

# **Speculative Credit and the Money Market: The *Marché des Reports* in France between 1875 and 1914**

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« A cette époque, il tonnait contre toute spéculation, il haussait les épaules de colère et de pitié, en parlant des pauvres imbéciles, qui se font dépouiller, dans un tas de voleries aussi sottes que mal-propres. Mais, vers ce temps-là, une somme importante lui étant rentrée, il avait eu l'idée de l'employer en reports : çà, ce n'était pas de la spéculation, c'était un simple placement »

Emile Zola, *L'Argent*, p. 246

## **Introduction**

During the consultations organised from 1908 onwards by the US National Monetary Commission with a view to creating the Federal Reserve System, when the banker Paul Warburg was called upon to give an account of the functioning of the money market in Europe, he compared the American system to the European system (Warburg, 1910). In the American system, he explained, the money market was based on the stock market. As there was no central bank accepting to rediscount short-term commercial credit instruments, the “money” market was represented by “call” credit, that is, credit on the stock exchange: those with available short-term cash lent it to stock market dealers in exchange for the deposit of securities. According to Warburg, this system was vulnerable as it established a direct link between the stock exchange and the money market. If cash requirements increased, for example in the event that the trade balance deteriorated and foreign creditors demanded settlement in cash, the liquidity shortage was immediately transmitted to the stock exchange, which trended downwards. The ensuing deterioration of the collateral of stock exchange debtors consequently prompted the lenders to distribute money sparingly to their commercial debtors. The stock exchange crisis thus became a commercial crisis. However, in Europe, the existence of a large volume of bills that could be rediscounted at the central bank enabled the stabilisation of the money market. When liquidity requirements grew, banks could turn to the central bank to rediscount bills. The liquidity obtained in this way permitted banks to avoid too abruptly interrupting their lending on the stock market.

Correct or not, Paul Warburg's analysis has the positive aspect of raising an important question. It draws attention to the need to examine the interactions between the money market

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and the capital market. It is difficult to imagine a well functioning financial market, meaning smooth issues of large amount of long term securities, without some kind of money market, meaning liquid market for short term papers. Funds which were going to be invested in long term securities were probably not held in cash, gold, or on the British money market<sup>2</sup>. In the case of pre-1914 France, this involves the consideration of an issue that has never really been discussed: that of the relationship between the market for trade bills proper and what was called the *marché des reports*. This was the French version of stock market lending: via *reports*, “capitalists” provided “speculators” with very short-term funds (for 15 days or one month).

This paper seeks to improve the understanding of the French money market in the 19<sup>th</sup> century by taking a close look at the interrelationship between this market and the financial market. To this end, we firstly propose to dissect the functioning of *reports* (Section I). This exercise allows us to then analyse the development of the *marché des reports* and its role in the Crash of 1881-82 (Section II), as well as the way in which *reports* became a key feature in the 1890s of the struggle for dominance between the official market managed by the *agents de change* (stock market brokers) and what was called the *coulisse*<sup>3</sup> or *marché en banque* (a type of over-the-counter market) (Section III). Lastly, Section IV attempts to connect the behaviour of the money market to that of the stock market and demonstrates in particular that the influence of the latter on the *report* rate disappeared over time.

## **Section I. An Economic and Legal Analysis of Reports**

### *a) The report contract: legal aspects*

Most contemporary literature on *reports* is written by lawyers. The *report* is first and foremost a contract, and one that was sufficiently complex to have greatly interested legal practitioners. It involves the sale of a security for a given period, whilst the seller undertakes to repurchase it at the end of the period at an agreed price: the *reporteur* is the agent that “purchases” the security for the given period and the *reporté* temporarily “sells” the security in question, thus borrowing money. The transaction thus boils down to a sort of temporary exchange of a security for cash. The *report* contract implies a type of futures transaction via the repurchase of the security when the contract matures. However, futures transactions remained illegal in principle in France until an Act was passed in 1887: up until this date, it

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<sup>2</sup> Strauss (1988, p. 102) makes the point that the overbidding on *rentes* was only possible because of borrowing from underwriting banks to the Bank of France, not necessarily through discounting of usual real bills (*papier commercial*).

<sup>3</sup> “*En coulisse*” means “in the wings” in the theatrical sense and can also mean “behind the scenes”.

was legally possible to avoid the obligation to honour a futures contract by invoking what was called the *exception de jeu* clause. As there was no legal guarantee, financial operators therefore had to develop incentives to ensure that participants in the futures market did not invoke this clause.<sup>4</sup> As a result, the illegal nature of one of the components of the *report* contract was to give rise to endless legal quibbling. However, after 1861, it was recognised that the *report* was a “serious contract without sham involving a genuine exchange of ownership between parties” (François-Marsal, p. 113). The 1881-82 Crash brought about a large number of lawsuits, primarily related to the use of the *exception de jeu* clause by speculators unable to meet their commitments. Since a large proportion of these trials involved varying forms of *report* transactions, the debate resumed. The Act of 1887 abolishing the *exception de jeu* clause, and then a judgement in 1890 by the *Tribunal de Commerce de la Seine* and a judgement by the *Cour de Cassation* in 1897 finally ensured the legal basis of the *report*. This market has been thriving for a while.

*b) The report contract: economic aspects*

A *report* may be viewed as a loan of money by the *reporteur* (the temporary purchaser of the securities) to the *reporté* (the temporary seller). The *report* price is the difference between the spot price of the security used in the *report* transaction (at the date  $t$ , for example the end of the month) and the price at which the *reporté* undertakes in the *report* contract to buy the security back at the end of the period covered by the contract (at the date  $t+1$ , for example at the end of the following month). For instance,  $C_t$  is the spot price (for the period  $t$ ) and  $C_{t+1}^t$  is the price at which the *reporté* agrees to repurchase his security at the date  $t+1$ . The *report*  $R_t$  is therefore quite simply the difference between the two prices,  $C_{t+1}^t - C_t$ . By ignoring transaction costs and counterparty risks, the *report* may be analysed as an arbitrage between two identical transactions: on the one hand, the loan of a sum of money  $C_t$  at the “market” interest rate  $i_t$ ; on the other hand, the *report* of a speculator at the *report* price  $R_t$ . These two transactions tie up the same amount and involve similar risks and must therefore produce the same profit for the period involved (say two weeks). This therefore gives us:  $R_t = i_t C_t / (12 \times 2 \times 100)$ .

The *report* is therefore a quotation for the price of short-term money. Moreover, this is the contemporary point of view that we found in all the accounts of the time (Zola, 1986, p. 78; Convert, 1911, p. 77). In the ideal situation described above, the *report* cannot in theory be negative and there should neither be differences between the *reports* on different securities,

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<sup>4</sup> Several important passages from the classic work by Courtois (1892) may be read on this subject.

nor between the *reports* via different intermediaries. In practice, the facts do not validate any of these “common sense” implications. To explain why this is the case, the micro-structure of the *marché des reports* needs to be scrutinised.

*c) Negative reports? The question of déports*

In practice, however, the *report* quoted was sometimes negative. In such cases, one talked of a *déport*. This appeared in two situations. The first was when a given security benefited from a particular advantage during the *report* period, such as a drawing or a stock option. Because the *reporteur* was entitled to the advantage in question (except for the coupon which continued to be enjoyed by the *reporté*), the *reporteur* was prepared to pay to temporarily purchase the security concerned. The quoted *déport* was thus a false negative interest rate since it concealed a positive rate behind a premium paid to benefit from a particular advantage. The second case of a negative *report* described in the contemporary literature is more interesting because it highlights the possibility of malfunctions in the *marché des reports*. For example, the accounts of Courtois, Convert and François-Marsal mention the situation of a short forward seller. This seller, who speculated on a downtrend (hoping to benefit from the low price of the securities on the settlement day), notes that the prices have not fallen. This short seller, who does not possess the pledged security, may therefore wish to extend his bearish speculative position. To do this, he must buy a security on the spot market (to offset the contract to which he is already committed) and combine this transaction with a new forward sale. The easiest way to carry out this operation is to temporarily purchase the security in a *report* transaction: in this way, the speculator purchases the security and can immediately sell it, remaining a short seller for the coming period. The bearish speculator is therefore a *reporteur*, and if there are a lot of bears, it is to be expected that the *reports* on the security in question will fall, or in other words, that the demand for securities on the spot market will be strong: the bearish speculators were said to be “in search of securities”. If the amount of bearish speculation exceeds the volume of securities on the market, meaning that no equilibrium is possible, there may be a *déport*. This situation may have been caused deliberately if certain financiers agreed to starve the market by buying up all the available securities: the bears are prepared to pay any price to maintain their position. However, such a squeeze was not seen for *reports* on securities with a deep market.

