

# Stock exchange industry regulation

## The Paris Bourse, 1893 - 1898 <sup>1</sup>

Pierre-Cyrille Hautcoeur, EHESS-PSE

Amir Rezaee, ISG-LEO Université d'Orléans

Angelo Riva, EBS-IDHE Paris Ouest<sup>2</sup>

### Abstract

The debate on the virtues of fragmentation vs. consolidation of securities markets has recently been reopened by the Mifid directive of the European Union and its ongoing review. Empirical assessments of these two options are rare because few substantial changes occur at this “meta-regulatory” level. The history of the Paris exchanges provides an interesting empirical test, since two changes in opposite directions occurred in the late 19<sup>th</sup> century, when Paris was the second financial centre in the world. In 1893, the competition between the two Parisian markets was sharpened by a law diminishing the advantages of the regulated exchange; in 1898, another law brought them back and provided tools for their enforcement which lacked before 1893. We analyse the impact of these two changes on the competition between the exchanges in terms of securities listed, traded volumes and spreads. We conclude competition among exchanges is a delicate matter and efficiency is not always where one would think.

JEL codes: G14 G18 G24 N13 N23 N43

Keywords: Paris stock exchange, market microstructures, reforms, regulation, monopoly, spreads.

---

<sup>1</sup> This paper results from a research project partly financed by Europlace and by the Paris City council. A first draft was presented at the 7<sup>th</sup> EIF Forum “Financial Crisis, Market Liquidity and Corporate Governance”, Paris, December 16<sup>th</sup>, 2009, DIME Workshop “Innovation and Design of Financial Systems” March 3-4 2010 Paris, FRESH Meeting Belfast 23 April 2010 and French Finance Association (AFFI) International Conference May 10-12, 2010 Saint-Malo. The authors thank Roland Bellegarde, Thierry Foucault, Paul Lagneau-Ymonet, Eugene White, Giovanni Dosi, David Le Bris and Sophie Moinas for their constructive comments.

<sup>2</sup> E-mails : [hautcoeur@pse.ens.fr](mailto:hautcoeur@pse.ens.fr), [amir.rezaee@isg.fr](mailto:amir.rezaee@isg.fr), [angeloriva@ebs-paris.com](mailto:angeloriva@ebs-paris.com)

## **1. Introduction**

The debate on the virtues of fragmentation vs consolidation of securities markets has recently been reopened by the Mifid directive of the European Union and its ongoing review. In some European countries, like Italy and France, regulated markets had until then been protected against internal competition by rules imposing the concentration of orders on listed securities, even if they competed with other international markets. The implementation of Mifid on November 1st, 2007 allowed the entry of new competitors in the stock exchange industry: MTF (multilateral trading facilities), systematic internalizers, crossing networks, dark pools. According to the idea dominating Mifid, the contestability of the market would allow both a substantial decrease of transaction costs and an important increase in transparency, when also stimulating the integration of the European securities market.

Nevertheless, the effects of Mifid, as observed three years later, are not in line with the European Commission's expectations. The complex nature of transaction costs on stock exchanges – indirect costs related to multidimensional liquidity (tightness, deepness, immediacy) and information in particular – make them difficult to evaluate, and suggest the association of deregulation and the decrease of costs may be less obvious than previously considered.

The literature on the microstructures of securities markets often emphasized the benefits of a consolidated and transparent market for both investors and issuers, considering such a consolidation as the natural consequence of the competition between markets. The benefits of consolidation result from positive externalities of liquidity and the reduction in information asymmetries resulting from the consolidation of the price discovery process.

Following the bonding hypothesis, investors and issuers should concentrate on a unique highly transparent market with strict listing and disclosure requirements. For issuers, this solution allows sending a signal on the quality of their governance. It protects uninformed investors against those better informed and screaming the market. Even informed investors would prefer concentrating on a market with the high liquidity resulting from the presence of uninformed investors (Coffee 2002).

In the opposite direction, a more recent literature emphasizes the obstacles to such a consolidation, and the advantages of a fragmented market if investors and issuers are heterogeneous enough in terms of risk aversion, information, costs structure and patience. For

example, informed investors (and the CEOs of some firms) may prefer an opaque market where they can take advantage of their superior information, when uninformed investors may opt for a transparent and less immediate market; a variety of markets may emerge, where different categories of actors could find the characteristics they prefer (e.g. Seppi 1997). In terms of the bonding hypothesis, fragmentation may also result from the capacity constraints that a highly transparent market would face. Such a market must restrict access to a select group of brokers in order to limit counterparty risk, something which reduces the number of available counterparties and limits the market's capacity to treat a high number of transactions. Such a market must select firms on strict criteria, something which, especially during new technology booms, may restrict the access of emerging firms which will search for another market for their shares (Coffee 2002).

Hence, if there is a consensus on the inefficiencies that would result from the juxtaposition of various identical markets, serious arguments suggest that the co-existence of different markets may help the development of the securities market as a whole. In equilibrium, the transaction costs in such markets would differ profoundly in their structure. If one considers transaction costs as including not only commissions but also liquidity and uncertainty, one would expect commissions to be lower, liquidity to be higher and uncertainty to be larger in less regulated fragmented markets. Among the various dimensions of liquidity, immediacy would be the dominant one in such markets thanks to the presence of large informed traders aiming at taking profit from their information in a relatively opaque market (Pagano and Roell 1996); on the other hand, relatively high spreads could result from inventory costs and, mainly, from the risks intermediaries face when trading with highly informed agents (Stoll 1989, Hasbrouck 1988, Madhavan and Smith 1991). Hence, liquidity traders prefer centralized markets while market makers prefer fragmented markets (Yin, 2005). In order to manage uncertainty, a regulated market could reduce risks thanks to both its organizational structure (i.e. efficient settlement and delivery) and the guarantees it offers (i.e. central counterpart) (Duffy and Zhu 2009, Bernanke 1990 and Kroszner (1999, 2006).

Recent research on the history of stock exchanges confirmed that some financial centres could develop successfully not only when, as London, they included a single, open, stock exchange, but also when, as New-York and Paris, they included various exchanges (White, 2008; Hautcoeur and Riva, 2009). From the early 19<sup>th</sup> c. onwards, the structure of the

Parisian stock market was bipolar, including two very different markets, the Parquet and the Coulisse. The Parquet was the regulated market organized by the *Compagnie des agents de change* (CAC), the semi-private body of 60 official brokers (*agents de change*) with a legal monopoly on transactions. These brokers were recruited on strict social and wealth conditions which provided high guarantees to the investors<sup>3</sup>. The regulated market was highly transparent, imposed strict listing conditions, and provided investors with a collective guarantee which made losses unlikely in the case of the default of a member. It controlled strictly its members<sup>4</sup>. It also provided efficient payment and settlement mechanisms in cooperation with the Bank of France.

By contrast, the Coulisse was a loosely organized market (with no juridical structure until 1884), illegal *de jure* but *de facto* tolerated and even protected by the government. Its members (the *coulissiers*) acted both as brokers and jobbers. They were usually less wealthy than the official brokers. Their number was not fixed, and the admission procedure was loose. The Coulisse was opaque: orders were not centralised, transaction prices were registered unsystematically, and published by newspapers without any guarantee for investors, in variable lists. Competition among *coulissiers* was not regulated and transactions were only guaranteed by their capital and individual wealth that on average was lower than the agents de change' one<sup>5</sup>.

The differences between the two markets led to a specialization, competition developing only at the margin. The coulisse mostly dealt in forward and option operations, when the Parquet had a *de facto* quasi-monopoly on spot transactions. The Coulisse listed many (mostly foreign) issuers that did not satisfy the listing requirements of the Parquet (including some fiscal requirements). Competition between the two markets concerned mostly the most liquid, hence cross-listed, foreign and French government bonds, those on which

---

3 These guarantees were based on the Parquet's Common Fund, the capital of the stockbrokers' security houses as well as on their (and often their families') personal wealth. See Hautcoeur-Riva 2009, for an estimate.

4 On the counterparty risk management by the Parquet, see Riva-White 2010.

5 We have no data on the personal wealth of the *coulissiers*, but historical research shows that they belong to a social class lower than the agents de change (Verley 2007 and 2010, forthcoming). Concerning the firms' capital, we have detailed data on the *agents de changes*' one, but not on the *coulissiers*' "houses". The *patente* (a tax on the value of commercial real estates owned by merchants) is the best available proxy for comparing the two groups: on average, an *agent de change* paid five times the amount paid by a *coulissier* in 1893 (Administration des contributions directes. Département de la Seine. Rapport du Directeur, Paris le 3/1/1893. Tab. N° 1 Contribution des patentes - Agents de change, 4/1/1893 et Tab. N° 2 Contribution des patentes - Tenant caisse ou comptoir d'opérations sur valeurs, 4/1/1893. box B 33.236 CAEF). Nevertheless, it is worth noting that the total amount paid by the *coulissiers* was equal to the one paid by the *agents de change*.

most of the speculative activity was concentrated (Vidal 1904)<sup>6</sup>; from 1892 on, it also involved a number of mid-cap French firms listed on the two exchanges. Individual investors mostly sent their orders to the Parquet, when professional investors split their orders between the two markets.

