<sup>rd</sup> are interpolated as 125 for March 21<sup>st</sup>. Thereafter, for the remainder of March, April, and May, the number reported in the minutes 133.2 million is used.

To determine whether the Banque de France's actions in 1889 were purely a lifeboat operation or also included a substantial increase in liquidity to the market in general à la Bagehot, the extra liquidity provided over and above the two loans 140 million francs needs to be measured. The value of private discounts outstanding will be modeled as an AR(1) process with the change in log of the private discounts ( $\Delta \ln PD$ ) depending on the change in the interest rate differential between the Paris market rate and the Banque de France's discount rate ( $\Delta \text{IntDiff}$ ). To capture, the demand emanating from the Bourse, we have created a matrix of dummy variables, one for each day of each settlement period. Until February 15, 1889, the mid-month settlement had five days and the end-of-month settlement had six days; afterwards, these were reduced to four and five days. The end-of-month settlement was bigger as it was on that date that all government and government guaranteed bonds, the bonds of the Ville de Paris, and shares of the

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<sup>36</sup> Comité de Livres et Portefeuilles, Banque de France, Procès-verbal, 24 mai 1889.

Banque de France, Crédit Foncier, and all railways listed on the forward market were settled. It is believed that the biggest demands for liquidity were on the first and last days of each period. On the first day the borrowing contracts (*reports*) were due and the last day was for payments and delivery of certificates. The dummies for the five middle-of-the-month settlement days are M1, M2, M3, M4, and M5) and the six end-of month settlement days are E1, E2, E3, E4, E5, E6. Using the Bayesian Information Criterion, the model (equation 1) selected has one lag for the private discounts variable and two lags for interest rate differential variable.

$$\begin{aligned}
 (3) \quad \Delta \ln PD_t &= \beta_0 \Delta \ln PD_{t-1} + \beta_1 \Delta \text{IntDiff}_t \\
 &+ \beta_2 \Delta \text{IntDiff}_{t-1} + \beta_3 \Delta \text{IntDiff}_{t-2} + \beta_2 M1_t + \beta_3 M2_t + \beta_4 M3_t \\
 &+ \beta_5 M4_t + \beta_6 M5_t + \beta_7 E1_t + \beta_8 E2_t + \beta_9 E3_t + \beta_{10} E4_t + \beta_{11} E5_t \\
 &+ \beta_{12} E6_t + e_t
 \end{aligned}$$

Equation 1 is estimated using weekly data for two separate periods, the first is from August 26, 1871 to December 27, 1888. The end week is selected so that we will be able to observe any pre-emptive increases in liquidity that may have been provided prior to the beginning of March when the rapid run on the Comptoir d'Escompte began. Information about the condition of the bank or the general problem of the inflated copper market might have led to slow runs by the public and/or an increase in precautionary liquidity by bankers and have led to "extra" liquidity being provided by the Banque. The second period is from June 1, 1882 until December 27, 1888. This shorter second period was selected because of the enormous disruptions to the French capital markets as a result of the Franco-Prussian War of 1870-1871 and the payment of post-war reparations. The starting point was selected to be after the stock market crash of early 1882 that produced a major financial crisis. If the Banque substantially changed its policies in the wake of the 1870-1871 debacle or the 1882 crisis, then the estimation should be restricted to the later period. The results are shown in Table 4.

**Table 4**  
**Banque de France Private Discounts in Paris**  
**(dependent variable =  $\Delta \text{LnPD}_t$ )**

	Full Sample 1871-1888			Restricted Sample 1882-1888		
	Coefficient	Standard Error	t-statistic	Coefficient	Standard Error	t-statistic
$\Delta \text{LnPD}_{t-1}$	-0.185	0.030	-6.18	-0.233	0.049	-4.75
$\Delta \text{IntDiff}$	-0.032	0.014	-2.35	-0.067	0.031	-2.16
$\Delta \text{IntDiff}_{t-1}$	-0.053	0.014	-3.75	-0.097	0.032	-3.04
$\Delta \text{IntDiff}_{t-2}$	-0.063	0.014	-4.62	-0.133	0.031	-4.29
M1	0.022	0.015	1.42	0.018	0.027	0.64
M2	-0.047	0.017	-2.85	-0.049	0.034	-1.46
M3	-0.033	0.017	-1.96	-0.048	0.031	-1.53
M4	-0.003	0.013	-0.25	-0.007	0.024	-0.31
M5	-0.006	0.012	-0.47	0.010	0.031	0.34
E1	0.233	0.017	13.37	0.282	0.033	8.65
E2	0.004	0.016	0.27	-0.007	0.030	-0.22
E3	0.010	0.016	0.63	0.017	0.029	0.58
E4	-0.029	0.013	-2.17	-0.071	0.026	-2.79
E5	-0.022	0.017	-1.34	-0.029	0.032	-0.89
E6	-0.129	0.019	-6.69	-0.120	0.036	-3.38
Constant	0.001	0.004	0.13	0.000	0.008	0.00
No. of Obs.	903			344		
Adjusted R-Sq	0.283			0.366		
F-Statistic	24.78			12.66		

For both samples, the lagged dependent variable and the interest rates variables and its lagged values all have the expected signs. It is interesting to note that for the dummy variables that are intended to capture the liquidity demand effects emanating from the Bourse, the strongest effect is the first day of the end-of-month settlement, as the identified spikes in Figure 7 suggest. Although the fit of the model appears to be better for the shorter period, the coefficients are similar, and the full sample is used for prediction.

The estimated model was used to predict the discounts offered by the Banque from January through May 1889. The predicted private discounts at week  $t$  are equal to the actual lagged private discounts plus the predicted increase. Private discounts in Paris, credits to the Comptoir d'Escompte and the predicted private discounts are shown in Table 5. The extra liquidity provided by the Banque is the difference between Column 4

(Private discounts less credits to the Comptoir) and Column 5, and are presented in Column 6, Extra Liquidity. Obviously, there is a considerable amount of fluctuation in the market that is not explained by the model, given that the average value of the private discounts was 325 million francs and the standard error from the model is 31 million francs, but the possibility of a Bagehot style operation can still be evaluated.

**Table 5**  
**Actual and Predicted Private Discounts in Paris**  
**January-May 1889**

Week	Private Discounts	Credit to the CE	Private Discounts - Col 3	Predicted Private Discounts	Extra Liquidity
1	2	3	4	5	6
1/3/1889	363,016,028	0	363,016,028	328,863,392	34,152,637
1/10/1889	347,169,692	0	347,169,692	357,916,544	-10,746,852
1/17/1889	328,674,006	0	328,674,006	334,304,295	-5,630,290
1/24/1889	312,906,378	0	312,906,378	320,556,594	-7,650,216
1/31/1889	382,937,444	0	382,937,444	387,387,677	-4,450,233
2/7/1889	290,300,479	0	290,300,479	362,902,296	-72,601,817
2/14/1889	285,574,050	0	285,574,050	315,136,678	-29,562,628
2/21/1889	264,215,390	0	264,215,390	291,489,517	-27,274,127
2/28/1889	338,425,247	0	338,425,247	332,767,298	5,657,949
3/7/1889	275,229,420	0	275,229,420	319,183,522	-43,954,102
3/14/1889	426,609,274	88,500,000	338,109,274	288,807,028	49,302,246
3/21/1889	529,837,418	121,733,333	408,104,085	328,655,517	79,448,568
3/28/1889	584,217,077	133,200,000	451,017,077	406,448,139	44,568,937
4/4/1889	594,347,578	133,200,000	461,147,578	437,699,430	23,448,148
4/11/1889	576,511,655	133,200,000	443,311,655	458,208,235	-14,896,580
4/18/1889	556,483,513	133,200,000	423,283,513	431,530,306	-8,246,793
4/25/1889	551,036,699	133,200,000	417,836,699	416,113,368	1,723,331
5/2/1889	516,970,370	133,200,000	383,770,370	422,673,977	-38,903,607
5/9/1889	518,886,090	133,200,000	385,686,090	391,597,232	-5,911,142
5/16/1889	489,222,405	133,200,000	356,022,405	365,291,601	-9,269,196
5/23/1889	474,216,789	133,200,000	341,016,789	360,140,647	-19,123,859
5/31/1889	551,760,575	133,200,000	418,560,575	436,935,218	-18,374,643