Squeeze on a bond that shows up on a very low repo rate is still possible nowadays. For instance in November 2000 one market maker bought 90% of the auction of the French October 2010 5.5 % bond. The other market makers had to borrow this bond to deliver it to

their clients, at a price fixed before the issue, waiting for the next auction of this bond by the French Treasury. On the 16<sup>th</sup> of November The one month repo rate relative to the one month money market rate, the EONIA, on the October 2010 bond was -185 bp while the repo rate was -10 on the April 2010 bond. At the end of November the repo rate was -100 bp, it became normal at some point in December.

Putting the two previous situations aside, the presence of very low *reports* on liquid securities may have stemmed from quite frequent transactions, of which we have surprisingly found no trace in second-hand accounts. When an issuer wishes to support his security, he may want to “subsidise” bullish speculation using *reports nuls* (zero-rated *reports*), especially since the cost of such an operation is not boundless given that the supply of the security in question on the market is not infinite. We will come back to this point later.

#### *d) Counterparty risks and intermediaries*

We have pointed out that, if we ignore the problems posed by risk, all the different forms of *reports* should be identical: obtaining a loan by temporarily selling, say, a share in the *Banque de Paris et des Pays-Bas* in a *report* transaction should in principle be on the same terms irrespective of the intermediary involved. However, it should be emphasised that, in practice, the terms upon which *reports* on given securities were transacted did depend on the intermediary used. This was related to the existence of a counterparty risk. The sharp fall of the value of a security could cause the bankruptcy of the *reporté*. The *reporteur* then found himself with the depreciated security as his only compensation (there was no margin calls), unless the intermediary had undertaken to provide an additional guarantee. The risks thus depended on the market upon which the *report* transaction had been conducted. On the “official” markets, the stock exchanges, it was the intermediary that had brokered the transaction, i.e. the *agent de change*, who was the guarantor of its successful completion. The *report* rate on the same market could therefore have varied from one *agent de change* to another depending on the reputation of each *agent*. In practice, however, a single *report* rate for a given security on a given market was achieved thanks to the existence of joint and several liability clauses, whereby the *chambres syndicales des agents de change* (federations for brokers) collectively undertook to act as guarantors for their different members. In return, they had the right to oversee the *agents de change*, retaining the right to confiscate their deposit or to exclude them from the *chambre syndicale*. These clauses had obviously been introduced to make the market sounder and to ensure its smooth development. This was the

case for the Paris *parquet*<sup>5</sup> for example.<sup>6</sup> When comparing different *chambres syndicales*, one can therefore expect to see differences in the levels of *reports* for similar securities, because in the final analysis the value of the guarantee of a given exchange had to be influenced by the sums deposited by its members. From this standpoint, the Paris *parquet* was the soundest in Haupt's opinion.

It goes without saying, of course, that the question of counterparties also comes up when we leave the official markets to take a look at *reports en banque*. Here, transactions are carried out over the counter, typically between a banker and his client. It is clear that, in this situation, the banker must protect himself by taking a sufficient deposit. This type of direct contract clearly demonstrates the fine distinction between a *report* transaction and a security-backed loan. The latter were transactions in which a banker undertook to lend money for a short period of time against the deposit of a financial instrument acting as collateral, and in return for a discount (of, say, 20%) of the market value of the security, affording protection to the banker. There was therefore only a slight difference between this type of contract and an over-the-counter *report* with the pledging of collateral, and it is hardly surprising to find *reports* and security-backed loans scattered throughout the balance sheets of the main deposit-taking banks. In this case, the transactions were not clearly distinguishable, but rather formed a continuum of contracts.

*e) Different report rates for different securities*

In principle, all securities should be used in *report* transactions at the same rate on a given market. However, here again, persistent differences between the *report* rates for different securities can be seen. To explain this phenomenon, transaction costs, which we have ignored up to now, must be taken into consideration. The reasoning whereby all *report* transactions should be identical for all the securities on a given market is based on thinking in terms of arbitrage, which assumes that the transaction costs are negligible and that one can temporarily sell, free of charge, securities with low *reports* and temporarily purchase those with high *reports*. As stated by Ottomar Haupt (1894), arbitrage between stock exchange *reports* involves the temporary purchase of securities "with a very high *report*", financed by temporarily selling securities with "a very slight *report* or even a *déport*". In practice, however, this operation involved various costs. Firstly, there was the brokerage fee paid by the two *report* parties to their respective *agents de change*. The principle of the arbitrage

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<sup>5</sup> Literally means "trading floor", with a broader meaning of "stock exchange".

<sup>6</sup> The joint and several guarantee was of a private nature until 1898, after which it became law.

results from the following observation. Take two securities, 1 and 2, enjoying a large market and being used in *report* transactions lasting for identical periods. The rate at which security 1 is used in the *report* is  $r_1$  and  $r_2$  is the corresponding rate for security 2. For it to be impossible to make any pure arbitrage profit, the transaction involving the temporary sale of 1 and the temporary purchase of 2, as well as the symmetrical transaction, must leave no profit. In simple terms, the fact that both the *reporteur* and the *reporté* must pay the *report* brokerage fee means that the difference between the two interest rates  $r_1$  and  $r_2$  must be no more than twice the loss associated with the *report* brokerage fee. If the *report* brokerage fee expressed in the form of an annual interest rate is  $\delta$ :  $|r_1 - r_2| \leq 2\delta$ .

This relationship helps us understand why, even on a well-organised market with guarantees from intermediaries, fairly marked differences in interest rates may be observed. As *reports* were for particularly short periods, a brokerage fee, even if it was very low, allowed quite considerable divergence between rates. In practice, by taking indications of official brokerage fees on the Paris *parquet*, we obtain an annualised cost for *reports de quinzaine* (two-week *reports*), which accounted for the bulk of transactions, of 2.4% to 3% (that is 24 times the fees, excluding stock market taxes) up until the change in tariff of 1898, and of 1.25% per annum with the new tariff. All other things being equal, this meant a maximum possible differential of 4.8% to 6% before 1898, and of 2.5% thereafter. It is true to say that the interest rates derived from the *report* quotations could vary significantly, especially before 1898. However, French government securities enjoyed more advantageous conditions, partly in relation with the reduced brokerage fee and partly because of the fact that the *rente* was used in monthly *report* transactions, meaning that the loss of interest resulting from the fixed brokerage fee was proportionally smaller. Overall, the annual brokerage cost for *reports de rente* can be estimated at 0.5% before 1898 and 0.3% thereafter. This meant that the rate differential between *reports* on different *rentes* could not in principle exceed 1% before 1898 and 0.6% afterwards.

Lastly, just to complicate things, it should be stressed that the arbitrage principles developed earlier suffer from asymmetry, linked to the possibility of subsidising bullish speculation on certain securities. Suppose that an operator decides to provide interest-free credit on a security in the hope of helping it to rise. In principle, this should cause arbitrage, with operators temporarily selling this security and temporarily purchasing others. But, because the supply of this security is finite, the amount invested in this arbitrage is also finite and the violation of the arbitrage range from below can be sustained. Conversely, any

violation from above will be eliminated very quickly, because operators will compete with each other to temporarily purchase the securities with rising rates. And since the supply of credit is infinitely greater than the amounts being used to temporarily purchase a specific security, the initial increase is very quickly corrected. Finally, whilst the violation of the range from below is possible, violation from above is not.