This bipolar architecture remained quite steady over the century, suffering only one severe threat in the late 1850s, when the Parquet attempted (and failed) taking over the Coullisse. In the following decades, the Coullisse developed steadily. In the 1890s, the bipolar architecture was discussed and tested, the Paris market becoming the place for the two experiments in the organisation of the stock exchanges industry that are the subject of this paper. In 1893, the creation of a new tax gave to the Coullisse a legal status, *de facto* dismantling the (already mostly formal) monopoly of the Parquet. It created then an open field for new entrants in the exchange business. In 1898, a new law took the opposite route: it re-established and for the first time enforced the monopoly of official brokers on all transactions in the securities they listed.

We first present an historical account of the suppression and reestablishment of the Parquet's monopoly, presenting the different arguments that were used and the main reasons one can propose in order to understand these two important changes. We then try to assess their impact on the market by looking first at quantities traded and at the two markets' quality as measured by the spreads on listed securities. Finally we test the extent to which Parquet and Coullisse were cointegrated and which one was dominant market (more efficient in term of information circulation).

## 2. History

### *The 1893 reform*

In 1892, a tax on stock market transactions was proposed by the socialist member of the *Chambre des Députés* (later *Chambre*, the lower house of the French Parliament) of Deputies (members of the *Chambre*) Antoine Jourde not only as a sanction for the various financial crises and scandals of the previous decade (among which the Panama canal

---

6 During the XIX century, speculative activity concentrated on large international issues of public bonds cross-listed on the main European exchanges, not on stocks. Vidal (1904) explains that speculators dealt on this kind of securities because (i) the issues were very large; (ii) the probability of default was limited relatively to other securities; (iii) coupons insured stable and foreseeable revenues; (iv) prices' variations were not correlated to either local or seasonal factors.

corruption scandal led to the resignation of the Minister of Finance on December 13<sup>th</sup> 1892, just one day after Jourde's proposal was approved by the *Chambre*), but also as a statistical instrument allowing the government to observe the operations on the stock market (see his speech at the Parliament on Dec. 13<sup>th</sup>, 1895 and the introduction to the bill<sup>7</sup>).

The *Coulisse* and the *Parquet* brokers fought against the tax that would in their vision harm Paris as international financial centre. Nevertheless, each group rapidly turned to consider the tax as an opportunity for obtaining a favourable settlement in the conflict that opposed them: "they differed only on the application process, which, for both of them, was crucial"<sup>8</sup>. The tax created a dilemma for the government because of the structure of the Paris stock market: if it was to be imposed only to the *Parquet*, it would kill it, since all operations would migrate to the tax exempted *Coulisse*; but if imposed to both on equal bases, it would legalize the *Coulisse*, and badly damage the *Parquet* which would suffer from its heavier regulatory burden without the advantage of a superior legal position. Nevertheless, the interactions among professional groups and regulators helped the latter to solve the dilemma.

The Minister of Finance Pierre Tirard presented a bill in January which reinforced the official brokers' monopoly, since it made their signature necessary for the payment of the tax on listed securities. In fact, the *Parquet* had started lobbying the government very soon and intensively. The balance sheets of the CAC give a measure of the lobbying effort of the official stockbrokers<sup>9</sup> : in 1892-1893, the official stockbrokers spent 1,8 million francs (45% of its overall expenses) in lobbying, mainly the press<sup>10</sup>. Among the expenses, the *Parquet* subscribed 100 shares of a pro-business and protectionist newspaper promoted by Jules Mélines<sup>11</sup> (at the time member of the *Chambre* and influential sponsor of the Association de

---

7 « La lumière pénétrera du même coup dans un monde spécial, extérieur à notre marché officiel, et où les intérêts et l'élément français ne figurent qu'en minorité » (Exposé des motifs, Impôt sur les opérations de bourse, January, 1893, box B 64.877, CAEF).

8 Y. Guyot, « L'impôt sur les opérations de Bourse », *Le Siècle*, Feb. 7<sup>th</sup> 1893.

9 Cf. CAC balance sheets, *sub anno*. From 1882 on, the lobbying efforts of the CAC grew (mainly for the legalization of the forward operations, then for the 1890 rules) and found a place on a separate line of the (private) balance of the CAC under the headings "advertising expenses" and then "various expenses n°2". These headings disappeared after the stabilisation of the Paris financial market architecture in 1903.

10 Among the newspapers that the *Compagnie* considered « friendly » - and maybe supported financially - were *Le XIX Siècle*, *La Nation*, *Le Journal des Débats*, *Le Messager de Paris*, *Le Soir*, *Le National*, *Le Gaulois*, *L'Autorité*, *le Petit Journal*, *Le Voltaire*, *La Paix*, *La Libre Parole*, *La Lanterne* and *La République Française* (see Box SG 331, file A.212.03, CAC archives). Among the articles promoted by the CAC, *La Réforme Economique* published the list of the *coulissiers* with the indication of their nationality and their religion (*La Réforme Economique*, supplément, February 23d, 1893).

11 Mélines was a pivotal conservative politician of the Third République. He was President of the *Chambre*, several times minister and candidate for the Presidency of the Republic. He led the longest-lasting government of the Third Republic, which denied the existence of the "Dreyfus Affair", opposed strongly the

l'Industrie française, the leading French employers' union).

Beside these expenses, the official stockbrokers mobilized their social networks. Maurice Berteaux, an important official broker and member of the Parquet's Committee (the *Chambre syndicale*) with influential political connections (he became a *radical-socialiste* member of the *Chambre* in 1893 and Minister some years later<sup>12</sup>), met Jean Casimir-Perier<sup>13</sup> and the Minister of Finance and was happy of their good will towards the Parquet<sup>14</sup>. Nevertheless, the *Chambre syndicale* prepared its arguments for the debate with the paradoxical support of two pro-market advisors Edmond Théry and Paul Delombre who remained the main advisors of the Parquet during the entire episode<sup>15</sup>.

The argument was first a purely legal one: as Crépon, a judge at the Cour de cassation (the highest judiciary level in France), wrote, it was impossible to tax the operations of the *coulissiers* since they were illegal (both the operations and the *coulissiers*). Nevertheless, even judges knew the *Coulisse* had a major role in securities transactions, and Crépon asked for a reform that would clearly define the Parquet as the centre of the market, but also recognize some role for the *Coulisse*<sup>16</sup>. Thanks to its participation in the bail out of the *Comptoir d'escompte* and its cohesion and resilience during the 1882 crash, the Parquet apparently had convinced the government that it provided a necessary protection to individual investors, frequently unfavourably treated by the *Coulisse* and victims of the 1880s scandals. They also argued that the transparency of the Parquet was beneficial to listed firms (its price discovery process would insure a fair valorisation of their stocks), something also emphasized by the Association de l'Industrie française and the Parquet<sup>17</sup>. The 1890-1892 regulations and the

---

reopening of the case and prosecuted Zola after his "J'accuse".

12 Berteaux entered the *Chambre* thanks to the renewal following the scandal of Panama which obliged many of politicians to retire. He belonged the radical-socialist party.

13 When Berteaux met the long lasting politician Casimir-Perier, the latter chaired the budget commission of the *Chambre*, but some days later (on January 10), he became President of the *Chambre*. In 1894 he became President of the Republic.

14 "Dispositions bienveillantes" (Minutes of the *Chambre syndicale* January 6, 1893).

15 The first one was the director of the *Economist Européen*, the main French economic newspaper. Delombre, a member of Parliament since September 1893 (Union démocratique and then républicain progressiste), was a brilliant lawyer in charge of the economic column of the important newspaper *Le Temps*. He would become Minister of Trade and Industry from 1/11/1898 to 18/2/1899. He was a member of the liberal Société d'Economie Politique de Paris. See the Minutes of the *Chambre syndicale* January 20<sup>th</sup>, 1893.

16 La *Coulisse* « est nécessaire pour le développement (...) des transactions (...) auxquelles font obstacle les heures de bourse étroitement limitées et les responsabilités rigoureusement définies des agents de change » (Gazette des Tribunaux, March 24<sup>th</sup>, 1893).