During the months of January and February 1889, there was no anticipatory increase in discounts, as the model over-predicts the volume of the discounts. Nevertheless, the model under-predicts the increases in discounts for the crisis month of

March 1889, suggesting that liquidity beyond that provided to the Comptoir was pumped out by the Banque de France.

To make the best case for a Bagehot-style provision of liquidity, we note that following the events of March 8, the next three weeks---March 14, 21, and 28---recorded 49, 79 and 44 million francs of “extra” discounts, after which the model tracks the actual private discounts fairly closely. Individually, these are above one standard error, though they seem modest compared to the 133 million francs of credit absorbed by the Comptoir. A better metric may be to view this in the context of the fluctuating requirements of settlement days of the Paris Bourse. Contemporaries viewed the first day of end-of-month settlement when the contracts for the *reports*, borrowing to fund the futures contracts, fell due as the day when demand for liquidity could spike. Although registering a sharp, momentary increase in the demand for discounts, the Banque handled these requests easily. If the daily demand for extra liquidity in March 1889 was no more than a monthly settlement spike, we consider it to be modest and not a panic-like surge. The average spike in discounts for this day is calculated using average level of discounts and the coefficient on the first day of the end-of-month dummy, E1. For the full sample where the mean value of discounts was 330 million francs, the average E1 day added discounts of 88 million francs, with a range of 74 to 103 million francs using the 95 percent confidence interval. For the restricted sample, the average jump was 68 million with a range of 43 to 95 million francs. Viewed from this perspective two of the three days (March 14 and March 28) were at or below the minimum increase in discounts E1 settlement days, and the biggest increase of 79 million (March 21) fell well within the normal range.

The conclusion that we reach is that while clearly some substantial extra liquidity was provided to the market, the actions of the Banque de France were first and foremost a lifeboat not a Bagehot operation. There was no discussion in the minutes of either the Conseil de Regents or the Comite de Livres et Portefeuilles of the rise in discounts, suggesting that it was within ordinary bounds. Their attention was instead riveted on halting the run on the Comptoir, managing its bankruptcy and then organizing its recapitalization and re-launching the institution as the Comptoir National d’Escompte.



#### **IV. The Lifeboat's Guarantee Syndicate**

##### **IV.A. The Design of the Guarantee Syndicate**

The design of the guarantee syndicate strongly suggests that it was intended to punish those behind the copper scheme and the collapse of the Comptoir d'Escompte. Consequently, it provided incentives to mitigate the moral hazard arising from aiding an insolvent bank. The minutes of the Conseil Général des Régents reveal that a number of the regents and the Minister of Finance were certainly concerned that the copper scheme had been engineered without regard to the threat that it posed to the Comptoir and financial system. Members of the tightly-knit financial community had exploited conflicts of interest for personal gain or the gain of their private banks. Many bankers sat on multiple boards of directors and had a clear opportunity to benefit from using or conceal information.

Information on first and second 20 million franc guarantee syndicates are shown in Table 6. When the first syndicate was formed on the night of March 7, 1889, proposed contributions totaled 17,200,000 francs. To complete the 20 million franc guarantee, it was expected that the Société de Dépôts et de Comptes-Courants and the Crédit Industriel et Commercial and perhaps Crédit Lyonnais would make up the difference. Crédit Industriel et Commercial and Crédit Lyonnais were prevailed upon to join the syndicate; but the Société de Dépôts et de Comptes-Courants was dropped and Goguel et Cie. , Mallet frères, Vve. Kinen et Cie., Vernes et Cie. and the Banque Ottomane were added. In spite of a careful search of the archives, no information was found regarding the second 20 million francs guarantee syndicate, except that Rothschild had apparently pledged 3 million francs.

**Table 6**  
**The Guarantee Syndicates for the Banque de France Loans**  
**to the Comptoir d'Escompte**

Guarantee Syndicate Members	Bank Capital (millions FF)	Initial 20 M Guarantee for 100 M Loan	Final 20 M Guarantee for 100 M Loan	20 M Guarantee for 40 M Loan
1	2	3	4	5
Conseil d'administration of the Comptoir d'Escompte	80	2,500,000	2,500,000	
Rothschild frères	50	3,000,000	3,000,000	3,000,000
Banque de Paris et des Pays-Bas	62.5	2,200,000	2,200,000	
Banque d'Escompte	65	1,000,000	1,000,000	
Baron Hottinguer	2	1,000,000	1,000,000	
André et Girod et Cie	10	1,000,000	1,000,000	
Crédit Foncier	155	2,000,000	2,000,000	
A.J. Stern et Cie.	25	1,000,000	1,000,000	
Heine et Cie.	10 est.	1,000,000	1,000,000	
Crédit Mobilier	40	1,000,000	1,000,000	
Hentsch frères	7	1,000,000	1,000,000	
Société générale	120	500,000	500,000	
Crédit Industriel et Commercial	60	*	300,000	
Crédit lyonnais	200	*	1,000,000	
Société de Dépôts et de Comptes-courants	80	*	0	
Goguel et Cie.	5		300,000	
Mallet frères	4.5		300,000	
Vve. Kinen et Cie.	5		200,000	
Vernes et Cie.	4.5 est.		300,000	
Banque Ottomane	250		600,000	
<b>Total Contributions to Guarantee Syndicate</b>		<b>17,200,000</b>	<b>20,000,000</b>	<b>20,000,000</b>

Source: Capital: Annuaire-Alamanch du Commerce (1888) and Actes de Société, City Archives of Paris. For Rothschild, Niall Ferguson, Vol. 2 p. 286 Table 9i indicates a capital for the French Rothschilds of roughly £20 million or 500 million FF in 1888 on page 285 he claims that the Rothschild bank had 590 million francs of capital in 1881. However, he is follow the error of B. Gille in mistaking assets for capital as A. Plessis explained. A true figure of 50 million francs is found in the Rothschild's partnership agreement. Initial contributions: Banque de France, Conseil Général, Procès-verbal de la séance extraordinaire du Vendredi 8 Mars 1889, à 9 heures du matin.

Notes: \* Indicates banks that were hoped would join the syndicate when the idea was initially raised. Capital for Heine and Vernes are estimates. The figure of 4.5 million for Vernes was reported for 1890 and may have changed from 1888.