## **Section II. The *Marché des Reports*: Development and Robustness**

### *a) Development of the marché des reports*

According to Lecoupey, it was the operations accompanying the issuance of the French government bonds intended to pay the war indemnity in 1871 and 1872 that revealed the key role played by *reports* in the functioning of the capital market. The issuance of securities to settle the FRF 5 billion owed to Germany had caused a significant fall in the price of the *rente*. Speculation, however, was to bet on an increase. Speculators made forward purchases of *rentes* using the money that they had borrowed on the *marché des reports* and renewed their bullish position, thus accompanying the rise in prices. The quantitative information available to us suggest that this movement continued and then accelerated at the end of the 1870s. During this period, it is not unusual to see that the amount of *reports* and loans made by the main deposit banks was twice their commercial portfolio. This is shown clearly in Figure 1, which gives the ratios of amounts invested in *reports* and the commercial portfolio of the four largest deposit banks.<sup>7</sup> At the end of the decade, the mechanism for collecting funds to be invested in *reports* became larger with the creation of intermediaries between private depositors and speculators. As indicated by the economists of the *Lyonnais* in a memo in 1912: “special companies were founded, which collected funds and paid an annual interest of 7, 8 or 9%, and used them in *report* transactions”.<sup>8</sup> Specialised financial companies called *caisses de reports* were created and were kind of mutual funds before their time. Their aggressive advertisements were spread throughout the economic and financial press, especially from the summer of 1881 when the last bout of bullish speculation began. These companies created a new financial product called the *compte de report* (*report account*). They collected the depositors’ funds and reinvested them in *reports* and *quasi reports*, as well as in

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<sup>7</sup> In practice, the exact measurement of *reports* using balance sheets was problematic. Firstly, in certain cases, the *reports* are not always distinguished from loans (see Allix, p. 156). Secondly, as shown by the balance sheets of the *Banque de Paris et des Pays-Bas* (which is not included in the sample), the amount of *reports* indicated on the asset side is in fact the balance of the amounts of securities temporarily purchased and those temporarily sold. In the case of Paribas, the latter amounts were relatively small: but what of the other institutions?

trade bills, though to a lesser extent.<sup>9</sup> The attractiveness of the interest rates paid over the last months of the speculation and the simplicity of the operation for the depositor allowed these companies to grow rapidly.

The links between these companies and the various financial institutions provide some insight into their origins. Bankers and brokers are often to be found on their boards of directors. The *caisses* were sometimes set up by private bankers recognising the lucrative nature of *report* rates in the middle of 1881, wished to start new business they cannot do while remaining independent (Bouvier, 1960, p. 115).

One way of evaluating the risks taken by the different *caisses de reports* is to look at comparative interest rates. The rates paid by the *Caisse Mutuelle* and the *Caisse de la Société Nouvelle* are always almost two points higher than those paid by the *Caisse Générale* and the *Société Française de Reports et Dépôts* (SFRD) which were almost identical (Figure 2). It is tempting to attribute this trend to less risky behaviour by the latter two institutions: more costly resources on the liability side necessarily imply greater risk-taking on the asset side. It was indeed the SFRD that was reputed to be a prudent *caisse de reports*. In 1900, Allix described it as a “wisely managed” company and saw it as one of the “two model institutions of its kind.”<sup>10</sup> Moreover, it was the only one which continued to regularly distribute its prospectuses until the war and beyond. Conversely, the disappearance of the *Caisse Mutuelle*’s advertisements in the depths of the recession tends to be suggestive. From a different angle, the observation that the rates paid by the most prudent *caisses* were nonetheless higher than the *report* rate on the 5% *rente* suggests that there was a fair amount of competition between these institutions and that, on composing their *report* portfolio, they came to some sort of arrangement to make the most profitable, and therefore most risky investments.

Lastly, Figure 3 shows the trend in *report* rates on the Paris exchange for four securities and compares these with SFRD rates. It has to be acknowledged that the increase in *report* rates on the Paris stock market was not phenomenal, even during the December 1881 settlement when the crash was imminent. None of the *report* rates were significantly above 10% (see Figures 2 and 3, the peak at 16% for the *report* involving the *Banque de Paris et des Pays-Bas* share was reached in October 1881, meaning from the October settlement to the

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<sup>8</sup> From “La crise financière de 1882”.

<sup>9</sup> This is probably *Haute Banque* paper, because it is not part of their business to practice discounting. This allows them to remain liquid in the event of withdrawals by their depositors. There were also Treasury bills and certificates of deposit issued by the large banks of the time.

November settlement) and many were much lower. *Union Générale* shares, which were expected to plummet at any time, were the only ones to be hit by *report* rates of up to 29% (Figure 3 bis). Even in this case, the rate was not excessive because, for 35 francs, the market accepted to lend to bullish speculators whose shares were to dive from 2,900 to 500 francs in the coming days. This rate, whose differential with other rates was wider than the arbitrage range for two-week *report* securities, clearly indicates that the collapse of *Union Générale* stock at the following settlement was fully anticipated. From another angle, the low absolute level of this *report*, in view of the imminent 80% loss in the value of *Union Générale* shares, underlines the confidence that traders had in the *Chambre Syndicale des Agents de Change*'s soundness. Those who temporarily purchased *Union Générale* shares on the stock exchanges therefore considered that the only risk they were taking was that of tying up their money for a short time, i.e. the time for the joint and several guarantee to take effect.

*b) The Crash of 1882*

The difference between the level of remuneration on the Paris stock exchange and on other less sound markets can be seen clearly when analysing the geography of the 1881-82 Crash. *Union Générale* shares, which as we have seen were temporarily sold and purchased at 29% on the Paris *parquet*, were thus exchanged in OTC *report* transactions at the end-December settlement at rates of “50%, and even more for speculative stock.”<sup>11</sup> Similarly, Bouvier indicated for Lyons that in October and December 1881 the *report* rates on the *Union Générale* and the *Banque de Lyon et de la Loire* stock exceeded 100%. On the 19<sup>th</sup> of December the costs of a *report* for the end of month settlement were 160 francs and 70 francs, the spot prices were 3020 and 1765 francs on the 17<sup>th</sup> then 2845 and 1670 francs on the 21<sup>st</sup> (Bouvier, 1960, pp. 136-8). The 30 brokers on the Lyons stock exchange were declared bankrupt by the court in February (Bouvier, p. 195).

A geographic distribution of speculation is therefore apparent. At the head office of the *Crédit Lyonnais* in Paris, we note that “Mr. Pignatel is very concerned about the state of the Lyons market, the liabilities of the [Lyons] *parquet* and the risks incurred by the *reports* on your [i.e. Lyons] market. We must above all avoid running risks with our *reports* and it is indisputable that these risks are greater in Lyons than in Paris where the *parquet* is much more robust. For us to prefer to trade in Lyons, we must therefore obtain *much higher rates*

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<sup>10</sup> The other being its foreign partner, the *Caisse générale des reports et dépôts de Bruxelles*: Allix (1900), p 113. See also the praiseful depiction of it by Manchez (1901).

<sup>11</sup> ACL 129 AH 162, “La crise financière de 1882”, 1912 study. 4 April 1912, p. 2.

than in Paris.”<sup>12</sup> The risk of dealing on the Lyons *parquet* therefore called for much higher rates. Several weeks later, just before the ruinous settlement of the first fortnight of January 1882, the head office quite simply instructed the registered office in Lyons to move all its *reports* back to the official market in the capital because “we can trade more safely in Paris.”<sup>13</sup> The surge in the level of *reports* involving speculative stocks was therefore a phenomenon with a specific institutional geography. To sum up, whilst the official market in Paris handled, even in times of crisis, the *reports* within a range between 8 and 14% (Figure 3), other markets or intermediaries demanded much higher margins, particularly for speculative stocks.

We can therefore understand even better how the *caisses de reports*, even the most prudent, were in the end able to pay rates of interest similar to the “average” levels for stock market *reports*, whilst still making profits. The method involved building up *report* portfolios containing both stock market *reports* and the higher-interest-earning over-the-counter *reports*.

#### c) Reports involving one’s own securities

The archives had to be examined to find a trace of the practices of lending on or buying its own shares, practices for which Bontoux of the *Union Générale* was criticised, but which second-hand accounts more or less pass over. We thus see from the *Crédit Lyonnais* Archives that banks temporarily purchased their own securities. As with the discounting of one’s own commercial bills, the temporary purchase of one’s own securities was viewed as an almost mandatory service. It was for the best, because refusing to temporarily purchase one’s own shares was equivalent to admitting that one was not creditworthy.<sup>14</sup> This is why, in the depths of the 1881-82 crisis, the *Lyonnais* temporarily purchased its own securities. At the height of the crisis, at the very time when the *Lyonnais* was frantically discontinuing its *report* lines in Lyons, a lifeline was maintained for its own securities: “We must temporarily continue purchasing our shares [*Crédit Lyonnais, Eaux, Foncière*]. [...] No shares other than the three in which we have a direct interest should be temporarily purchased in Lyons.”<sup>15</sup> From Figure 3 it can be seen that there was a negative *report* on the *Crédit Lyonnais* share at the start of 1882, suggesting massive support to holders of these shares.