17 When audited by the *Chambre* commission, the chairman of the Association de l'Industrie Française declared favouring the Tirard bill because the price discovery mechanism on the Parquet allowed a better approximation of the « true value » of stocks, and because the *Coulisse* didn't provide sufficient guarantees in terms of « regularity » and « nationality » (Impôt sur les opérations de bourse, Dépôts devant la

restrictive law on corporations passed on August 2<sup>nd</sup>, 1893 had revealed the Government desire for better controlling the financial market after the banks' scandals of 1889 and 1890 and the Panama affair. The official brokers argued that imposing a subsidiary position to the *Coulisse* would not affect the market as badly as the *coulissiers* pretended: first, the *Parquet* would provide, thanks to increased transactions, more efficient services and better immediacy; second, the *Coulisse* would not disappear, but only adapt to its subsidiary status and stop the illicit (because on *Parquet's* securities) part of its operations<sup>18</sup>. It would continue providing brokerage services but not market making on *Parquet's* securities: the *coulissiers* would switch from jobbers to speculators placing orders on the *Parquet's* book. Actually, the *Parquet* officially offered the *coulissiers* high rebates on their commissions for the business they would bring to the official brokers<sup>19</sup>. The presentation of the bill went as far as promising a reorganization of the whole market, which would give some recognition to the *Coulisse*.

The *coulissiers* refused, maybe because – as the *Parquet* argued – most of their business came from acting as counterparties on listed securities. Losing their immediacy because of the Tirard bill (since the agents de change would have to execute the transactions), they would lose most of their counterparty business<sup>20</sup>. They started an intense lobbying campaign, advised by Claude Clausel de Coussergues and Pierre Waldeck-Rousseau, famous financial lawyers and politicians<sup>21</sup>. They proposed a bill aiming at the buyback of the seats of the official brokers and at a general regulation of the profession of broker in exchange for the

---

Commission du Budget, Audition du Président de l'Association de l'Industrie Française, CAEF, B34.010).

18 « Le parquet d'aujourd'hui, plus modéré que l'ancien, ne demande pas la mort du pêcheur ; encore voudrait-il lui enlever des occasions de pêcher » [Anonymous « Le marché libre ; Quinze millions par an pour l'Etat », 1893. box B. 64.877, CAEF p. 1.

19 *Lettre rectificative* (corrective letter) sent to M. E. Boulanger, Senator, by the *Chambre syndicale des agents de change de Paris*, March 21<sup>st</sup> 1893, p. 9; CAEF, box 64877..

20 This was also the interpretation of the Paris Chamber of commerce: « l'énorme majorité des transactions exécutés par le marché libre n'a souvent pour origine que des affaires entamées par les *coulissiers* sans contre partie trouvée d'avance (...) les affaires dites arrêtées ». Rapport présenté au nom de la commission n° 3 de la *Chambre de commerce de Paris* par M Hugot. Adopté et converti en délibération de la *Chambre de commerce* dans sa séance du 11/5/1898, CAEF, box B.64895.

21 Clausel de Coussergues was a brilliant financial lawyer who became member of the *Chambre* (as *Républicain*) in 1889. President of the Commission on the Panama affaire and member of the Budget commission at the time of the discussion of the tax on stock exchange transactions, he was the rapporteur on the first draft of the 1893 corporation law. In 1894, he became vice-president of the *Chambre* up to his death in 1896. Waldeck-Rousseau had been a member of the *Chambre* and Minister up to 1885 (Ferry government). After the resignation of Ferry's government, he took a break from politics and became one of the most important lawyers in Paris. Elected again in 1894, he was candidate for the Presidency of the Republic in 1895, when Faure was elected. Partisan of Dreyfus in the Affaire, he was the artifice of the Bloc *Républicain* and became minister as well as *Président du Conseil* (prime Minister).



abolition of the official brokers and for the open but regulated entry in the profession<sup>22</sup>. They also pretended that submitting the *Coulisse* operations to the tax would bring 15 millions in taxes, which would otherwise be lost for the budget<sup>23</sup>.

The budget commission of the *Chambre*, of which the *Coulisse*'s advisor Clausel de Coussergues was a member, auditioned the various interests and, under the influences of Felix Faure and Raymond Poincaré (two future Presidents of the Republic), took a position hostile to the bill proposed by the government and favourable to the *Coulisse*. Officially, the commission argued that the government should not modify the status quo on the stock market – that is, impeaching the *coulisse* from doing what it was actually allowed to do for decades – without a law directly aiming at such a change. It added that the *Parquet* could still legally sue the *Coulisse* if considering it was breaking its monopoly<sup>24</sup>. It ended up creating a special sub-commission which would prepare a different bill, one “which would not disturb the stock exchange”<sup>25</sup>.

This attempt was short lived since the Minister threatened resigning if the bill was not passed. The bill was then passed on February 24<sup>th</sup>, 1893, at the *Chambre* (by 436 to 41). But the conflict went then to the Senate, where the rapporteur of the Budget commission, Ernest Boulanger<sup>26</sup>, also favoured the *Coulisse*. He argued that the government project would disturb the stock market, in which the *Coulisse* made 75 billions of operations a year compared to the *Parquet*'s 35 billions<sup>27</sup>. Maybe more importantly even, he wrote that the *Parquet* could not replace the *Coulisse* for international financial operations, so that the trading would move to

---

22 « Projet de loi portant suppression avec indemnité du monopole des agents de change et réglementation de la profession de courtier en valeurs mobilières », avril 1893, CAEF, cart. B 64877, and in the same file various other documents coming from the *Coulisse*. The Union of stock exchange and banks employees also lobbied against a bill potentially reducing employment at the *coulisse* brokers (letter by L. Strauss, the Union's chairman, to the Minister of Finance, February 10<sup>th</sup> 1893, CAEF B 64877).

23 Anonymous « Le marché libre ; Quinze millions par an pour l'Etat » (“ The free market : 15 millions per year for the State”), 1893. box B. 64.877, CAEF p. 1

24 A chief lobbyist for the *coulisse*, Yves Guyot, argued this would not occur because many official brokers had financial interests in some of the *coulissiers* : “des agents de change sont intéressés dans des maisons de *coulisse*, y compris le Syndic” (“L'impôt sur les opérations de bourse”, *Le Siècle*, féb. 7<sup>th</sup>, 1893).

25 *La Gironde*, Feb. 6th, 1893.

26 A *Républicain* member of the *Chambre*, he was the head of the fiscal department of the Ministry of Finance when elected in 1886. He was several times member and president of the Budget and Finance commissions and became Minister of the Colonies in the Casimir-Perier cabinet (Casimir-Perier took position in favour of the *Coulisse* in the 1893 debate within the budget commission). In 1893 he was also administrator of the *Compagnie Général des Omnibus*, which securities were traded on the *Coulisse*.

27 The *Parquet* discussed these figures, arguing they were produced by the *coulissiers* without any proofs. See the *Lettre rectificative* (corrective letter) sent to M. E. Boulanger, Senator, by the *Chambre syndicale des agents de change de Paris* (the governing body of the *Parquet*), March 21<sup>st</sup> 1893, p. 9; CAEF, box 64877.

foreign markets if the *Coulisse* was to disappear<sup>28</sup>. In order to lobby the Senate, the Parquet appointed as ‘technical advisor’ the senator Pierre Lacombe<sup>29</sup>. In spite of his speeches, the Senate then separated the tax from the general budget. A discussion with the *Chambre* ensued<sup>30</sup>.

The debate ended, after the fall of the government (on a different topic). The new Minister of Finance Paul Peytral<sup>31</sup> acted in favour of the *Coulisse*. Since he needed the tax on stock exchange transactions in order to balance the budget, he ended the debate by promising a law reforming the stock exchange industry and passed immediately. Then, a law similar to the Budget Commission’s project: it allowed any intermediary to pay the new tax on any security. Therefore, it legalized the *Coulisse* and put it on an equal footing as the Parquet, de facto allowing it to trade even in securities listed on the Parquet.

### *Reasons for the reform*

From these details on the politics of the reform, one may consider that it was mostly accidental. In fact, it was part of a long term trend in French politics from conservative governments towards liberal ones (in both the economic and social senses). Various former legal changes had been taken favouring the *Coulisse* since the *Républicains* (as opposed to the *Monarchists*) came to power in the late 1870s.

In 1884, a major law was passed which authorized the creation of unions. That law was drafted by Waldeck-Rousseau. The *Coulisse* immediately organized as a union (which imposed no solidarity among its members), which allowed it to organize more efficiently, particularly the settlement and delivery system, which had been run earlier on a bilateral basis. More specific changes also favoured the *Coulisse*. First, the 1882 crash had led in 1885 to the legalization of the forward market, which benefited more the *Coulisse* than the Parquet: not only because it mostly operated on the forward market, but also because the Parquet’s

---

28 E. Boulanger, « Rapport général sur le Budget au Sénat », pp. 160s.

29 Lacombe, a conservative Senator from 1885 to 1894, asked for in-depth investigations about the politicians’ involvement in the Panama affair. In 1894, he was’t reelected, and proposed the *Chambre syndicale* to stop advising it, which was refused. Nevertheless, his name disappears from the minutes of the *Chambre syndicale* as soon as 1895. Pierre Lacombe was involved in an affair of misappropriation of public funds (*Le Siècle*, June 15, 1898, “La réorganisation du marché financier”).

30 Details can be found in the *Rapport de M. le Président du Tribunal de Commerce de Paris à MM. les Présidents et Juges des tribunaux de commerce de la Seine*, May 14th, 1898. CAEF, box 64.895.