Visual inspection of Table 6 reveals that there was no strong link between the size of a contribution and a bank's capital. Instead, the banks and individuals intimately involved in the copper scheme seem to have been assessed large contributions. The two joint-stock banks at the center—the Comptoir d'Escompte (its board of directors were held personally liable) and the Bank de Paris et des Pays-Bas--were hit with big assessments, although they were smaller in terms of capital than their larger rivals Crédit Lyonnais and Société Générale. Among the *haute banque*, the names of bankers deeply involved in the copper scheme---Hentsch, André, Girod et Cie. and Rothschild are on the list. While the narrative fingers several bankers, more may have been operating behind the scenes. Certainly Rothschild who sought to avoid public notice was more deeply involved than is immediately visible, buying a controlling interest in the Rio Tinto mines and a large bloc of bonds and shares from the issue that doubled the Société de Métaux's capital in 1888.

One way to see the intention of the Ministry of Finance and Banque de France in the assignment of membership in and determination of the contribution to the guarantee syndicate is to consider what it might have looked like if allocations had only been apportioned according to ability to pay—a measure by a bank's capital. Table 7 examines this hypothetical alternative by listing the public and private banks in order of their capital in millions of francs and by their ordinal rank in Columns 2 and 3. The top 19 banks accounted for 1,467.5 million francs of capital. If, instead of the selected banks whose contributions are reproduced in in Column 4, the top 19 largest banks were assigned to the guarantee syndicate and were allotted shares proportionate to their capital, the syndicate would have looked like Column 5. Several large banks that were left out would have been forced to join and several smaller banks would have been omitted, including some which were very far down the rank size list. Even among the banks that would have remained in the syndicate, the allocation of shares would have been significantly different. Against the backdrop of the narrative, these differences suggest that inclusion in the syndicate and assignment of shares were influenced by a bank's participation in the copper scheme.

**Table 7**  
**The First 20 Million Franc Guarantee Syndicate**  
**and Hypothetical Alternatives**

<b>Bank</b>	<b>Capital</b>	<b>Rank Size</b>	<b>Contribution</b>	<b>Hypothetical Contribution by Capital</b>	<b>Prediction Model X Table x eckman Contrib by PC2 xSMK</b>	<b>Heck Contri DCE88</b>	<b>Heck EVC88 no capital in second equation</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
Banque Imperiale Ottomane	250	1	0.6	3.4	1.05	1.37	1.38
Credit Lyonnais	200	2	1.0	2.7	1.08	1.37	1.38
Credit Foncier de France	155	3	2.0	2.1	1.05	1.37	1.38
Societe Generale	120	4	0.5	1.6	1.05	1.37	1.38
Comptoir d'Escompte de Paris	80	5	2.5	1.1	1.81	2.31	2.76
Societe de Depots et de Comptes Courants	80	6		1.1	1.02	1.37	1.38
Banque d'Escompte de Paris	65	7	1.0	0.9	1.06	1.56	1.52
Banque de Paris et des Pays-Bas	62.5	8	2.2	0.9	2.32	1.81	1.82
Credit Foncier et Agricole d'Algerie	60	9		0.8			
Credit Industriel et Commercial, Societe Generale de	60	10	0.3	0.8	1.05	1.37	1.38
Societe Anonyme Le Credit	60	11		0.8			
Compagnie Fonciere de France	50	12		0.7			
Rothschild freres	50	13	3.0	0.7	2.92	1.36	1.39
Societe Marseillaise	40	14		0.5			
Banque Maritime	30	15		0.4			
Credit Mobilier	30	16	1.0	0.4	1.05	1.37	1.38
Banque de Constantinople	25	17		0.3			
Banque Parisienne	25	18		0.3			
Stern, A.J. et Cie.	25	19	1.0	0.3	1.05	1.37	1.38
Andre, Girod et Cie	10	36	1.0		1.19	1.75	1.70
Heine et Cie	10	40	1.0		1.05	1.37	1.38
Hentsch freres	7	45	1.0		1.30	1.81	1.73
Pillet-Will	5	58			0.785	1.37	1.38
Goguel et Cie	5	52	0.3		1.05	1.37	1.38
Vve. Kinen et Cie	5	59	0.2		1.05	1.37	1.38
Mallet freres	4.5	60	0.3		1.18	1.37	1.38
Vernes et Cie	4.5	61	0.3		1.39	1.37	1.38
Hottinguer	2	76	1.0		1.25	1.37	1.38

To identify the conflicted participants in the copper scheme and the degree to which they were responsible, we employ two approaches. First, we examine the overlapping directorships and management, using network analysis to measure the degree to which institutions were connected. The measures of connectedness is interpreted as the banks relative exposure to conflicts of interest. Secondly, we employ the 1888 subscription list to the Société des Métaux's stock and bond issue. Although there were certainly many means available for speculating on the copper boom, we regard this as the best measure of the interests of the potentially conflicted investors.

For the first approach, we have collected information on all the Paris banks, both public limited liability banks plus partnerships and proprietorships from the Annuaire-Almanach du Commerce for 1888. For the joint-stock banks we have identified their managers (their *directeurs* and *sous-directeurs*) the members of their boards of directors (the *conseil d'administration*) and their internal auditors (the *censeurs*). For private banks, we identify the lead (named) partners or owners. In addition, we have the *directeur*, members of the *conseil d'administration*, and *censeurs* for the Société des Métaux and the Compagnie auxiliaire des Métaux (Gilles, 1968).<sup>37</sup>

Although these sources reveal a tangle of connections, we realize that these measures of involvement in the copper scheme and responsibility for the collapse of the Comptoir d'Escompte are far from perfect. While most private bankers protected their investments in banks and companies by sitting on the board of directors, Rothschild did not do so. He was only a regent of the Banque de France and a member of the board of the government-sponsored Caisse d'Épargne et Prévoyance de Paris. He is nearly invisible, although we know that he was deeply involved in the copper speculation. Rothschild invested heavily and may have controlled Rio Tinto—one of the world's largest copper companies at the time of the copper scheme, but the board of directors of Rio Tinto were primarily Scottish, reflecting its origin. Eduard Hentsch presents a different problem. He was at the very center of the scheme, serving as the chairman of

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<sup>37</sup> Other possible connections would be the proposed French bankers' syndicate to raise capital to finance the Société des Métaux's copper purchases of January 1888, the actual French bankers' syndicate of February 1888 (Gilles, 1968), the initial October 31, 1888 list of guarantors of the warrants, discounted at the Banque de France, are included and from the Rothschild archives Gille (1968) found an undated list of lenders to the SM, drawn up by a liquidator Banque de France, Conseil Général, Procès-verbal de la séance du 2 Novembre 1888. Archives Rothschild, rapport du liquidateur, cited in Gilles (1968)