A similar phenomenon of *déport* can be seen for Paribas shares after the 1912 capital increase. Share owner could subscribe to this increase at a lower price, therefore there was an

<sup>12</sup> Our italics, 13 December 1881, ACL 98 AH 85.

<sup>13</sup> 13 January 1882, ACL, 98 AH 85.

<sup>14</sup> See 1895 questionnaire.

<sup>15</sup> ACL, 14 January 1882, 98 AH 85.

incentive to borrow a share (lending cash) to subscribe to a lower price, hence a *déport* before the share issue. One can surmise that Paribas lent on its shares after the issue because there was then still a *déport*.

These operations were forbidden in England since the Joint-Stock Bank Act of 1844 required that the deed of partnership contain provisions forbidding the company to purchase or lend upon its own shares.<sup>16</sup>

Banks were not the only agents to carry out this type of operation however. In his article of 1886 entitled “The Treasury’s intervention on the stock market over the last 100 years”, Léon Say wrote that the issuance of FRF 1 billion of 3% redeemable government securities in July 1881 led the French government to implement various arrangements to help the subscribers. It seems that this was insufficient and in October, the financial press criticised the government for not having sufficiently helped the market with more direct intervention. According to Say, “a paper printed that it was highly unusual that the Treasury did not enter into any *report* transactions”. In the final days of 1881 (just before the Crash), the government finally decided to intervene on the market to support the price of the 3% redeemable bond. Between 31 December 1881 and 4 January 1882, Say tells us, the Minister of Finance bought FRF 52.9 million of 3% redeemable bonds. On 4 January, he combined the operation with a forward sale, undertaking to deliver the *rentes* at the end-January settlement. Say explained: “a few days after this intervention, the speculators found themselves unable to support the share price of a well-known bank any longer [it was, of course, the *Union Générale*]. [...] The market for bank stocks was not the only one to suffer and the market for *rentes* was hit by the ricochet. As all the available capital had been used to settle the bad speculation, there was nothing left to replace the capital that the Treasury had lent to the market and it would have been impossible, even if one had wanted to, to take back the FRF 53 million committed” (Say p. 35-36). At the end-January settlement, the Treasury therefore considered that it was obliged to enter the *marché des reports*. To those who were supposed to buy back the *rentes* from it, but did not have the means, the Treasury lent not only the necessary 53 million, but even increased the loan by 12 million, taking its position to 65 million in January and 165 million in February (Say p. 36). These interventions brought back the report rate on the redeemable rente. The report rate for January 1882 (from the January to the February settlement) on Figure 3 ter is already pretty low after the December surge.

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<sup>16</sup> Collins (1988), p. 73.

While Say, like a good liberal, sharply criticised this intervention, there is good reason to believe that there were other cases. Thus, in 1891, during the subscription period for the new 3% perpetual *rente*, the *report* on the 3% *rente* already in circulation was much lower than those on the 3% redeemable *rente* or on the 1883 4.5% *rente*. Targeted Treasury intervention is to be suspected. Likewise, an examination of *report* prices for the Italian government bond in Paris suggests that the Italian government carried out regular *report* transactions involving its own securities, notably during the crisis of confidence in 1894.

Finally, the French and Italian Treasuries, like the *Crédit Lyonnais* or *Paribas*, almost regularly carried out these operations, for which Bontoux at the *Union Générale* was strongly criticised. All of these, without exception, used the *marché des reports* as a way to boost share prices.

#### *d) Borrowing on consols: carry over in England*

There was a system of semi-monthly (in general) or monthly (for Consols) settlement accounts on the stock exchange. It was possible to “carry over”, that is to defer payments from one account to the other; a “contango” or “rate” had then to be paid (Burn, 1909, p. 183). A few of the most important inscribed stocks have two quotations marked in the Stock Exchange Daily Official List, one for cash, and the other for the account (Burn, 1909, p. 161).

Selling stock for cash and buying it back for “time” i.e. forward was common in England, at least for Consols. This practice called “Borrowing on Consols” was used by the Bank of England to make its rate effective, as early as 1834, and as late as 1889 (King, 1936, p. 116, p. 301).

### **Section III. Banks and *Parquets*: Competition and the Efficiency of the *Marché des Reports***

#### *a) From the Gold Mine Crash to the Fleury-Ravarin Bill.*

Whilst the first section focused on the economic implications of the quality of intermediaries for the setting of *report* prices, the second section took the 1881-82 Crash to demonstrate that, with regard to “quality”, there was a division between two types of intermediary in Paris. On the one hand, there was the official market, which ensured that *reports* remained similar to each other (with the exception of certain specific circumstances discussed earlier) and, in general, did not rise too much, even in times of recession, owing to

the solidarity of the *agents de change*. On the other hand, there was the so-called *marché en banque*, where “direct” reports were carried out. These two markets were in competition with each other, as a bank with a *report* order for a stock market security had to choose between either passing through the official market or finding itself a counterparty to its client’s order. For the bank, part of the opportunity cost of passing through the official market was the *agent de change*’s brokerage fee.

According to contemporary authors and the qualitative documents consulted, it seems that from the end of the 1880s, the development of the *marché en banque*, which at this time took on a genuine structure, gradually eroded the dominance of the official market. According to Charousset for example, this period saw the development of direct reports, apparently at the expense of stock exchange reports. The large deposit banks exploited their situation as financial services “superstores” and the growth in their financial bases to directly clear a large proportion of *report* requests and offers. These were called *reports par application*: only the difference between supply and demand ended up on the official market. While it is difficult to put precise figures on these operations (our search in the *Crédit Lyonnais* Archives having left us empty handed), the feeling that comes from reading the minutes of meetings of the *Syndic des Agents de Change*, which perhaps exaggerated the danger, is that the latter become increasingly concerned from the start of the 1890s onwards about the increasing role taken on by the *marché en banque*, the soundness of which ends up comparing favourably with the official market. In 1891, the discussions of the *Chambre Syndicale des Agents de Change* describe the *coulissiers* (those behind the *marché en banque*) as being “prosperous and highly respected characters.”<sup>17</sup> Since it was, all things considered, the soundness of the Paris *parquet* that was its main attraction for *report* business, the rise of the *marché en banque* as an organised market with serious guarantees and lower costs was an obvious threat. In fact, in 1895, this market sought to give itself a real structure and published a regulation on the trading of securities aimed at increasing the transparency of its operations<sup>18</sup>.

The competition between the two markets peaked during the September 1895 crisis, known

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<sup>17</sup> Minutes of the *Chambre Syndicale des Agents de Change*, December 1891.

<sup>18</sup> Minutes of the *Chambre Syndicale des Agents de Change*, 23 October 1895: “[The *coulisse*], having organised itself into a professional association, published a regulation concerning the trading of securities that it handles on its market a few weeks ago, and it is at present taking very active steps to obtain the organisation at the Banque de France of a sort of clearing house for its settlements and exchanges of securities. In short, it is making the finishing touches to an organisation which will make it similar in every way to the corporation of the *agents de change*”.

as the “Gold Mine Crash”.<sup>19</sup> Speculation took hold of the shares of gold mining companies, particularly after the discovery of seams in South Africa. In September 1895, the shares in gold mines tumbled. Printed sources talk of a “difficult settlement” causing tensions on the *marché des reports*. A controversy began that was to last until the end of the decade concerning the responsibility of direct *reports* in the Gold Mine Crash and the lessons to be learnt from the crisis for the reform of the Paris market.

For the opponents of the *marché en banque*, the cause was clear: clearing off the official market worsened the quality of the price signals contained in stock exchange *reports*, which ultimately concealed rising speculative pressure (Manchez, p. 10). Credit institutions became aware of the dangerousness of the situation too late and then abruptly withdrew the money they had lent to speculators, causing the market to dive. This situation was the opposite to that in 1881-82, when the more visible pressure on *reports* on the official market is thought to have shown everybody that a crisis was imminent.<sup>20</sup>

The credit companies did not, of course, agree with these conclusions and defended themselves. Firstly, the monopoly of the *agents de change* was in itself detestable. Secondly, the failure to bail out speculators in 1895 had served the purpose of protecting the “liquidity” of the deposit banks at a time when they were a little short of resources, and would have happened anyway even if all their *reports* had been carried out on the stock exchange. Lastly, the advocates of the deposit banks never missed an opportunity to stress that it was the outrageous level of commissions charged by the *agents de change* that had spurred the development of the over-the-counter market. From this standpoint, the deposit banks had to be viewed as contributing to the efficiency of the system.