31 A radical-socialiste and pro-market Deputy (and Senator after 1894), Peytral had chaired the Budget commission before being Minister. Some personal conflicts with Tirard could also explain his position vis à vis the project of the latter: Peytral had already been Minister of Finance before Tirard and the latter had rejected every work in progress of his predecessor.

forward operations already benefited before the law from a quasi-systematic enforcement by the courts (mainly because of both the Parquet collective guarantee to the forward market operators and its strict trading rules<sup>32</sup>), which were more reluctant towards the *Coulisse*. Second, an 1885 decision by the Cassation court had also reduced the uncertainty that *coulissiers* faced by stating that a *coulissier* was a valid broker for a trade in securities not listed on the Parquet<sup>33</sup>. From then on, a list of securities tradable outside the Parquet was published yearly: it included 202 securities in 1892<sup>34</sup>. Third, the 1890 new legal regulation of the Parquet reinforced its security, but increased its regulatory burden and then decreased its competitiveness. The 1893 decision was then no sudden change in government policy. Furthermore, it was supported by two major interest groups : the banks and the Ministry of Finance itself.

The banks formed a group increasingly supportive of the *Coulisse*. First because part of the advantages of trading on the Parquet had been lost to them because of an unsuccessful strategic move of the official brokers: after the 1882 crash, which had led to 14 defaults among these brokers, the Parquet paid for all the losses as its internal rules promised to their clients, but then reconsidered this strategy and revised these rules: considering its internal controls as insufficient to prevent moral hazard behaviours by its members, it decided to pay only for the debts it was legally constrained to guarantee. This led some of the Parquet clients – mostly bankers – to lose money when two official brokers went bankrupt in 1886 (Vuaflart) and 1888 (Bex), events that the *coulissiers* highlighted in their campaign<sup>35</sup>. That strategy of the Parquet tarnished heavily its reputation, and made the banks increasingly favourable to the *Coulisse*.

More importantly, the banks had common interests with the *Coulisse*<sup>36</sup>. The deposit banks provided the huge amounts of short-term credit that was required by the forward market<sup>37</sup>. The banks were important clients of the *Coulisse* since they appreciated the

---

32 See Lagneau – Riva (2010, forthcoming).

33 This decision ended a long-lasting debate on the extent of the agents' monopoly and limited it to the officially listed securities.

34 *Tableau des Valeurs négociables Hors-Parquet* published every year by the *Almanach Financier*.

35 Anonymous « Le marché libre; Quinze millions par an pour l'Etat » (“ The free market : 15 millions per year for the State”), 1893. CAEF, box B. 64.877.

36 As the *Chambre syndicale* stated : “L'agent de change rend moins de services aux banquiers que les *coulissiers*”, *Lettre rectificative* (corrective letter) sent to M. E. Boulanger, Senator, by the *Chambre syndicale des agents de change de Paris*, March 21<sup>st</sup> 1893, p. 9; CAEF, box 64877.

37 In 1892, a conflict opposed the Parquet to the *Crédit Lyonnais*, at the time the main French deposit bank, on

immediacy it alone could provide, as well as the opaqueness that allowed them to take advantage of their superior information. Moreover, the main banks wanted the market to be liberalized since it would allow them to internalize many of their clients' orders without risk<sup>38</sup>, and to use the intermediation of the *coulistiers* without any legal uncertainty<sup>39</sup>. This new architecture would have allowed banks to put the official brokers in competition with the *coulistiers* and to decrease the intermediation costs<sup>40</sup>. Thanks to the dual capacity, the *coulistiers* already proposed low commissions (25 to 50% of the legal maximum commissions on the Parquet), since their profits would mostly come from their operations as counterparty. The last reason for the interest of the banks to be in line with those of the *Coulisse* was their joint involvement in the primary market, in particular on foreign and SME's securities that could not always be listed on the Parquet: the *coulistiers* could buy on their own account a large portions of the issue and then trade it on the market. The banks and the *Coulisse* then jointly argued that the liberalization of the market would stimulate the role of Paris as a financial centre, when the reinforcement of the Parquet monopoly would destroy it.

The last party interested in the debate was the State. Its interest had various dimensions. The fiscal dimension opened the debate and was certainly not negligible. Nevertheless, the impact of a given choice on stock market operations was not clear, so that the *Coulisse* argument was not very strong. The impact of a blow to the *Coulisse* on the trading of French *rentes* (government debt) was a more serious preoccupation, since most of that trading was done on the *Coulisse*: a *rentes* conversion was considered for January 1894, which bankers and *coulistiers* pretended would fail if the *Coulisse* was weakened. The role of the *Coulisse* during the huge issues of *rentes* required in 1872-75 by the war indemnity paid to Germany was still in all minds: Ernest Boulanger emphasized it during his speech at the

---

the "bourse du soir", an evening session of the *Coulisse* held in the *Crédit Lyonnais*' hall. The *Crédit Lyonnais* extracted valuable information from hosting this session and fought against the Parquet which was asking its closure. The Parquet, after enormous efforts, obtained the closure, disrupting the evening international order flows (cf. Riva 2007)

38 Following contemporaries' accounts, it seems that internalisation was a common practice of many banks before 1893. Nevertheless, in case of litigation, the client could ask for the agent de change's receipt, and have the bank condemned and the contract declared null in case it was missing.

39 In case of litigation, the *coulistiers* dealing on securities listed on the Parquet could be condemned and the contract declared null.

40 Various of these arguments were discussed in the letter to Boulanger by the Parquet : Les banques « généralement bien informé[e]s, trouvent leur avantage à se procurer ou vendre rapidement un lot de valeurs à la *Coulisse* » (p. 10) ; « banquiers et sociétés de crédit ont un intérêt puissant à ce que la dualité de la *coulisse* et des agents de change persiste. Avec cette concurrence ils obtiennent les avantages particuliers des deux Marchés et ils craignent, naturellement, que ces avantages disparaissent avec la concurrence » (p. 11) ; letter sent to M. E. Boulanger, Senator, by the *Chambre syndicale des agents de change de Paris* (the governing body of the Parquet), March 21<sup>st</sup> 1893; CAEF, box 64877.

Senate<sup>41</sup>. Precisely for this reason, the Minister of Finance asked the *agents de change* for renouncing to sue the *Coulisse* as they planned after the 1893 bill passed.

The diplomatic dimension was also underscored: the *Coulisse* was the main market for various foreign government bonds, which listing in Paris was important for foreign policy. In 1892, the Russian Minister of Finance S. Witte, had protested because of the move of Russian bonds from the *Coulisse* to the *Parquet*. It was the consequence of a private settlement between the *Parquet* and the *Coulisse* done, under the Minister of Finance pressures, after the *Parquet* planned to sue the *coulisse* in 1892. Major new issues of Russian debts were under consideration. In the same fashion, bankers and *coulissiers* pointed out that, without an active *Coulisse*, German financiers would take the place of French ones in Eastern European countries, which sovereign debts were traded mainly in the *Coulisse*.

Finally, the public opinion certainly appreciated the creation of a tax on financial operations, and would likely prefer a more regulated market, dominated by the *Parquet*, compared to a more deregulated and “foreign” one, dominated by the *Coulisse*. Creating a tax was nevertheless certainly sufficient to obtain a speculation-bashing reputation<sup>42</sup>, and the nationalist argument was tamed when the *Coulisse* renounced recruiting foreign members, a sharp break with its tradition (even if the perimeter of this loose organization was quite uncertain and naturalization was eased for acting *coulissiers*)<sup>43</sup>.

One can conclude that the 1893 reform was the result of a well coordinated alliance of interest groups taking advantage of the pro-market beliefs of anti-authoritarian governments. One must believe this alliance was not very strong – or the beliefs could be modified – since within five years, the reform was reversed and never reintroduced until the 1990s.

### *The 1898 reform*

The 1893 reform was reversed as soon as 1898. Another fiscal law then included an amendment by Deputy Henry Fleury-Ravarin, which obtained that the tax on officially listed securities could only be paid by the *agents de change*. This arrangement, similar to the 1893

---

41 Journal Officiel, March 29, 1893, Documents parlementaires (Sénat), session March 28, 1893.

42 In 1895, a Deputy spoke of the 1893 law as being received with fervour by the public (« la loi de 1893 est une de celles que le pays a accueillies avec le plus de ferveur parce qu'il a vu qu'on se décidait pour la première fois à frapper la spéculation », Henry Cochin, *Chambre des Députés*, December 13<sup>th</sup>, 1895, Journal Officiel, p. 2919).

43 See the letter of February 15<sup>th</sup>, 1898 from the *Coulisse* Committee to an anonymous “Director” in Box SG 329, File A.211; Mémoire A MM les Membres de la Commission des Finances du Sénat sur l’Amendement Fleury-Ravarin et la suppression du marché libre, box SG 329, file A.21 In CAC archives.

Tirard project, forbade the Coullisse to trade in these securities except for an agreement with the Parquet.