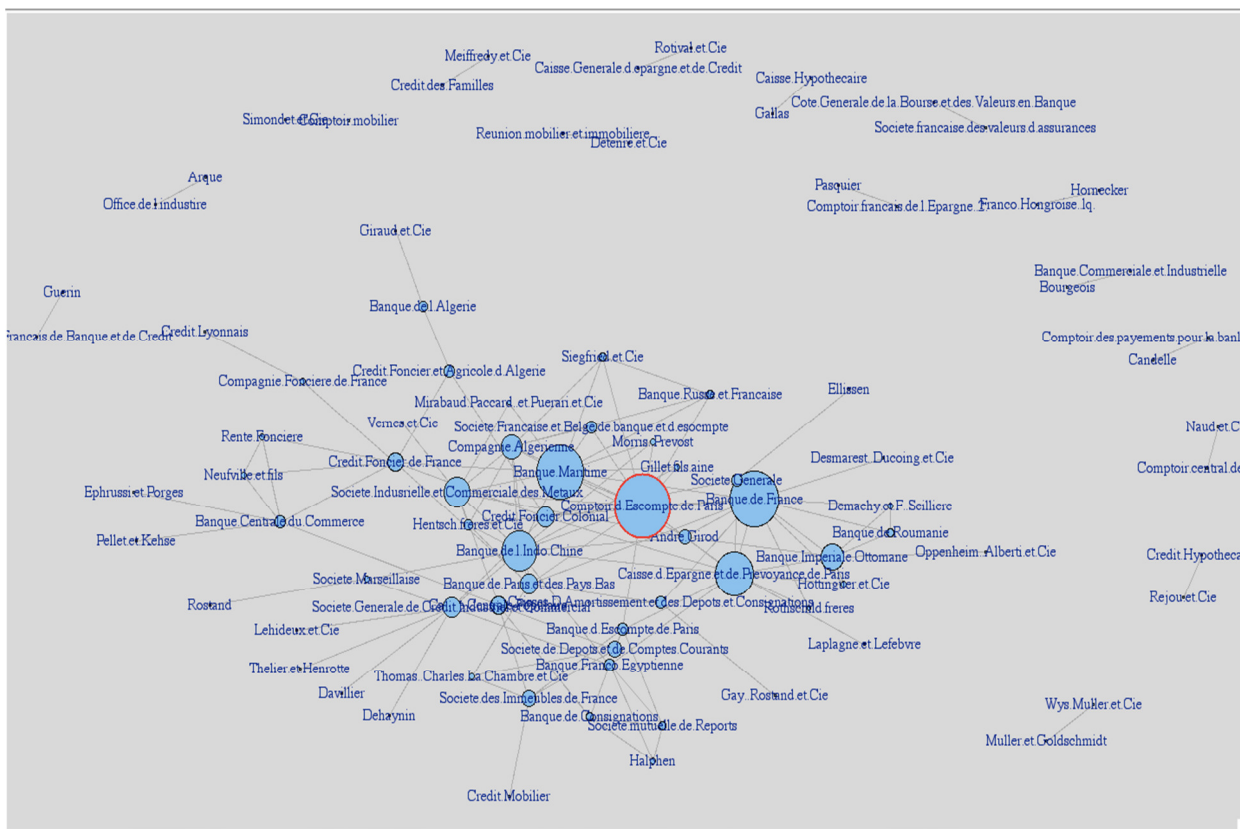
the board of the Comptoir, while his brother A. Hentsch and partner in the private bank, Hentsch frères, was on the board of the Société des Métaux, but his schemes also encompassed several other banks; and he was president of the Banque Maritime, Banque de l'Indo-Chine, and Credit Foncier Colonial and sat on the boards of the Compagnie Algérienne and the Banque de Paris et des Pay-Bas. These banks seem to have been part of giant highly leveraged schemes and some were either nearly insolvent or insolvent at the time of the collapse of the Comptoir. The Banque de France was aware of the problems with the Banque Maritime and perhaps the other banks; and it knew that it could easily not place them in the guarantee syndicate. In this sense, they do not belong in the sample of banks that could potentially be drawn into the syndicate, although the ties that Hentsch and his associates had with them implicate them further. At the other extreme, there are the puzzling cases of the Veuve Kinen et Cie and Heine et Cie who appear to have no connection to the debacle and no ties to other banks and yet joined the syndicate.<sup>38</sup>

Figure 8 depicts the overlapping directorships and management of the Parisian banks for all banks that had at least one connection. As is readily seen, there was tight network among a core of institutions, linked primarily by the *haute banque*. The Comptoir d'Escompte and the other Hentsch-connected institutions are visibly the most connected. However, there are also a number of modest sized firms that remained outside of this core group; and even a giant bank like Crédit Lyonnais was only tenuously connected to the core. In the case of Crédit Lyonnais, this absence of networking is picking up the degree to which the bank's head, Henri Germain, kept aloof from the rest of the banking system and thus limited conflicts of interest.

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<sup>38</sup> The head of Heine et Cie, the only company or individual in the Almanach with that last name, would appear to be Michel Heine, who became a regent officially on January 30, 1890, filling the seat vacated by Pillet-Will's resignation. Naturally, this raises the question whether he may have helped to ensure this position by volunteering to join the guarantee syndicate when he had no connection to the copper scheme.

**Figure 8**  
**Overlapping Directorship and Management**  
**Paris, 1888**



Source: See text.

Two measures of centrality or connectedness used in network analysis are deployed here to measure the conflicts of interest---degree centrality and eigenvector centrality. In the weighted network here, when there are multiple relationships, degree centrality it is the sum of all the edges (an edge is a line representing individuals who hold two positions) connected to a vertex (a bank) from other vertices (banks). Intuitively, the number of lines or individuals connected to two institutions is taken as a measure of the strength of the conflicted relationship between the two institutions. Degree centrality here is a measure not of the number of banks connected to an individual bank but the number of managers or directors that a bank has in common with another bank. Eigenvector centrality is a more sophisticated measure than degree centrality. While degree centrality uses the sum of all the connections that a vertex has, eigenvector centrality emphasizes that not all connections are equal. The idea behind this measure is

that connections to a vertex that are themselves influential or well connected will give that vertex more influence than connections to less influential vertices. Values for eigenvector centrality are calculated from the eigenvalues of the adjacency matrix which is an  $n$  by  $n$  symmetric matrix ( $n$  = number of banks) and the elements are the number of connections between  $i$ th and  $j$ th banks.

Degree and eigenvector centrality are calculated in three ways. The first two measures use only the direct connections to the Comptoir d'Escompte (DegreeCE and EVCM) and the Société des Métaux (DegreeSM and EVSM) and thus focus on whether a direct connection for a bank to either institution created an exploitable conflict of interest that was taken into account in the formation of the guarantee syndicate. The third measure (DegreeAll and EVAll) takes into account all the connections in the central network seen in Figure 8. These two measures consider the possibility that it was the general level of interconnectedness or possibilities for conflicts of interest that influenced whether a bank was included in the guarantee syndicate.

In addition to network analysis, one may be able to trace the degree to which individuals attempted to exploit the conflicts interest by examining measures of participation in the copper scheme. One possible measure are the purchases of the shares and bonds issued by the Société des Métaux when it doubled its capital in 1888 and embarked on its effort to drive up and sustain copper prices. A subscription sheet in the Archives of the Banque de France for this increase in equity and debt lists every contributor.<sup>39</sup> The goal was to raise 20 million francs, and 19,545,995 francs were subscribed on this undated list; most subscribers took equal portions of shares and bonds. Matching these subscriptions to the banks and bankers in the Alamanch reveals that most of the issue was taken up by, not by the public, but by banks and bankers who claimed 15, 201,240 francs worth of shares and bonds. The largest subscriber was Rothschild frères requesting 2,515,000 francs of bonds and 2,500,000 francs of shares for a total of 5,015,000 francs. The next largest contributor was the bank that was most compromised in the copper scheme after the Comptoir---the Banque de Paris et Pay-Bas, requesting 3,409,900 francs of shares and bonds.