The reality behind these rhetorical lines of battle is more subtle. The crisis of 1895 did in fact provide the banks with an opportunity to rethink their *report* operations and to carefully examine the associated risks and returns. Germain, the Chairman of the *Lyonnais*, thus sent a questionnaire to the different branches of his bank in September 1895 seeking to assess the liquidity of their “monetary” portfolio. The questionnaire paid special attention to *reports*. Germain asked the respondents to “examine the securities used in *reports*. [...] Which securities should be prohibited? What of the gold mines and the Bank’s shares? (examine this extremely important point)”. The replies to the questionnaire were reassuring. The registered

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<sup>19</sup> Verley (1989), p. 137, points out that while *agents de change* and banks had obvious frequent business relationships for stock brokerages and for investment in reports exchange, one of the very few candidate proposed by the former *agent* and rejected by the *Chambre syndicale* was rejected because of his links to a bank.

<sup>20</sup> And yet, at the time, credit institutions had already been accused of having stirred up speculation before causing the crash by withdrawing the loans from the speculators.

office in Lyons replied that its “*reports* were totally safe” and that the “the markets for all the securities used in *reports* were large”. After this date, however, the *Lyonnais* set itself quantitative liquidity targets intended, amongst other things, to contain the risks on *reports*, which was proof that the *marché en banque* had become a little jittery.

Furthermore, it appears that at this time the *agents de change* were also involved with the *coulisse*, such that the opposition between the two markets was indeed artificial. Following the demise of the Gerson *maison de coulisse* during the Gold Mine Crash, the minutes of the meetings of the *Chambre Syndicale des Agents de Change* tell us that its creditors were both bankers conducting *reports* and *agents de change*. Similarly, on 22 November 1895, the *agent de change* Hart asked the *Chambre Syndicale* to prosecute Mr. Béhier, who had defaulted on his gold mine stocks, which were however not listed on the official market. It is natural to conclude that the intermediaries of the official market did not hesitate to use the parallel market. Furthermore, at the very time that the press, which was terribly venal, was about to enter the ring, the interdependence between banks and the stock exchange prompted bankers and *agents de change* to co-operate with each other to manage the monetary tensions. In November, a meeting took place between the *Syndic du Parquet de Paris*, the Paris market’s main bankers and the Finance Minister with a view to “reaching an agreement on the means to be used to ward off the disastrous effects of the crisis, which is currently raging on the market”. An agreement was reached and the *Syndic* was able to congratulate itself on having succeeded in “assembling the efforts needed to support the market, thus restoring confidence in it [...]. The *Cie des Agents de Change* has once again shown the general public its strength and the quality of the guarantees that it gives in critical situations.”<sup>21</sup>

In other words, a historical analysis of the episode gives the feeling of a totally different story to that recounted in the mercenary accounts of the *agents de change*. Fundamentally, the problem for the *parquet* was the rise of a formidable competitor, offering solid guarantees and lower transaction costs, ultimately threatening to bring about either a narrowing of margins, or an erosion of the market share of the *agents de change*. However, because competition could not be officially put forward as the reason for the *parquet*’s action against its competitor, the *parquet* needed to take advantage of the confusion created on the stock market by the gold mines. It was an attempt to push the French government to change the rules of the game, enabling the *agents de change* to enforce their monopoly, the pretext was far fetched since the gold mines shares were not listed.

The Fleury-Ravarin Bill adopted in 1898 reducing the official level of brokerage fees

collected by *agents de change* served as a truce. The banks were obliged to use the *parquet* for all their *reports*. Every *report* needed to be accompanied by a slip that only the *agents de change* could issue and every slip was taxable. But after a special agreement just after the adoption of the Bill, the *agents* undertook to deliver their slips to the bankers in return for a reduced brokerage fee. The two markets subsisted. Verley (1995, p. 23) using a sample of balance sheets from *agents de change* shows that 40 % of funds invested in *reports* on the *parquet* between 1900 and 1913 came from banks.

*b) The reduced dispersion of report rates*

The level of competitive pressure may be measured by studying the dispersion of *report* rates on the Paris *parquet*. As we said earlier, the dispersion of *report* rates on a market with a joint and several guarantee was, putting the special cases of intervention to support a share price to one side, ultimately linked to transaction costs, i.e. the brokerage fees paid to the intermediaries of the market. But nothing prevented an *agent de change* from granting discounts on his official brokerage fees. Charoussat mentioned that at the start of the 1890s some *report* business was done at half the brokerage fee.<sup>22</sup> As the prices of services on the *marché en banque* were set freely, there are reasons to believe that the increased competition from this market would go hand-in-hand with a decrease in brokerage fees on the stock exchange. However, in return, the fall in stock exchange brokerage fees would cause a lower dispersion of *report* rates on the Paris market. Therefore, in the final analysis, studying the integration of *report* rates on the Paris stock exchange boils down to measuring the competitive pressure of the *marché en banque*.

Figures 4 and 4 bis show the differential between the maximum and minimum *report* rates for a sample of four securities: the French 3% *rente*, the Spanish government bond, the *Crédit Lyonnais* share and the *Banque de Paris et des Pays-Bas* share. This choice, which is necessarily arbitrary, is based on examples given in the literature at the time. The *report* rates themselves are given in Figure 3. To take account of the possibility, for a given issuer, of subsidising the use of its security in a *report*, a better measure of the differential between high and low *reports* is the difference between the maximum *report* rate and rate before last (when the rates are arranged in decreasing order) It is apparent that the spread thus calculated narrows in 1894. After this date, the spread rarely goes beyond 2% and, when this value is reached, the wide spread does not last, i.e. there is a correction in the following month. In

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<sup>21</sup> Minutes of the CSAC, 21 November 1895, p. 335.

<sup>22</sup> Also Allix, p. 191 and the *Economiste français* of 2 July 1898.

conclusion, it therefore appears that the information drawn from an analysis of first-hand sources is confirmed by a statistical study. Competition did indeed enhance the integration, and therefore the efficiency, of the official market.

Did this better integration of the *marché des reports* go hand-in-hand with an increase in the amounts invested in *reports*? The data contained in the balance sheets of the four main banks found in the *Crédit Lyonnais Archives* go some way to answering this question.<sup>23</sup> The proportion of assets devoted to *reports* and security-backed loans (*reports*/totals in Figure 1), having tracked the upward and then downward movements respectively related to the bond issuance to cover the war indemnity and the stock market speculation of 1880-1881, rose steadily from the beginning of the 1890s through to the turn of the century. In terms of other balance sheet items, *reports* and loans accounted for 40% of the commercial portfolio in 1892, 53% in 1903 and 32% in 1911. It is tempting to attribute the rise in the share of the commercial portfolio after 1905 to the pre-war boom, in that the relative decline of the share of *reports* could be explained by the more abundant supply of commercial bills to be discounted. This conjecture is obviously way beyond the scope of this article.

It is therefore clear that the amount invested in *reports* is considerable for the large banks specialising in discounting. As this measure of the scale of *reports* omits the investments of Zola's characters and the railway companies, which "invested a large part of their floating capital, which they kept in reserve to pay their coupon, in *reports*" (Allix, p. 109-110), while the leading banks "monopolised discounting", one can be led to believe that the amount invested in *reports* was greater than the amount of "bank acceptances." The open market discount rate (*taux d'escompte hors banque* meaning outside the Central Bank) was paid on these bank acceptances which represented a small fraction of the commercial portfolios of the four main banks. The significant amount invested in *reports* explains why it is so easy to find the Paris open market rate in the London *Economist* and it is so difficult to find indications of this same rate in the French newspapers which gave plenty of indications of the *report* rate<sup>24</sup>. This was because the open-market rate was the important one for international finance, whereas the reader of the *Economiste français* was more interested in the trend in the *report* rate on the Paris stock exchange. The following part considers the relationship between these two rates.

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<sup>23</sup> ACL 129 AH 25-28.