In order to obtain this result, the CAC again spent huge amounts (up to 2.8 million francs in 1898, again 45% of its overall expenses) in lobbying and mobilizing its social network. Even if it had accepted in 1894 an informal agreement sharing the market with the Coullisse, the CAC had never accepted the reform of 1893 as definitive<sup>44</sup>. October 1895 was the turning point, thanks to the “gold mines” crash on the Coullisse, the sudden election of Maurice de Verneuil<sup>45</sup> as head of the CAC, and the resignation of Alexandre Ribot and his government, which was supportive of the Coullisse. The new Minister of finance – Paul Doumer<sup>46</sup> – had no previous relationship with either party.

Verneuil grabbed the opportunity given by the financial crisis to propose coordinating financial institutions, and the Minister rewarded publicly his efforts<sup>47</sup>. Verneuil understood immediately that the crisis was a wonderful opportunity<sup>48</sup> for pointing out the weakness of the coullisse, shackled by a number of failures<sup>49</sup>, and lobbying for a change in the tax law.

In April 1896, a political change opened a new opportunity for the Parquet: Mélines, who displayed “a lot of sympathy” towards the Parquet<sup>50</sup> which supported his pro-business protectionist efforts, became Président du Conseil. The Chambre syndicale intensified its lobbying towards Krantz (rapporteur of the budget at the Chambre), but also former enemies such as Poincaré (Vice President of the *Chambre*), and Faure (President of the Republic), with the support of Bertaux, now a member of the Budget commission<sup>51</sup>.

An anti-Coullisse campaign was launched in the press<sup>52</sup>. The Coullisse was accused of

---

44 CS, 6/7/1894 and 19/10/1894.

45 Verneuil was elected after the death of the Syndic Bacot. Verneuil belonged to one of the most important dynasties of official brokers and was well connected to the French upper bourgeoisie.

46 Doumer, a future president of the *Chambre* and President of the Republic, was a self made man who specialized in public finance. He was a “radical de gauche” and free mason.

47 On July 7<sup>th</sup>, 1896 Doumer said at the *Chambre* that “the head of the Paris official stockbrokers has been crucial for saving the Paris market” (“le Syndic des agents de change de Paris a été fondamental pour sauver le marché de Paris”).

48 AG, 16/12, 1895.

49 Among the failing *coullissiers* were huge securities houses such as Gerson et Cie, Aghion et Cie. Cf. Box SG 329, file, A.211.5 CAC Archives for an overview on this topic. .

50 CS, September 10<sup>th</sup>, 1896.

51 The Budget Commission of the *Chambre* apparently refused to hear the Coullissiers in spite of their application. Cf. Mémoire à MM les membres de la Commission des Finances du Sénat sur l’amendement Fleury-Ravarin et la suppression du marché libre, box SG 329, file A.211n CAC archives

52 The same source displays complaints by members of the Coullisse. Most significantly, the CAC financed directly the Mélines' newspaper, *La République Française*. This resulted in a scandal when the information was disclosed in June 1898 by *La Petite République*, the socialist newspaper of Viviani and Jaurès (cf. *La Petite République*, June 6, 1898, “Les Intégréés”). Cf. Box SG 331, file A.212.03, CAC archives. About the

allowing speculative practices that created diplomatic tensions, as in the case of the bull campaign on the Italian government bonds in 1894<sup>53</sup>. The campaign worsened later with the increasingly conflictive context of the Dreyfus affair: in the spring of 1895, the “Jewish problem” was discussed at the *Chambre* for the first time (“a turning point in the history of anti-Semitism in France”, Joly, 2005); the famous « J'accuse » article by Emile Zola in *L'Aurore* was published on January 13<sup>th</sup>, 1898, just before the stock market reform was discussed in Parliament. The *Chambre syndicale* took advantage of this context to have the press stigmatize the coulissiers as foreigners (Germans) and Jews<sup>54</sup>. The *Parquet* supplied the press with detailed information about the nationality and the “religion” of the coulissiers, their partners and their employees<sup>55</sup> pointing out the risks in terms of national loyalty. The antidreyfusard camp was in government (under Mélines) and clearly supported the *Parquet*, considering this move as part of its protectionist stance..

When it understood what was going on, the *Coulisse* tried to pre-empt a parliamentary move in favour of the *Parquet*<sup>56</sup>: In June 1897, the senators Boulanger and Ludovic Trarieux<sup>57</sup>, members of the Finances Commission of the Senate, presented a bill which proposed the suppression of the *Parquet* and of the official stockbrokers' profession in order to create a London-style market. Under heavy pressure from the *Parquet* (which threatened suing the *Coulisse* in court as in 1859, something which would have made the bi-polar organization difficult to maintain and created much uncertainty<sup>58</sup>), the government

---

scandal in the press, see *L'Aurore* June 7, 1898; *Le Moniteur des Tirages Financiers*, June 9, 1898; *Le Siècle*, June 12 and 15, 1898; *Les droits de l'Homme*, June 7 and 10, 1898

53 The sudden rise of the price of the Italian government bonds in January of 1894 was attributed to a speculative operation coordinated by the Deutsche Bank with the help of *Crédit Lyonnais* and German coulissiers. M. Jourde raised the point at the *Chambre* and the government refused answering for diplomatic reasons. See articles in *Les Débats*, February 25<sup>th</sup>, 1894; « Diplomatie » in *La Petite République*, February 26<sup>th</sup>, 1894, « La rente italienne » in *La Lanterne*, February 22<sup>nd</sup>, 1894. « Les préoccupations de M. Jourde » *La Liberté*, February 25<sup>th</sup>, 1894.

54 CS, January 28<sup>th</sup>, 1898. In the same year, thirty Deputies followers of Edouard Drumont formed a parliamentary group explicitly named “anti-Semitic group” at the *Chambre* (Joly, 2007).

55 See box SG 331, file A.212.02 as well as the detailed report on the coulisse and the coulissiers by private detectives paid by the *Parquet* in box JZ 29 CAC archives.

56 CS, 9/4/1897, CS, 15/5/1897.

57 Strongly *dreyfusard* Trarieux was a *Républicain radical*. He was the founder and the first President of the *Ligue des droits de l'homme*, an Association that was created in order to defend Alfred Dreyfus on June 4 1898. He opposed the projected reduction of the rights of unions (the *Coulisse* was organized as a union). Trarieux had strong relationship with Joseph Reinach, a journalist and politician co-founder of the *Ligue des Droits de l'Homme* and close to Gambetta. Reinach and Trarieux defended foreign (particularly German) and jewish *coulissiers* (the father of the former was a Jewish German banker), in spite of the participation of his brother in the partnership of the official stockbroker Margaritis (Birbaum 1992b, pp. 13ss).

58 CS June 4 and 12, 1897, Tetrau 1994, p. 177. CS June 12, 1897 and the letter from the *Syndic* to the Minister

incorporated the Fleury-Ravarin amendment in March into the budget bill. Supporting him, the Minister of Finance Georges Cochery explained that the reform “could be put in place rapidly and, after some negotiations, an agreement will be found between the two sides of the market”.

Some liberal minded Deputies (such as Ribot and Ferdinand Crémieux<sup>59</sup>) protested, arguing mostly formal reasons because the amendment was not supported by a report, as it should have been, and because the reform of the financial market was presented at the very end of the legislature while the budget’s discussion was still ongoing<sup>60</sup>. They underscored also the contradiction of and suggesting that the reform would *de facto* exempt the transactions in French *rentes*. Socialists René Viviani and Jean Jaures obtained the reinforcement of the Parquet to be compensated by the legalization of the solidarity of the official brokers in order to ensure a full and legal guarantee to private investors<sup>61</sup>. In the Senate, the bill was also strongly disputed<sup>62</sup>. Cochery had to give more details on the general interest dimension of the Parquet role. But more important was the convincing hearing of Verneuil, who emphasized the financial instability resulting from an uncontrolled *Coulisse* while recognizing its useful role in a well-organized market under the Parquet’s control<sup>63</sup>. The law was passed on April 14<sup>th</sup>, 1898.

### *Reasons for the reform*

Such a drastic reversal resulted from various reasons. The first one is the gold mines crash of 1895, which affected mostly the *Coulisse* and its operators. Many observers considered the *coulissiers* had developed the market on gold mines shares very speculatively: most of the shares did not comply with either French corporate regulations or the Parquet’s

---

of Finance, June 14, 1897 as well as October 4, 1897. in box SG 331, file A.212.03, CAC archives.

59 A lawyer, Crémieux had been elected as *Républicain radical*. He was a “*juif d’Etat*” (Birnbaum, 1992a) and a friend of Reinach.

60 The legislative election was on May 8 and the beginning of the new legislature fixed on May 31. The related discussion held at the beginning of March.

61 *Annales de la chambre des Députés*, 1898, session, March 7, 8, 9. On this topic, the socialist party pointed out the vices of the two professional groupes. In his speech, Viviani battered the two camps: he accused both official stockbrokers and *coulissiers* to be involved in all the financial scandals.