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<sup>39</sup> Société Industrielle et Commerciale des Métaux, Archives de la Banque de France.



**Table 8**  
**Contribution to the Doubling of the Capital of the Société des Métaux, 1888**

<b>Bank or Banker</b>	<b>Total Invested</b>	<b>Invested by Principals</b>	<b>Number of Individuals Involved</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Andre, Girod et Cie	376,050	376,050	1
Banque de France	8,198,500	0	9
Banque de l'Indo-Chine	1,328,525	0	3
Banque de Paris et des Pays-Bas	4,237,150	3,409,900	2
Banque de Roumanie	701,800	0	2
Banque d'Escompte de Paris	20,060	20,060	1
Banque Imperiale Ottomane	2,732,450	0	5
Banque Maritime	1,615,233	0	8
Banque Russe et Francaise	175,525	25,075	2
Berard	50,150	50,150	1
Cahen d'Anvers0	451,200	451,200	1
Caisse d'Epargne et de Prevoyance de Paris	6,619,300	0	6
Compagnie Algerienne	1,804,950	0	3
Comptoir d'Escompte de Paris	2,055,475	2,055,475	13
Credit Foncier Colonial	1,052,775	0	3
Credit Lyonnais	91,348	91,348	3
Demachy et F. Seilliere	350,900	350,900	1
Gillet fils aine	16,048	16,048	1
Hentsch	726,950	726,950	1
Hottinguer et Cie	551,550	551,550	1
Mallet freres et Cie	350,900	350,900	1
Mirabaud-Paccard, et Puerari et Cie	927,550	927,550	1
Morel	25,075	25,075	1
Pillet-Will	551,550	551,550	1
Rothschild freres	5,015,000	5,015,000	1
Thomas	100,300	100,300	1
Vernes	927,550	927,550	1
Worms	20,060	20,060	1

Source: File for the Société des Métaux, Archives of the Banque de Paris et Pays-Bas, Paris. May 10, 1888.

Measuring involvement by this list is tricky because purchases of the debt and equity of the Société were made by largely by individuals who had multiple affiliations and yet the assessment of contributions to the guarantee syndicate was primary by institution. Consequently, we use this list to offer three measures, shown in Table 8: (1) the purchases by the managers and directors of a bank and the bank itself, though this

leads to some double counting (TC2xSMK), in Column 2, (2) the purchases by a bank or by its managers and directors who have their primary affiliation with the institution in Column 3 (PC2xSMK), and (3) the total number of individuals at a bank who made purchases (NS2xSMK) in Column 4. As will be seen immediately in the Table 8, the two “official” banks of the government, the Banque de France and the Caisse d’Epargne had many regents and directors investing in the scheme. Given that they were government or quasi-government institutions assessing the private institutions they will not be included in the regressions.<sup>40</sup>

**Table 9**  
**Correlation Coefficients of Centrality and Subscription Measures**

	TC2xSMK	PC2xSMK	NS2xSMK	DegreeAll	EVAll	DegreeCE	EVCE	DegreeSM	EVSM
TC2xSMK	1								
PC2xSMK	0.6555	1							
NS2xSMK	0.6089	0.3157	1						
DegreeAll	0.5377	0.2174	0.6344	1					
EVCAI	0.5564	0.2303	0.7992	0.8696	1				
DegreeCE	0.5143	0.2592	0.7779	0.7006	0.825	1			
EVCE	0.4674	0.2147	0.7914	0.6836	0.846	0.968	1		
DegreeSM	0.3593	0.276	0.6051	0.6182	0.745	0.9126	0.91	1	
EVSM	0.3755	0.2671	0.7921	0.5748	0.721	0.874	0.88	0.8442	1

Of course, all of these measures of conflicts of interest are to some degree correlated, as see in Table 9. The lower right triangle colored in yellow shows the correlation coefficients for the centrality measures, all six of which are highly correlated, implying that a bank that was highly connected to the Comptoir d’Escompte or the Société des Métaux was likely to be highly connected to the rest of the networked system. The stock and bond subscription measures in the top left yellow triangle are also highly correlated, but less so for the number of investors and the principals. The lower left three by six matrix presents the correlation coefficients between the centrality and subscription measures. The number of subscribers is highly correlated with all measures of centrality,

<sup>40</sup> It should be noted that the Banque of France was also potentially penalized as it would have to absorb any losses in excess of the 20 million francs provided by both guarantee syndicates.

suggesting that it embodies similar information to that encompassed by the overlapping directorships and management. Subscriptions by the principals has the weakest relationship with centrality measures, suggesting that it may add additional information to our analysis.

To determine if the Minister of Finance/Banque of France sought to use the guarantee syndicate to discipline banks that had contributed to the financial crisis instead of, or in addition to, assessing contributions according to capacity to pay, one could regress the contributions on our measures of conflicts of interest and bank capital. However, as is readily observed this may produce a selection bias, as banks that were connected may be excluded from the guarantee syndicate. The correct approach to this problem is to pursue a two stage regression approach, where the first stage estimates the determinants of simply being induced to join the syndicate and the second estimates the determinants of the contribution to the syndicate with, a correction for the selection bias. It should be noted that, although the syndicate was organized in haste, as befitted a financial crisis, it seems reasonable to presume the Minister and Banque first identified banks that should be members of the syndicate (reflecting both capacity to pay and guilt) and their contributions (perhaps weighting guilt more heavily).

The first stage of analysis will be a series of probit regressions, as specified in equation 4, to examine the determinants of membership in the first guarantee syndicate. Membership of the  $i$ th bank in a guarantee syndicate,  $M_i$  is expected to be primarily a function of a measure of capacity to pay (Bank Capital $_i$ ) and conflicts of interest  $CI_i$ , for which there are 6 centrality measures and 3 subscription measures. Other factors may have played a role. The number of directors and managers who were members of the Legion d'Honneur,  $LH_i$  and regents of the Banque de France,  $R_i$  were included as explanatory variables.<sup>41</sup> Membership the Legion, a high status honorary association or being a regent might influence selection into the syndicate if it was believed that they ought to help out in this crisis or they should or should not be punished for involvement. We include two dummy variables:  $LL_i$  to indicate if the bank was a limited liability joint-stock bank rather than a proprietorship or partnership, and  $FCB_i$  to indicate if the bank was a colonial or foreign bank.

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<sup>41</sup> Our primary sources are the Almanach and the partnership agreements.

$$(4) M_i = \beta_0 + \beta_1 BC_i + \beta_2 CI_i + \beta_3 LL_i + \beta_4 LH_i + \beta_5 FCB3_i + \beta_6 R_i + \epsilon_i$$

A Heckman selection model was employed to correct for selection bias; but before estimating the complete model, an OLS model, equation 5, was estimated for the contribution that a bank made to the guarantee syndicate in millions of francs ( $G_i$ ). Unlike the probit model where there are at least 98 observations, there are only 19 for the contribution to the syndicate. As is well known, there are problems with the small sample properties for models that correct for selection bias, so it is useful to check the ordinary least squares estimates. There is one more additional cautionary note; all the explanatory variables that may be appropriate for equation 4 may also be appropriate for equation 5, so that there are no clear instruments to identify each equation.

$$(5) G_i = \alpha_0 + \alpha_1 BC_i + \alpha_2 CI_i + \alpha_3 LL_i + \alpha_4 LH_i + \alpha_5 FCB3_i + \alpha_6 R_i + u_i$$

Tables 10 and 11 present the initial probit estimates for selection into the guarantee syndicate for the centrality and subscription measures of conflicts of interest, displaying the coefficients, z-statistics and average marginal effects for each explanatory variable.<sup>42</sup> Being a foreign or colonial bank was not significant determinant in any of the specifications. However, the dummy variable for limited liability, yields a large, significant negative effect, which implies that private institutions were more likely to be included in the syndicate, pointing to the role of the *haute banque* in copper scheme. Having one or more directors or officers who were members of the Legion d'Honneur also reduced the likelihood of inclusion. The capacity to pay as measure by book capital is an important factor and is fairly tightly estimated. The average marginal effect ranges from 0.007 to 0.012, implying that an extra 1 million francs of capital would increase the probability of selection by 0.7 to 1.2 percent.