<sup>24</sup> See Dessirier (1929) on the open-market rate.

c) *The marché des reports and the money market*

The argument developed by the opponents of the *marché en banque* whereby this market weakened the information content of the stock exchange price of *reports* brings us to the relationship between the “trade bill” segment and the “speculative credit” segment of the short-term market. The idea about the increase in *reports* being a “barometer” of speculation, therefore accompanying the movements of the stock market, recalls Warburg’s description of the American market. As we have said, Warburg described the call money market as being correlated to stock market fluctuations and insisted upon the debilitating implications of such a situation. Paradoxically, authors like Manchez lamented the disappearance of the link between the stock exchange *report* rate and financial speculation that is purported to have prevailed during the “golden age” of the 1881-82 Crash, and spoke of the worsening quality of the price signals that *reports* were, in their opinion, supposed to convey for the stock market. This prompts an investigation of the statistical links between the money market rate, the *report* rate and stock market fluctuations.

To conduct this type of investigation, an indicator of the “average” price for a *report* on the stock exchange is needed. The financial press seem to have had a fairly precise idea of this notion: a number of papers gave an informal average *report* rate in their money market section, reflecting a sort of “market sentiment” concerning the “normal” rate during a given settlement. This “quotation”, when it was mentioned, was nevertheless qualitative, random and above all discontinuous. It seems wise to use the rate published by the SFRD to represent the average market rate.<sup>25</sup> We have already seen that this rate is an acceptable indicator of the market “average”. This is perfectly understandable insofar as private agents with liquidity were obliged to use *agents de change*, because they did not have the means to enter into direct contact with speculators. The *reports* on the stock exchange were the direct competitor of companies like the SFRD, which therefore had to adjust their interest rates to the level that could be obtained by going to see an *agent de change*. Furthermore, the annual averages of these rates are close to the returns on investments in *reports* by the *Crédit Lyonnais* in Paris (Figure 5).

Equipped with this indicator, it is interesting to study the relationship between the *report* rate and money market rate. Figure 6 shows these two rates. As can be seen, the open-market rate is below the SFRD rate, which is not surprising inasmuch as the funds invested at the

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<sup>25</sup> We took these rates from SFRD advertisements published in the *Economiste français*. The advertisement claims that these are net returns. We have chosen to believe it: the deduction of brokerage fees would give a net remuneration far too small relative to the returns on the *reports* done by the *Crédit Lyonnais*.

SFRD are tied up for a month, whereas the top-grade bills could always be rediscounted at the Banque de France.<sup>26</sup>

Another interesting exercise is to estimate how much influence stock market movements have on the premium on the *report* rate relative to the open-market rate. In the French case, this would thus be a formal test of both Manchez's argument and that of Warburg concerning the European system. It is a question of knowing whether it was the discount market that played a stabilising role. If the premium on the *reports* is a pure liquidity premium, and not a measure of the risk of default by the *reportés*, itself linked to stock market movements, one would expect that the variations in the stock market index would not add any information relative to the setting of the *report* rate once the influence of the open-market rate is taken into account.<sup>27</sup>

Taking  $IR_t$  to be the rate paid by the SFRD representative of the *report* rate,  $IM_t$  to be the open-market rate and  $B_t$  to be the stock market index, the estimated equation is:

$$IR_t = a + bIM_t + cIM_{t-1} + d\left(\frac{B_t}{B_{t-12}} - 1\right) + u_t \quad u_t = \rho u_{t-1} + \varepsilon_t$$

**Table I. Correlation between the open-market rate, the *report* rate and stock market variations**

Period	1881:8 to 1894:12	1883:1 to 1894:12	1895:1 to 1913:12	1881:8 to 1894:12	1883:1 to 1894:12	1895:1 to 1913:12
	Non seasonally adjusted data			Seasonally adjusted data		
Constant	0.94	1.21	1.39	0.86	1.09	1.60
Open-market rate	0.85 (10.92)	0.76 (9.72)	0.58 (11.59)	0.81 (9.73)	0.72 (8.38)	0.43 (7.86)
Lag	0.03 (0.40)	-0.01 (0.25)	0.06 (1.18)	0.12 (1.44)	0.07 (0.80)	0.13 (2.36)
Stock market price (12-month change)	4.99 (3.42)	3.32 (1.92)	1.15 (1.15)	4.97 (3.66)	3.46 (2.10)	1.31 (1.30)
AR(1)	0.70	0.67	0.61	0.74	0.71	0.69
Rsq	0.85	0.72	0.77	0.86	0.72	0.78
SER	0.41	0.37	0.29	0.37	0.34	0.25
Standard deviation of SFRD	1.03	0.68	0.59	0.98	0.63	0.53
Standard deviation of open-market rate	0.67	0.50	0.71	0.62	0.45	0.66

The results show that, whilst before 1895 a degree of correlation is seen between stock market movements and *report* rates, this disappeared afterwards. Furthermore, the influence

<sup>26</sup> This spread was on average 0.68 on the 1876-1894 sample, and 0.51 on the 1895-1913 sample.

<sup>27</sup>  $IM$  is taken from *The Economist*, "Open Market Paris", and  $B$  is taken from Arbulu 1998, Appendix XI, pp. 188-195.

of share price movements on the *report* rate does not originate from the 1881-1882 Crash. When the estimation period is limited to the years 1883-1894, the influence of the increase in share prices remains significant: a 10% twelve-month increase in the stock exchange index, as was seen in 1890, resulted in a rise of more than 0.3% in the *report* rate as measured by the rate paid by the SFRD.<sup>28</sup> Lastly, the decrease in the standard deviation of the regression between the first and the second period shows that the link between the two rates strengthens over time. This happens because the variability of the SFRD rate declines.

To conclude, it may be said that both Manchez and Warburg were largely right about the facts. Manchez was correct in saying that the *report* rate was in the past an indicator of stock market tensions containing information not to be found in the open-market rate, and also that this property later disappeared. Warburg was also right in claiming in 1908 that in Europe the market for bills that was the benchmark. It indeed appeared that this market summarised all the “monetary” information contained in the stock exchange *report* rate, the formation of which was in no way influenced by the capital market. This can be understood very easily, because fundamentally the greater soundness of the Paris *parquet*, demonstrated by the 1881-82 crisis, meant that stock exchange *reports* did not imply any additional risk for investors compared with a money market investment. As a result, financial agents with a large amount of cash to invest, who neither had the technical means to invest in trade bills, nor to negotiate collateral loans directly with speculators, could invest their cash on the stock exchange *report* market. In Zola’s words: “that was not speculation, it was merely an investment”.

## Conclusion

This paper ends up with the question of the relationship between the money market and speculative credit in France in the last part of the 19<sup>th</sup> century. It is now possible to partially answer the questions asked in the introduction. In particular, it seems clear that, despite the size of the “pool” of speculative credit, the *marché des reports* developed gradually as a market that was complementary to the money market. This happened via a multitude of mechanisms, the central trend of which was the gradual linking-up between the interest rate for investments in trade bills and that for *reports* in the strict sense. This coupling-up was the

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<sup>28</sup> It is possible to imagine that stock market movements influence both the open-market rate and the SFRD rate, once market integration is complete, as in the United States where the call money rate rises with the stock market. On the contrary, there is evidence of a negative correlation between the open market rate and the

result of the establishment of a robust official market on the Paris stock exchange and the subsequent rise in competition between the banks and this market, which ended up improving the efficiency of the *marché des reports* in the 1890s.

These developments took place in two stages. In the first stage, there was a consolidation of the Paris *parquet*, confirmed by the geographical pattern of the speculation during the 1881-1882 crash. In the second stage, the development of an over the counter market—the *marché des reports en banque*—resulted in the weakening of the monopoly or virtual monopoly enjoyed by the *agents de change*, and put them under competitive pressure. It was this mechanism that brought brokerage costs down in practice, several years before the Fleury-Ravarin Bill. This Bill, which was of such interest to contemporary writers, did little more than institutionalise a fact. The natural extension of this situation was of course the centralised clearing of stock exchange *reports* or, in other words, the quotation by the *agents de change* of a single rate for all the securities used in *reports*. This did not happen until after the First World War however.

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increase in the stock market index (both before and after 1895), which probably reveals a negative relationship between long-term rates (used to discount future dividends) and stock market prices.

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129 AH 29, Reports des banques françaises.

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Convert, manuel...