62 Box SG 329, file A.211 Minutes on the sessions of the Finance Commission of the Senate, March 17<sup>th</sup>, 18<sup>th</sup>, 22<sup>th</sup> and 23<sup>th</sup>, 1898.

63 « I am convinced that the complete suppression of the *coulisse* would lead to hard problems (je suis convaincu que si on supprimait radicalement la *coulisse*, on aboutirait à des résultats fâcheux)” Verneuil, hearings in front of the Finance Commission, March 18<sup>th</sup>, 1898. Box SG 329, file A.211 Minutes on the sessions of the Finance Commission of the Senate,



listing requirements, the market was opaque, the information on the firms was very limited and the *coulissiers* acted as bankers issuing the shares. Nevertheless, thanks to a huge advertising campaign, hundreds of millions worth of securities had been sold to the general public, whose losses resulted enormous in the crash. In 1896, the Parquet transmitted to the Minister of Finance a file detailing the losses that the gold mines' crash had imposed to French savings<sup>64</sup>. As we have shown above, this accusation was reinforced by the anti-Semitic and nationalist context.

A second reason allowing the Parquet's victory was the neutrality of the banks, who had been on the *Coulisse's* side in 1893. From his very election, Verneuil started negotiating with the banks. In November 1896, he organized technical meetings with bankers and civil servants of the Ministry of Finance, in order to discuss the reorganization of the market under the authority of the Parquet but maintaining an institutional heterogeneity<sup>65</sup>. Thanks to these hard negotiations and the exceptions he offered<sup>66</sup>, Verneuil thought he had obtained the neutrality of the banks vis-à-vis the reform<sup>67</sup> (CS, 18/12/1897). He also tried to discard the worries of the government about the market for French *rentes* by suggesting exempting them from the tax<sup>68</sup>. Other changes helped. After the 1894-1895 boom the bankers likely perceived the *coulissiers* as less complementary to themselves and more as competitors, especially on the primary market. The banks had also lost part of their legitimacy because of the high and hidden leverage they had supplied to the *coulissiers* and which made them – at least to the governments' eyes – co-responsible for the 1895 crash<sup>69</sup>. Then the remaining hostility to the Fleury-Ravarin amendment expressed by the bankers's association was of limited impact.<sup>70</sup>

A third reason for modifying the law was the tax evasion by the *coulissiers*. The behaviour of one of them, who avoided paying the tax on 2575 operations representing 44

---

64 Cf. Box SG 329, file A.211.51 CAC Archives.

65 CS 6/11/1896; CS 23/11/1896, 27/11/1896, 11/12/1896, 1/2/1897); bankers involved were Vernes and E.Gouin, founder and president of Banque de Paris et des Pays Bas as well as a member of the Finance Commission of the Senate.

66 Mainly, the Syndic accepted that operations through which *coulissiers* bought blocs of securities from bankers would be considered outside the official stockbrokers' monopoly (CS 23/11/1896, 27/11/1896, 11/12/1896).

67 CS, 18/12/1897.

68 CS, 9/1/1896.

69 “Les grandes banques ont joué leur rôle dans cette agitations de la spéculation : elles ont donné en reports des sommes considérables qu’elles avaient en dépôt en dissimulant pendant des longs mois l’importance des engagements à la hausse ; elles ont donc faussé l’allure du marché et lui ont permis de s’engager dans les proportions que vous savez. Ces mêmes banques ont provoqué la crise en restreignant , quelque peu subitement, les crédits exagérés qu’elles ont faits” (AG, 16/12/1895).

70 Gouin, on the behalf of bankers' association, spoke explicitly against the Fleury-Ravarin amendment at the Finance Commission of the Senate (Note of March 30, 1898, Anonymous, Sénat, Box. SG 329, file A.211).

millions francs, was revealed in 1897 and provoked some scandal at the *Chambre*<sup>71</sup>, especially when the *coulissier* escaped the tax and the penalty (totalling 2,79 millions) thanks to a bankruptcy (apparently not an isolated case<sup>72</sup>), and when it appeared that any *coulissier* acting as counterparty could relatively easily escape the tax, in spite of the Coullisse representatives' affirmations in front of the Budget commission<sup>73</sup>.

On the positive side, a major reason for re-establishing the Parquet's dominant position was its return to its traditional policy of guaranteeing collectively the losses of its clients. The short-lived policy for containing moral hazard, which had been adopted in 1883, was disputed as soon as 1890, when Verneuil entered the *Chambre syndicale*; it was abandoned when the Parquet faced the 1895 crash and when Verneuil became *Syndic* in 1896.

Finally, the government prepared a reorganization of the Parquet, to be implemented in the aftermath of the reform, in order for the restoration of the monopoly not to damage the development of the Paris financial center.

#### *The aftermaths of the 1898 law*

The 1898 law didn't bring the market back to its pre-1893 organization. First, the reaffirmation of the Parquet's dominance had a price: the Parquet had to reorganize strongly. To a large extent, this was less the price of a monopoly than the changes required by a substantial increase in transactions: the Parquet itself calculated that about 5/7th of the 70 billions of Coullisse transactions concerned securities listed on the Parquet, which would then be negotiated by the Parquet after 1898. The number of agents de change was raised from 60 to 70 and the number of trading clerks for each official stockbroker was increased<sup>74</sup>; the surface of the floor was extended and the number of pits was doubled; the legal maximum commissions were reduced by half ; the procedures for payment and settlement were reinforced and accelerated. An extension of the stock exchange building (the Palais Brongniart) was to be financed by the Parquet, as well as a new association for the defence of

---

71 Fleury-Ravarin himself denounced the *coulissiers'* evasion (*Annales de la Chambre des Députés*, 1898, session March 7, 1898).

72 A report by the Chairman of the Paris Commercial Court mentioned several « frauds which repression was hindered by the insolvency of the offenders » (« fraudes dont l'insolvabilité des délinquants ne permettait pas la répression », Rapport de M. le Président du Tribunal de commerce de la Paris à MM. Les Présidents et Juges des Tribunaux de commerce de la Seine, May 14<sup>th</sup>, 1898, CAEF, box 64.895).

73 The head of the tax administration explained that the only possible verification depended on the matching of the records of two intermediaries having done an operation together, which made it easy to escape for those acting as counterparty (letter "Le Directeur de l'Enregistrement au Ministre des Finances. Note Impôt sur les opérations de bourse. Observation de M Krantz », July, 2<sup>nd</sup>, 1897 ; CAEF, B 34.010).

74 More than 500 traders were daily on the Parquet's floor.

investors in foreign securities, on the British model.

Furthermore, the collective guarantee of the Parquet was enshrined in the law. The Minister of Finance had promised such a decree on the subject to the *Chambre* on April 6<sup>th</sup>, 1898. The Parquet opposed it because of the moral hazard it may involve if no official broker could become bankrupt because of such solidarity: the brokers could take risks without sanction, and the public would have no incentive to discriminate among brokers on the basis of bankruptcy risk<sup>75</sup>. After lengthy debates, a text aiming at both limiting the moral hazard and guaranteeing solidarity was adopted<sup>76</sup>.

The Government also imposed through moral suasion a radical reorganization of the *Coulisse*: conditions for the admission of new members as well as a set of formal trading rules were established, a list of admitted securities was printed daily from 1899, making the market more transparent, and various regulations imposed, making the *Coulisse* less different from the Parquet. A result of this stricter integration was the apparition of a third market, the Free Market, more opaque and unregulated, which nevertheless remained marginal up to World War One. Some securities listed on the Parquet were also nominally traded in Brussels by former *coulistiers* who refused adhering to the new structure and delocalized their headquarters while maintained their activity in Paris.

Since at that moment the *Coulisse* operations were largely concentrated on securities listed on the Parquet, the reform would have killed the *Coulisse* except for an arrangement with the Parquet allowing the *coulistiers* to trade in some of the officially listed securities under the authority of the Parquet, but without acting as direct counterparty. That *modus vivendi* was signed in 1901. It made provision for large rebates (up to 80%) on the agents' commissions to be given to the *coulistiers* for the business they provided to the Parquet. In particular, the *Coulisse de la rente* (on French government bonds) was allowed to continue its operations without change, even if the transactions requiring the actual delivery of the securities would be settled through the Parquet.

One may then consider that the 1898 reform increased very substantially the size of the Parquet, allowing for the transfer of a large proportion of the business previously done by the *Coulisse*, but not eliminating the *Coulisse* thanks to the *modus vivendi*. Which of these legal

---

75 Letter from the Syndic to the Minister of Finance, May, 17<sup>th</sup>, 1898; CAEF, box 64.895.

76 Cf. another, undated, letter (from the « Syndic au Ministre des Finances », accompanying the « Note remise par le Syndic des agents de change, texte proposé en remplacement de l'amendement Viviani sur la solidarité, rédaction de M. Sabatier ») as well as the other documents in CAEF, box 64895.

moves led to a more efficient market will be raised in the next section.