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<sup>42</sup> The number of regents is closely correlated with the number of members in the Legion d'honneur. We estimated probit models with these variables alternately. They were similar and we do not report the results that include the number of regents.

**Table 10**  
**Guarantee Syndicate Selection**  
**Centrality Measures--Probit Estimates**  
(coefficients, z-statistics, and average marginal effects)

	1	2	3	4	5	6
Constant	-1.187	-1.118	-1.18	-1.128	-1.475	-1.281
	-41.8	-4.08	-4.22	-4.09	-4.24	-4.04
Bank Capital	0.082	0.079	0.08	0.082	0.106	0.1
	2.96	2.93	3.13	2.96	3.00	2.9
	0.011	0.011	0.01	0.011	0.011	0.012
DegreeCE	0.241					
	2.22					
	0.031					
EVCE		2.888				
		1.72				
		0.391				
DegreeSM			0.303			
			2.23			
			0.038			
EVSM				3.097		
				1.81		
				0.417		
DegreeAll					0.407	
					3.39	
					0.041	
EVAll						4.446
						2.38
						0.559
Limited Liability	-1.947	-1.966	-1.927	-2.029	-2.785	-2.455
	-2.43	-2.5	-2.46	-2.49	-2.72	-2.57
	-0.294	-2.666	-0.245	-0.273	-0.281	-0.309
Legion d'Honneur	-0.249	-0.218	-0.242	-0.234	-0.523	-0.325
	-1.84	-1.61	-1.9	-1.7	-2.71	-2.03
	-0.031	-0.029	-0.031	-0.031	-0.053	-0.04
FCBank	-4.72	-4.878	-4.88	-4.833	-5.003	-5.033
	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	-0.605	-0.661	-0.62	-0.652	-0.505	-0.634
No Obs	98	98	98	98	98	98
Pseudo-R2	0.526	0.4968	0.526	0.5	0.612	0.533
LRCHI2	50.67	47.88	50.73	48.21	59.59	51.33

**Table 11**  
**Guarantee Syndicate Selection**  
**Subscriptions to Doubling of Société des Métaux's Capital**  
**Probit Estimates**

(coefficients, z-statistics, and average marginal effects)

	1	2	3
Constant	-1.480	-1.542	-1.037
	-4.18	-4.39	-4.05
Bank Capital	0.096	0.079	0.049
	3.10	2.71	3.23
	0.011	0.008	0.007
TC2xSMK	2.454		
	2.80		
	0.276		
PC2xSMK		3.411	
		2.85	
		0.357	
NS2xSMK			0.046
			0.22
			0.006
Limited Liability	-1.981	-1.504	-1.91
	-2.26	-1.83	-2.58
	-0.223	-0.157	-0.273
Legion d'Honneur	-0.316	-0.227	0.575
	-2.3	-1.59	-0.01
	-0.036	-0.024	0.082
FCBank	-7.299	-6.83	-5.053
	-0.02	-0.01	-0.01
	-0.822	-0.716	-0.722
No Obs	98	98	98
Pseudo-R2	0.581	0.603	0.476
LRCHI2	55.97	58.17	45.86

However, conflicts of interest also played an important role. All measures of centrality were positive and significant. For degree centrality, one additional overlapping directorship or official with the Comptoir, increased the probability of selection into the guarantee syndicate by 3.1 percent. This measure for the Société des Métaux was 3.8 percent and for all connections 4.1 percent. The eigenvector value is scaled with a

maximum value of one. The average value of this variable for members of the syndicate was 0.41; at that value and with a marginal effect of 0.391 for the Comptoir-only eigenvalue, there was a 16 percent increased probability inclusion in the syndicate. For the highest score of one, this variable added 39 percent. Subscriptions to the bond and stock issue were a significant determinant, though not the number of subscribers in a bank. If the principals of a bank had subscribed to 1 million francs of bonds or stocks, it increased the probability of inclusion in the syndicate by 35.7 percent. Taken all together, including the largest negative constant term, they imply that if a bank was a limited liability joint-stock bank it would only be included in the syndicate if it were very large, with association with the copper scheme adding to the likelihood. Size was not as important for the *haute banque* but deep involvement in the copper scheme was a key factor, as measured by overlapping positions or subscriptions for the Société des Métaux.

Tables 12 and 13 show the initial OLS estimates of the determinants of contributions to the guarantee syndicate. Only considering the banks already in the syndicate, none of the control variables (with one exception) contributes significantly to explaining a bank's share of the 20 million francs. Both bank capital and measures of conflicts of interest (except for EVAll and NS2xSMK) are major factors. According to the regression using DegreeCE, from a base of 503,000 francs, a bank with a capital of 100 million francs and 3 connections would have 400,000 francs plus 348,000 francs added for a share of 1,248,000 francs. For a regression with principals subscribing (PC2xSMK), from a base of 502,000 francs, a bank with a capital of 100 million francs and subscriptions of 1 million francs would have 300,000 francs plus 449,000 francs added for a share of 1,261,000 francs. The Rothschild's substantial subscription of 5 million francs boosts their contribution to the syndicate by over 2.2 million francs.

**Table 12**  
**OLS Estimates of Contribution to the Guarantee Syndicate**  
**Centrality Measures**  
(coefficients and t-statistics)

	1	2	3	4	5	6
Constant	0.503	0.57	0.486	0.569	0.657	0.599
	2.79	3.19	2.64	3.23	2.61	2.69
Bank Capital	0.004	0.004	0.004	0.004	0.003	0.003
	4.26	4.11	4.19	4.2	2.72	2.93
DegreeCE	0.116					
	3.13					
EVCE		2.059				
		2.99				
DegreeSM			0.153			
			3.04			
EVSM				2.196		
				3.11		
DegreeAll					0.001	
					0.03	
EVAI						0.911
						1.11
Limited Liability	-0.046	0.001	0.001	0.077	-0.425	-0.273
	-0.12	0	0	0.19	-0.86	-0.56
Legion d'Honneur	0.002	-0.008	0.004	-0.016	0.069	0.036
	0.05	-0.21	0.11	-0.39	1.29	0.71
No Obs	19	19	19	19	19	19
Adjusted R2	0.592	0.577	0.582	0.589	0.307	0.362
F Stat	7.53	7.15	7.28	7.47	2.99	3.56



**Table 13**  
**OLS Estimates of Contribution to the Guarantee Syndicate**  
**Subscriptions to Doubling of Société des Métaux's Capital**  
(coefficients and t-statistics)