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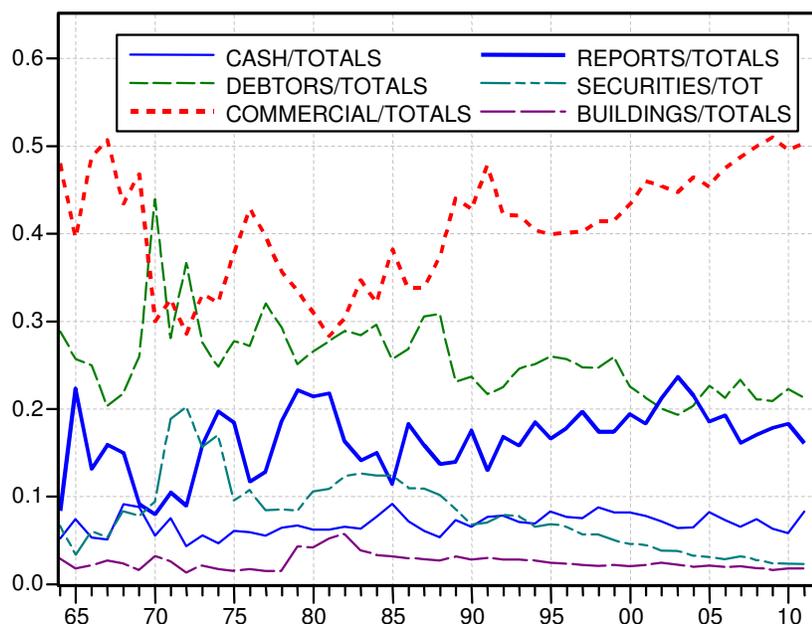
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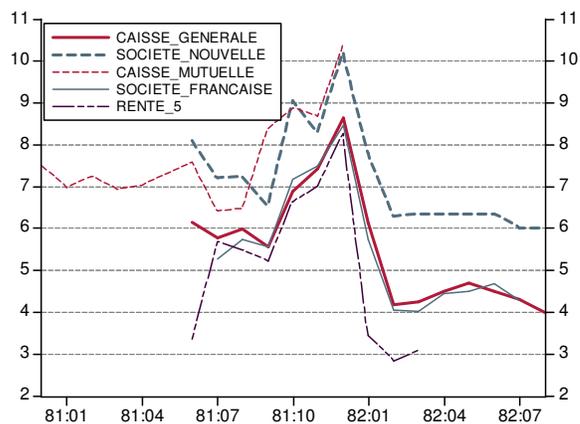
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Figure 1: Balance sheet structure of the four main banks



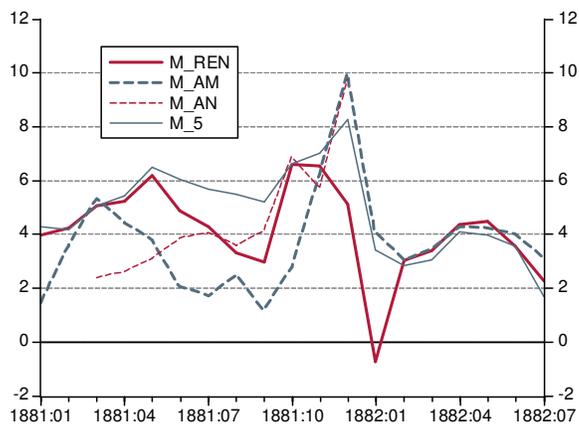
Source: Crédit Lyonnais Archives

Figure 2: Rates of the *caisses de reports* during the 1881-1882 Crash (remuneration of funds invested in monthly settlement)



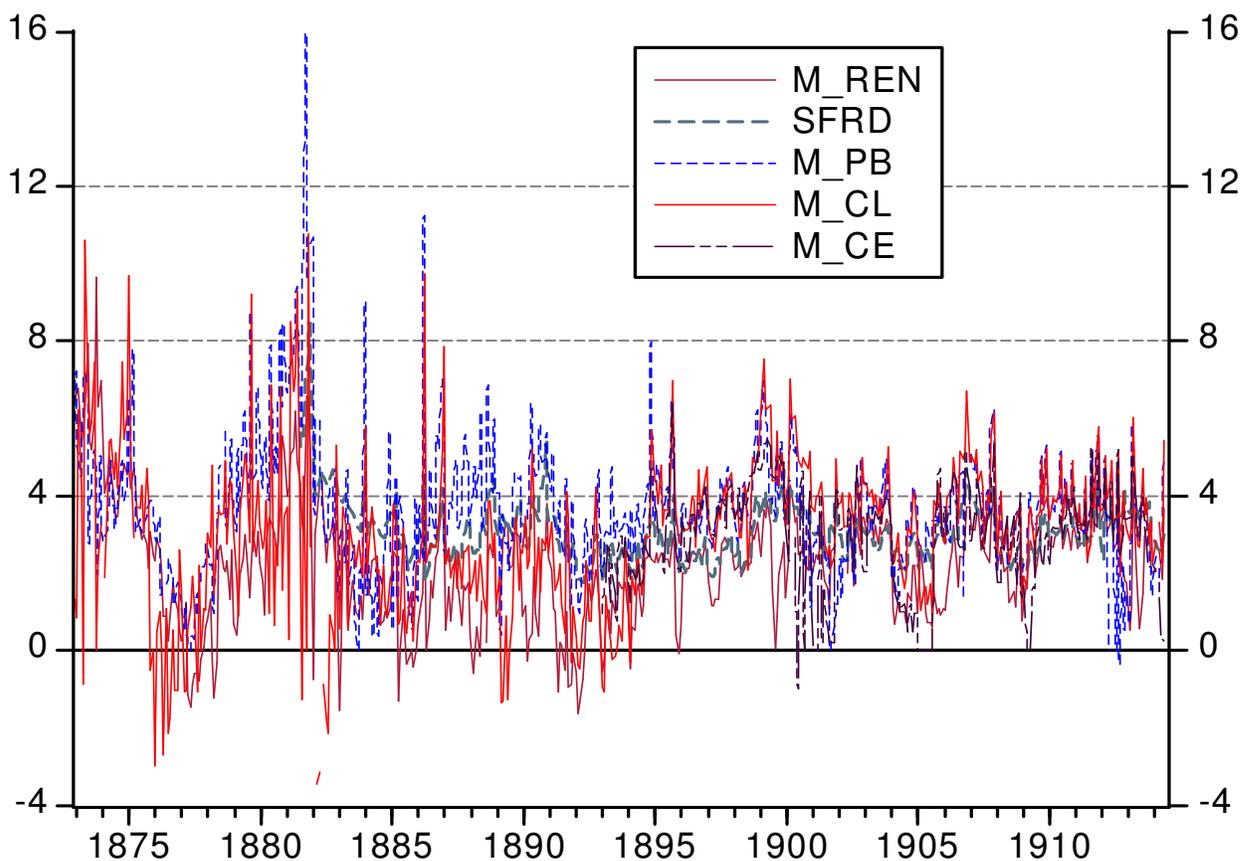
Sources: Rates of the *caisses de reports*, *Economiste français*. Reports on the 5% rente, ACL 129 AH 162.

Figure 2 bis: Report rates on rentes



Notes: M\_REN report rate on the 3% rente, M\_AM on the old redeemable, M\_AN on the new redeemable, M\_5 on the 5% rente. Authors' computations.

Figure 3: Report rates



Sources: SFRD rate from advertisements in *l'Économiste français*, report rate computed from quotations in *Cours authentiques de la bourse de Paris*