### 3. Quantitative tests

One may conclude from the detailed presentation of the origins of both reforms that technical arguments about the efficiency of the market were little present in the debate. Nevertheless, one may find two polar arguments that were made by contemporaries favourable either to the *Coulisse* or to the *Parquet*. For the first ones, the 1893 liberalization should help develop the whole market thanks to increased competition and a reduction of transaction costs under the pressure of the more competitive *Coulisse*, which market share would rise. From the point of view of those favourable to the *Parquet* or to a hierarchy of markets, the 1893 move should have damaged the *Parquet* and improved the situation of the *coulissiers* because of their dual capacity as unregulated brokers and operators on their own account. Nevertheless, this would not lead to a decrease in transaction costs for investors because the informational rents<sup>77</sup> and inventory costs of *coulissiers* and the increased uncertainty for investors could negatively compensate the positive impact of improved competition. Furthermore, the increase in the role of the unregulated *Coulisse* would reinforce risk-taking behaviours and the instability of the market as a whole. The effects of the 1898 move should be the opposite: for *Coulisse* supporters, it should not only have damaged the *Coulisse* but the market as a whole, and increased transaction costs. For *Parquet* supporters, it should have little affected the market as a whole and decreased transaction costs by reducing uncertainty and informational rents.

These arguments could be valid only for some segments of the market, since the competitive advantages of both organizations differed. For example, it may be that the 1893 liberalization affected mostly some segments of the *Parquet*'s activity: foreign bonds and shares with large volumes, particularly in the forward market, were taken over immediately by the *Coulisse*, when the *Parquet* resisted better on private (French) securities, both for the spot and forward operations. After the 1895 crisis, the *Parquet* may also have benefitted from a flight to quality, some investors and issuers looking again for the reputation and stability of a regulated market. In this section, we aim at estimating the impact of the 1893 and 1898 regulatory changes in various dimensions: first, the impact on the size of the market and the market shares of the

---

<sup>77</sup> The *Coulissiers* benefitted from two kinds of informational rents : on the one hand, they monitored the order flow better than operators ; on the other hand, as they were mainly of foreign origin, they maintained strong links with correspondents in their home country, which gave them useful insights for international arbitrage.

two exchanges; second on the market's quality.

### *Data*

Little data is available on the *Coulisse* before 1898 and on transactions in general before 1893. It results precisely from the organization the new laws planned to modify: without a transaction tax, transactions were not registered, except within the *Parquet*, where the registration aimed at financing the central organization thanks to a contribution of each agent proportional to its transactions, but did not provide details on transactions by security in order not to affect competition among members. The list of the securities traded on the *Parquet* is precisely known thanks to the official listing procedures and publicity, but the very concept of listing did not exist for the *Coulisse*, each broker quoting prices for the securities he wanted, and newspapers publishing the lists of their choice. By contrast, an "official" list for the *Coulisse* was published from 1899 on (but not for the new "marché libre"). Only prices are reasonably well documented... as long as one picks them by hand in contemporary newspapers. This is easily done concerning the *Parquet*, which published an official and exhaustive daily price list. For the *Coulisse*, the *Cote de la Banque et de la Bourse* was, from 1884 on, the prominent private list of the market, but it may have neglected some transactions, and we don't know how it gathered the prices it published. We must assume that the very success of that journal reflects the quality and representativeness of its selection.

### *Listings*

We constructed a list of securities which prices were published as "traded on the *Coulisse*" in the *Cote de la Banque et de la Bourse* for July 1<sup>st</sup>, 1890, December 31<sup>st</sup> 1894, December 31<sup>st</sup>, 1900 and December 31<sup>st</sup>, 1913 (table 1). On that measure, the regulatory changes had relatively little impact. The market share of the *Parquet* didn't decrease after 1893: it actually rose on French securities, and decreased on foreign ones. The *Coulisse* didn't suffer from 1898 either: in 1900, the market share of the *Parquet* had increased, compared to 1894, only for foreign bonds (actually the most contested market), but decreased for French stocks. Moreover, the *Coulisse*'s list in 1900 included twice the number of securities that we counted for 1890.

Table 1 Market share of the Parquet in terms of number of securities listed

<b>Securities</b>	<b>Exchange</b>	<b>1890</b>	<b>1894</b>	<b>1900</b>	<b>1913</b>
French bonds	Parquet	220	239	266	337
	Coulisse	37	23	40	0
	% Parquet	86%	91%	87%	100%
French stocks	Parquet	304	236	286	424
	Coulisse	60	50	163	176
	% Parquet	84%	83%	64%	71%
Foreign bonds	Parquet	138	173	203	303
	Coulisse	60	97	65	88
	% Parquet	70%	64%	76%	77%
Foreigns stocks	Parquet	40	37	60	129
	Coulisse	52	75	128	82
	% Parquet	43%	33%	32%	61%
Total	Parquet	702	685	815	1193
	Coulisse	209	245	396	346
	% Parquet	77%	74%	67%	78%

Source : our count, from the *Cote officielle des valeurs cotées à la Bourse de Paris* (Parquet) and the *Cote de la Banque et de la Bourse* (Coulisse). Annex 1 gives more details.

Nevertheless, the 1898 change may have been responsible for the decline of the Coulisse after 1900: the 12% decrease overall of the number of securities it listed (almost 30% on foreign stocks) may well have resulted from the growing interest of the Parquet for some segments (the number of foreign stocks on its list more than doubled during that period), and from its legal capacity to exclude the Coulisse from them.

### *Transactions*

The volumes of transactions are difficult to evaluate before the 1893 law. After that law, data on the payment of the tax provide some information. Nevertheless, the rates of the tax were lowered (by 75%) for the French *rentes* in 1895, and unfortunately the detailed allocation of transactions between the various operations is unknown (see table 2 for the tax rates). This makes it difficult to compare the 1894-1895 years with the following ones.

Table 2. Rates of the tax on stock exchange transactions (in per thousand)

Date	Forward & spot transactions		<i>Reports</i>		Deals on foreign exchanges
	French public bond	Other securities	French public bond	Other securities	
28/04/1893	0.05	0.05	0.025	0.025	0.1
28/12/1895	0.0125	0.05	0.00625	0.025	0.1
31/12/1907	0.0125	0.10	0.00625	0.025	0.2
15/07/1914	0.0125	0.15	0.00625	0.0375	0.3

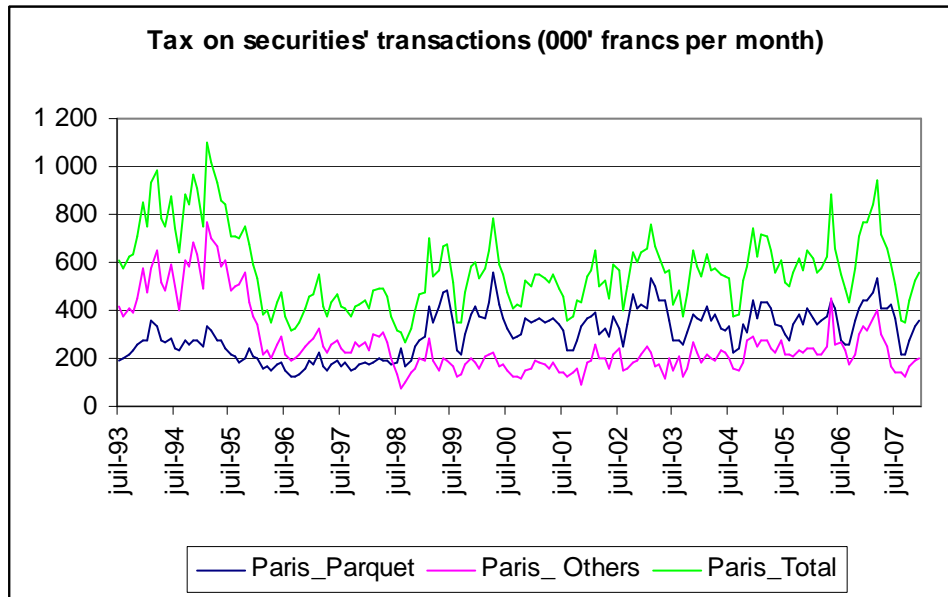
If we believe the estimation (provided by supporters of the *Coulisse*) of 75 billions francs of operations for the *Coulisse* in 1892 and 35 for the *Parquet* (then a 2.14 to 1 ratio), and compare it to the ratio of the tax paid by the two markets in 1894 (2.17 in favour of the *Coulisse*), the similarity is striking. It suggests that the *Coulisse* didn't benefit much, at least in the short term, from its new freedom<sup>78</sup>. On the other hand, the same ratio for 1903 was only 0.5. As graph 1 shows, the « market share » of the *Coulisse* dropped from 2/3d in 1894 to 1/3d around the 1898 reform. The *Coulisse* suffered a first drop in the fall of 1895, which may be attributed to the crash in the “gold mines” stocks; a second one, in January 1896, is purely apparent since it reflects the decrease in the tax rate on the *rentes*, on which the *Coulisse* had a dominant position. Data comparing the *rentes* and the other securities for 1895 and 1896 show that transactions on other securities decreased by two thirds from their maximum in March, 1895 to their minimum in August, 1896, and by half if one compares two identical (January to August) periods in 1895 and 1896. This decrease is mostly supported by the *Coulisse* and probably reflects the impact of the gold mines crash. Transactions on *rentes* increased by half during the same period once corrected for the variation in tax rate, which reflects a flight to quality standard in periods of financial crises. This increase benefitted the *Coulisse* since it dominated that market, compensating to some extent the drop of transactions on other securities. On the other securities, the market share of the *Parquet* likely doubled before the 1898 reform, mostly as a result of the crash<sup>79</sup>. In 1898, that market share suddenly

78 Both the 1892 and 1894 figures could overstate the size of the *Coulisse* since what they call « *Coulisse* » measures actually all operations not passed through the *Parquet*, which includes operations done by banks and by independent mini-markets like those organized by some financial newspapers. On the other hand, fiscal evasion works in the opposite direction.