	1	2	3
Constant	0.527	0.502	0.788
	2.95	2.89	3.03
Bank Capital	0.004	0.003	0.004
	1.11	1.00	0.71
TC2xSMK	0.409		
	4.73		
PC2xSMK		0.449	
		5.01	
NS2xSMK			0.108
			1.32
Limited Liability	-0.089	0.004	-0.268
	-0.2	0.01	-0.4
Legion d'Honneur	0.020	0.019	0.018
	0.57	0.57	0.29
Foreign Bank	-2.440	-0.866	-1.542
	-2.6	0.255	-1.25
No Obs	19	19	19
Adjusted R2	0.598	0.626	0.034
F Stat	6.34	7.04	1.13

Tables 14A and 14B report the combined equations in a Heckman selection model using the centrality measures, and Table 15 displays the results for the subscription measures. Again, it should be noted that the small number of observations from the members of the guarantee syndicate make precision somewhat difficult. For selection into the syndicate with the centrality measures, limited liability and capital have coefficients of the same or larger value, while the contribution the centrality measures are slightly smaller. In the equation, explaining the contributions, the coefficient on capital is similar and the effect of the centrality measure is somewhat increased. However, the Likelihood Ratio does not always indicate that these gain from being estimated jointly.

**Table 14A**  
**Selection of and Contribution to the Guarantee Syndicate**  
**Heckman Selection Model Estimates**

	1	1	2	2	3	3
	Membership	Contribution	Membership	Contribution	Membership	Contribution
Constant	-1.039	0.147	-0.844	-0.213	-1.046	0.216
	-3.77	0.3	-2.19	-1.31	-3.88	0.57
Bank Capital	0.053	0.004	0.041	0.006	0.055	0.005
	2.56	3.22	1.99	5.8	2.73	3.74
DegreeCE	0.166	0.138				
	1.6	3.47				
EVCE			0.158	2.8		
			0.18	5.32		
DegreeSM					0.232	0.181
					2.04	3.93
EVSM						
DegreeAll						
EVAII						
Limited Liability	-2.075		-2.121		-2.09	
	-2.85		-4.14		-2.85	
Legion d'Honneur	-0.073		0.0184		-0.083	
	-0.63		0.24		-0.83	
No Obs	98	19	98	19	98	19
Wald Ch2	13.46		63.06		19.16	
Prob Ch2	0		0		0	
rho	0.623		1		0.521	
sigma	0.467		0.604		0.464	
lambda	0.291		0.604		0.242	
LR rho = 0	0.62		9.6		0.44	
Prob Ch2	0.432		0		0.506	

**Table 14B**  
**Selection of and Contribution to the Guarantee Syndicate**  
**Heckman Selection Model Estimates**

	4	4	5	5	6	6
	Membership	Contribution	Membership	Contribution	Membership	Contribution
Constant	-0.951	0.169	-1.294	0.381	-1.152	0.987
	-3.44	0.34	-4.2	0.88	-4.28	2.46
Bank Capital	0.0484	0.005	0.075	0.004	0.066	0.002
	2.03	3.09	3.15	2.96	3.14	1.75
DegreeCE						
EVCE						
DegreeSM						
EVSM	1.453	2.329				
	0.82	3.53				
DegreeAll			0.358	0.052		
			3.17	1.32		
EVAII					3.364	0.952
					2.24	1.54
Limited Liability	-2		-2.928		-2.182	
	-2.81		-3.03		-2.57	
Legion d'Honneur	-0.033		-0.34		-0.145	
	-0.28		-2.46		-1.47	
No Obs	98	19	98		98	19
Wald Ch2	13.75		8.81		4.52	
Prob Ch2	0		0.01		0.104	
rho	0.679		0.321		-0.608	
sigma	0.482		0.612		0.596	
lambda	0.328		0.196		-0.362	
LR rho = 0	0.57		0.3		0.46	
Prob Ch2	0.452		0.585		0.498	

The results in Table 15 are perhaps clearer, as the measure of conflicts of interest by subscription picks out some otherwise hidden relationships, most significantly Rothschild's large role. Bank capital, limited liability, and the size of a subscription continue to be important factors for inclusion into the guarantee syndicate. However, when bank capital is included in the contribution equation, its coefficient becomes small

and insignificant. When it is omitted, the estimation becomes more precise and these results are reported in Table 15. It would appear that once in the syndicate, size/capacity to pay does not influence the size of the contribution but investment in the syndicate that sustained the copper scheme is a key factor.

**Table 15**  
**Selection of and Contribution to the Guarantee Syndicate**  
**Heckman Selection Model Estimates**

	Membership	Contribution	Membership	Contribution	Membership	Contribution
	1	1	2	2	3	3
Constant	-1.332	1.415	-1.384	1.049	-1.273	1.678
	-2.10	4.44	-4.57	5.57	-6.01	10.12
Bank Capital	0.072		0.059			
	3.220		3.360			
TC2xSMK	1.592	0.176				
	1.84	1.57				
PC2xSMK			2.566	0.372		
			2.17	3.92		
NS2xSMK					0.386	0.0559
					2.09	0.9
Limited Liability	-1.449		-1.42		-1.18	
	-3.22		-2.21		-2.61	
Legion d'Honneur	-0.291		-0.157		-0.111	
	-5.51		-1.61		-1.46	
No Obs	98	19	98	19	98	19
Wald Ch2	2.46		15.33		0.82	
Prob Ch2	0.117		0		0.336	
Rho	-1		-0.783		-1	
Sigma	0.684		0.493		0.825	
Lambda	-0.684		-0.386		-0.825	
LR rho = 0	10.37		3.14		12.86	
Prob Ch2	0.001		0.076		0.000	

Finally, the estimates in Tables 14A, 14B and 15 may be used to produce the estimated contributions in Table 7. For the centrality measures DegreeCE and DegreeSM, estimated contributions are shown in Columns 7 and 8 using Models 1 and 2 in Table 14A. There is not a lot of variation in the estimated contributions, which are

typically 1.37 and 1.38 million, whereas the median actual contribution was 1 million francs. This result is fairly easy to interpret because the overlapping directorships and management pick up only part of the relationships that enabled individuals to exploit conflicts of interest. Only the Comptoir d'Escompte, the Banque de Paris et des Pays-Bas, and Hentsch frères have larger contributions of 2.31 and 2.76, 1.81 and 1.82, and 1.81 and 1.73 million francs for the two specifications, and reflect the relationships the two centrality measures picked up. It is notable that Rothschild only pays the base subscription as his influence is undetectable by these measures. Subscriptions to the doubling of the Société des Métaux's capital more precisely identify the conflicting relationships that engendered the copper scheme. Once selected into the syndicate, the model indicates banks would have to contribute a minimum of 1.05 million francs. This figure is more than some actually did pay, but it is closer to the median contribution. An increase in this sum is attributable to the subscription factor, which assigns 1.81 million to the Comptoir, 2.32 million to the Banque de Paris et des Pays-Bas, 1.3 million to Hentsch frères, and 2.92 million to Rothschild, which are all very close to the actual values.<sup>43</sup> Given this evidence, it is hard to avoid the conclusion that any losses from the collapse of the Comptoir were going to be borne to a significant degree by those who were aware of the damage inflicted upon one of Paris' most important financial institutions by the copper scheme.