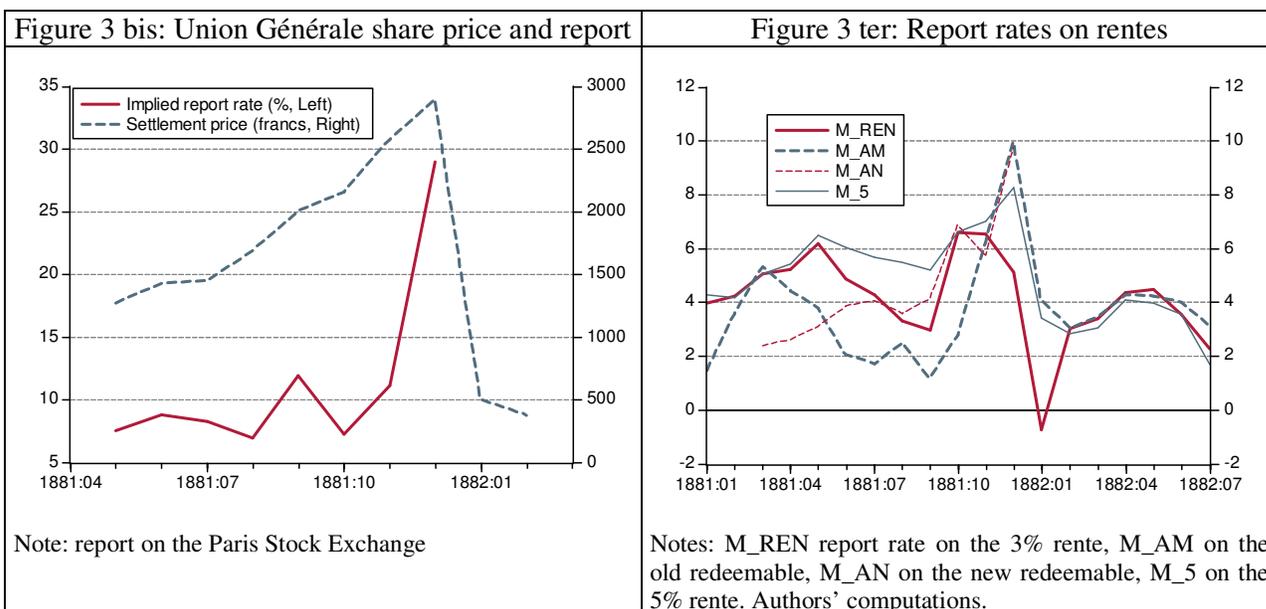


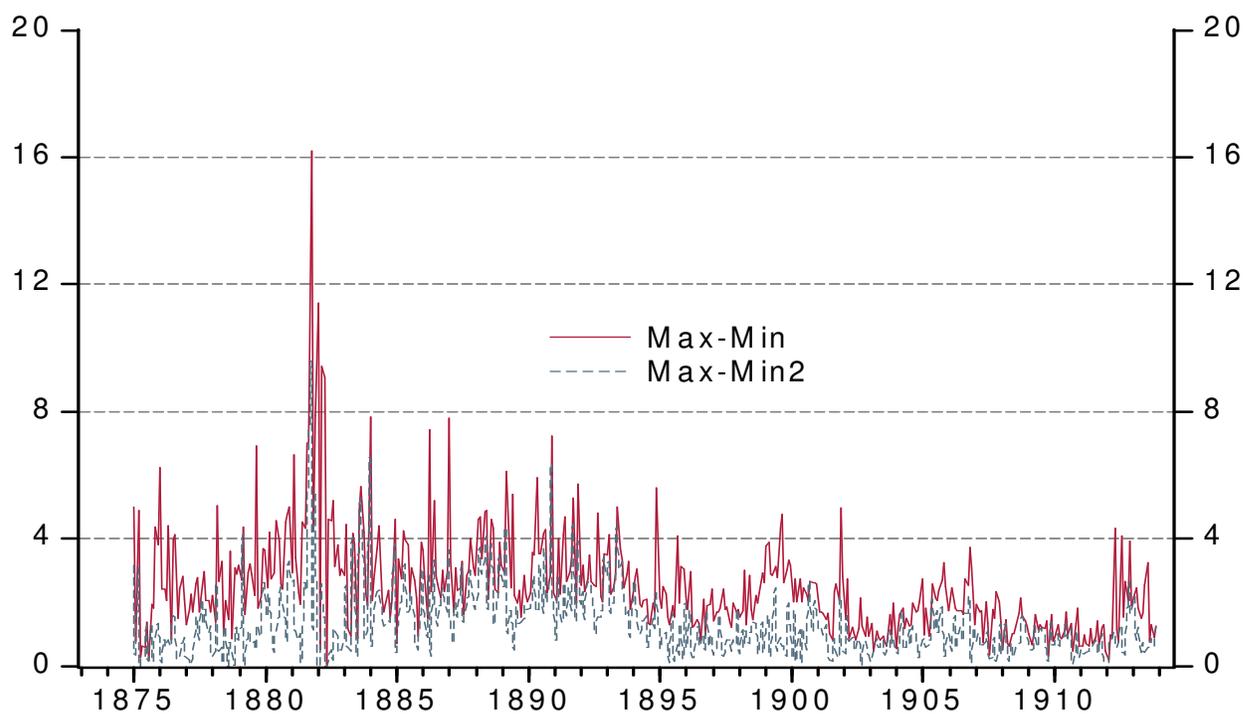
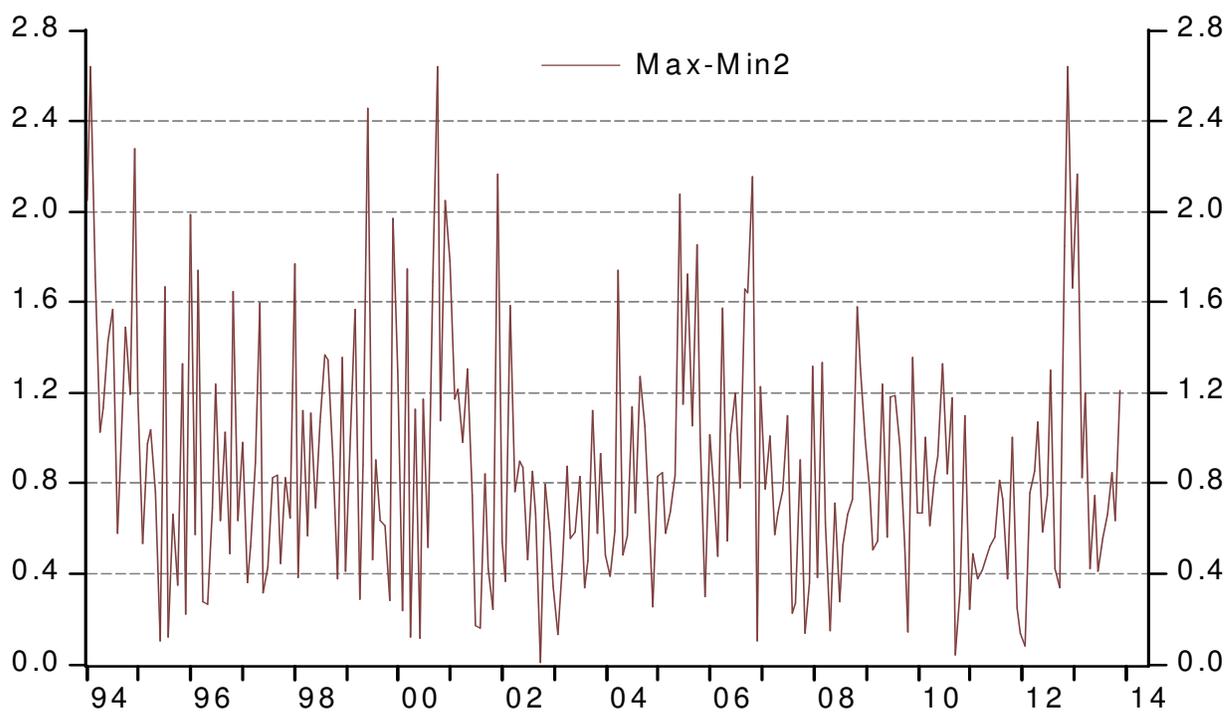
Figure 4: Differentials between *report rates*Figure 4bis : Differentials between *report rates*

Figure 5: SFRD rate and Returns on Crédit Lyonnais reports

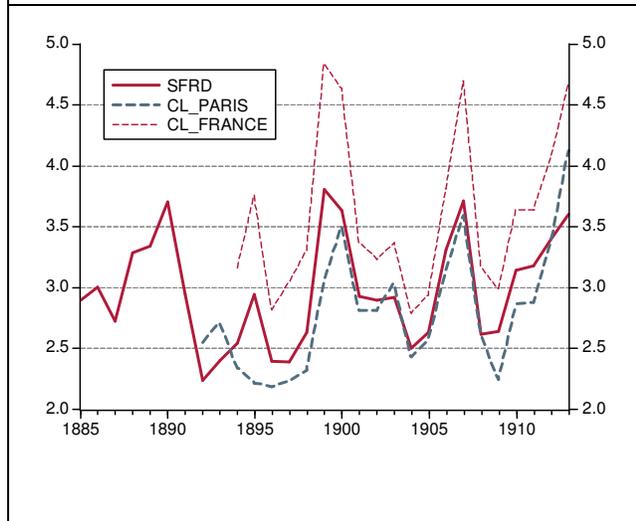


Figure 6: Report rate, open-market rate and official discount rate