### **Aftermath and Cleanup: Setting the Right Incentives**

The Société des Métaux filed for bankruptcy on March 21, 1889, under a new legal procedure that halted payments to creditors, while the firm continued operation. The law required a meeting of creditors to decide the fate of the firm; and the Société's creditors decided to liquidate the company, refusing to consider any plan to restructure the firm. However, the liquidation turned out to be a long drawn out long process because of the many legal problems created by Secrétan. They first tried annulling guarantees given to the mines, leading to lawsuits in English and French courts. In England, the Société lost its case; but in Paris the liquidators won in Tribunal de

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<sup>43</sup> Pillet-Will's potential contribution is included. His resignation may well have released him from any obligation.

Commerce and in the Cour d'Appel. This important decision shifted a huge burden from guarantees of the forward contracts, seen in Table 1 that would have fallen on the Comptoir d'Escompte.

The case was won in Paris on the grounds that the mine owners knew that they had participated in a corner scheme, which was illegal under French law; and that by participating in it, they became shareholders and not creditors. Furthermore, as the contracts were to deliver copper far in excess of the annual production requirements of the Société, they became invalid, having been irresponsibly signed by the Société's *conseil d'administration*. To avoid being sued for this dereliction of duty, the *administrateurs* agreed to pay 2.5 million francs. On the whole, the liquidation proved more successful than might have been anticipated and the Société paid a surprising portion of its debts.

As for the Comptoir, its *administrateurs* resigned and on March 23, 1889 filed for a private liquidation, under the authority of the Tribunal de Commerce, which appointed a *liquidateur* on March 30. The bank maintained payments to depositors and creditors thanks to the loans from the Banque de France. Like the Société, the Comptoir was freed from the guarantees it had given to the copper mines because they were incompatible with its internal statutes. Most importantly, the price of copper rebounded, perhaps influenced by willingness of creditors now in possession of the copper stocks not to dump them on the market (Moreau and Montchicour, p.25). As we have seen, repayments by the Société was higher than expected, helping the Comptoir to repay its creditors.

To resurrect the institution and minimize disruption, the Minister of Finance and the Banque de France promoted a new Comptoir National d'Escompte de Paris (CNEP). The Comptoir's head office, branches and clientele were sold to this reincarnation in exchange for 40,000 founders' shares in the CNEP that would be distributed to the former shareholders of the Comptoir for their acquiescence. The CNEP was founded with a capital of 40 million francs, half of which was paid in; and Denormandie, a former Governor of the Banque de France, assumed the office of president. The capital was almost entirely subscribed by the former shareholders of the Comptoir. The new CNEP gained the confidence not only of its shareholders, but also of depositors. Within five

months, deposits flowed in, reaching 125 million francs.<sup>44</sup> On November 5, 1889 the CNEP's Assemblée Générale decided that it could double the bank's capital to 80 million francs.

The losses to the Banque de France suffered appear to have been modest but the opaque nature of its records make a final assessment difficult. It is not yet clear how much the guarantee syndicate had to provide to make the Banque whole.<sup>45</sup> However, the Banque, cleaned house of conflicted managers. Two *censeurs*, P. Tessionnière and Ernest Baudelot who had been on the board of the Comptoir were dismissed. The regent Andre broke his partnership with Girod seems to have kept his partner in the dark.

The four principal figures in the copper scheme were sued by the *liquidateurs* of the SM and the CE for their role as *administrateurs* or *directeurs* and prosecuted in criminal court for « *accaparement* » (seizing a market and excessively raising prices to consumers) and fictitious accounting. Secrétan and Laveissière were sentenced to 6 and 3 months of prison. These sentences were commuted on appeal into 3 months for Secrétan and no prison time for Laveissière, and the « *accaparement* » was dropped. Joubert and Hentsch were also prosecuted and convicted but received no prison sentences. The Tribunal de Commerce imposed heavy assessment on *administrateurs*, leaving them with very few assets. The liquidators of the CE were more severe towards the CE's *administrateurs*, demanding payment of 50 million francs. Hentsch tried keep his chateau out of the hands of the *liquidateurs* by attempting a fictitious sale; however it was clawed back. Hentsch frères was liquidated, though Hentsch appears to have remained a banker by joining a much smaller partnership. In general, the *liquidateurs* and courts moved swiftly and forcefully to capture assets and punish the guilty.

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<sup>44</sup> Conseil d'Administration, Comptoir National d'Escompte de Paris, Rapport, 1889.

<sup>45</sup> At the Banque's 1889 Assemblée Générale, the Governor announced that the 100 million francs would be repaid using the proceeds of the liquidation, thus the guarantors would not be called upon. As for the additional 40 million francs loan, the Banque created a 4 million francs reserve from its yearly profits.

## En Conclusion

In 1910, the Governor of the Banque de France, M. Pallain was interviewed by the U.S. National Monetary Commission (1910), which was hoping to learn from European central banks how to design an American institution. He was asked: “Does the amount and the character of credit granted to other banks depend on the amount and the character of their accounts at the Bank of France?” He answered:

There is no fixed rule, and although the balance of the account is not a matter of indifference, it is more especially the quality of the paper presented which fixes the extent of the credit. In periods of crisis in 1830, 1848, in 1870 in 1889, the general council of the Bank did not hesitate to come to the assistance of establishments which were in difficulties, but which held assets of unquestioned character and value, by extending to them the largest possible credits.<sup>46</sup>

The Governor may have been citing the rules of the Banque, but those were not the rules by which the Banque played during the Crisis of 1889.

At the beginning of March 1889, the Banque de France discovered that one of the leading French commercial banks, the Comptoir d'Escompte de Paris, was highly leveraged and taking huge off-balance risks by guaranteeing payments for forward contracts on copper. It had been at the center of an attempt, engineered by the Société de Métaux, to corner the world copper market. When this scheme failed and news of the Comptoir's position became public, a run started on the Comptoir. Fearing that the run would morph into a general panic, which would spoil the opening of the 1889 Paris Exposition and possibly send the struggling economy back into recession, the Minister of Finance forced the Banque de France to intervene.

The Banque did not discount freely at a high rate of interest on good collateral as recommended by Bagehot, and permitted by its statutes. If it had done so, the Comptoir would have been unable to meet the demands of its depositors, and a panic might have hit all the banks. Interest rates would have spiked and GDP declined, but eventually the banking system would have recovered having suffered a “cold shower,” creating no moral hazard.

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<sup>46</sup> U.S. National Monetary Commission, Bank of France (1910), p. 207.



Instead, the Banque---with no promise of any funds from the Government--- offered the insolvent Comptoir a huge loan collateralized by questionable assets. The central bank was protected from losses by a guarantee syndicate of bankers that was coerced to give guarantees of 40 million francs against any losses the Banque might sustain from its total credits to the Comptoir of 140 million francs. The runs immediately abated and the shock to the economy never materialized. The danger from this action was, of course, that it might encourage banks to take bigger risks in the future in the knowledge that the Banque would come to their rescue.

The response of the Banque, partly assigning shares in the guarantee syndicate according to involvement in the copper scheme, and the legal system seem to have mitigated this dangerous effect by purging the banking system of the bank officials and board members who had conflicts of interest, nullifying contracts that would have rewarded risk-taking speculators, and by assessing and collecting truly huge financial penalties on the banks and officials implicated in the copper scheme. Although deviating from the accepted central banking tenets of the era, this strategy seems to have worked, in that there were no more financial crises in the pre-1914 era.

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