79 It is impossible to reach exact figures with the available data, especially since they depend on assumptions on the share of *reports* (forward market postponement). An estimate by the tax administration suggest that share is below 10% of transactions (and less of the tax revenues since the rate is half the standard rate), a proportion on which we base our estimates (Note de la direction générale de l'enregistrement, 13/2/1897,

rose to about two thirds

Graph 1



Sources : *Bulletin de statistiques et de législations comparé*.

This data suggests that the rise of transactions in 1893-1895 was to a large extent the result of a bubble, which benefitted mostly the Coullisse and disappeared in late 1895. Whether the 1893 law had some role in the start of the bubble is difficult to say. After the burst of the bubble, the market share of the Coullisse was probably not much more important than before 1893. The 1898 reform had a substantial impact on markets shares, allowing the Parquet's share to rise from about 40 to 60%. On the other hand, total transactions didn't decline after 1898, contrary to the predictions of the Coullisse supporters, but increased moderately.

The internal stamp tax that the Parquet imposed to its members (in order to finance collective action and the collective guarantee) provides us with more detailed information on the transactions on the Parquet<sup>80</sup>. Considering the various segments of the market (see graphs) suggests the Parquet suffered no serious blow from the 1893 reform: even if its market share declined from mid-1894 up to the gold mines crash, it participated the boom of 1894-95 and the 1896 crisis, mostly on the forward market. The spot market wasn't much affected by the 1898 regulation, which benefitted mostly the forward market (which activity rose by 75% between 1898 and 1899. This increased activity was concentrated in foreign government

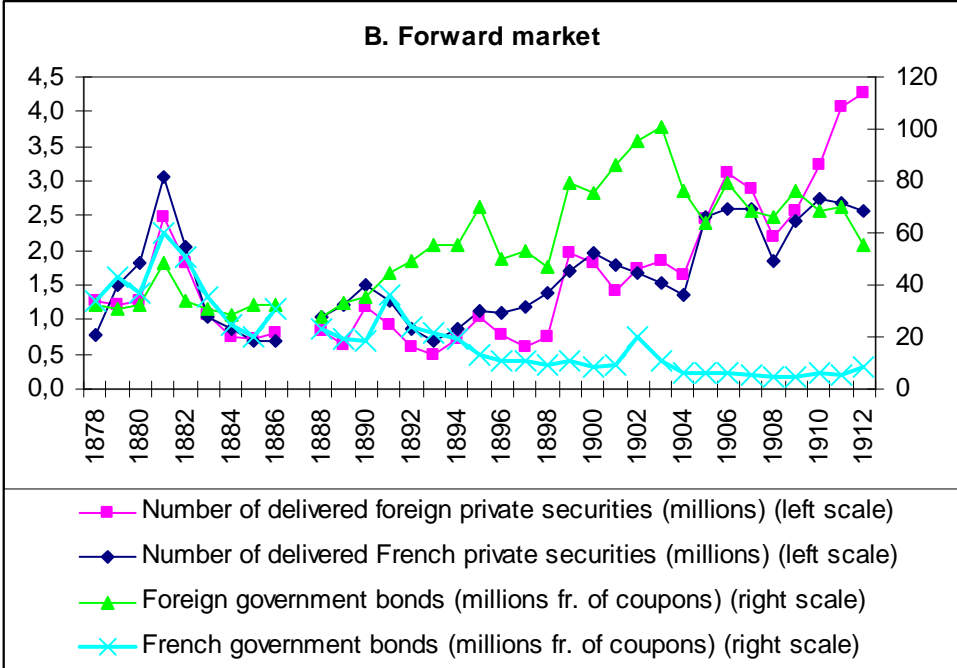
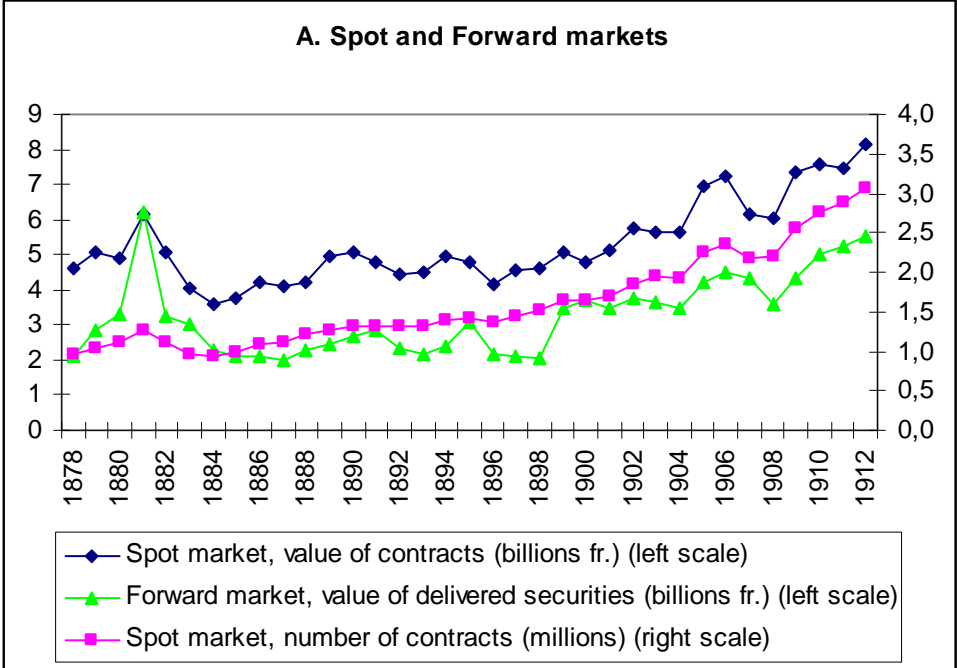
CAEF, box B 33.236).

80 This information is registered in the Parquet archives, see Lagneau & Riva 2005



debts (+60%) and, above all, private foreign securities (+150%). On the other hand, the decrease in the Parquet forward operations on the French *rentes* was not stopped, and the rise in its forward operations on private French securities was not much affected by either the 1893 or the 1898 laws, maybe because it always had dominated that market segment, either (overwhelmingly) for spot or (relatively) for forward operations.

Graph 2 Transactions on the Parquet (from the internal stamp tax)



These results suggest that neither the supporters of the *Coulisse* nor those of the *Parquet* were right: The *Parquet* didn't suffer much from the 1893 law, mostly because the *Coulisse* had already conquered most of the market it could pretend to satisfy (banks, institutional investors and brokers issuing and dealing in securities not – yet – definitively distributed in individual portfolios). On the other hand, the supporters of the *Coulisse* were wrong in pretending that transferring the control of the market to the *Parquet* would result in an overall decline of the market: the change affected the distribution between *Coulisse* and *Parquet* but didn't stop the development of the market.

### *Transaction costs*

Contemporaries considered that commissions were usually lower on the *Coulisse*, at least for large transactions. The difference, nevertheless, was lower than argued by the *coulissiers*, when they compared their commissions to the official maximum commissions set by the *Parquet* regulation rather than to the actual commissions, usually nearer from the minimum (50% of the official maximum) that the *Parquet* tried to impose to its members (with frequent enforcement problems, as the CAC archives testify). Since the 1898 reform led to official maximum commissions being halved, it likely put the *Parquet* on a footing similar to the *Coulisse*. Actually, a comparison undertaken by the *Crédit lyonnais* for its own use suggested the commissions on the *Parquet* were lower than in all foreign market including London<sup>81</sup>.

A major reason for the low commissions on the *Coulisse* is the fact its members acted also on their own account as counterparty, something forbidden to *Parquet* members. Part of their profits then resulted from the spread between their bid and ask prices. Unfortunately, these spreads have not been registered by the press, and – maybe in order to hide the dual capacity of the *coulissiers* to private investors – the prices for securities listed on the *Coulisse* were always published as if they were pure “equilibrium” prices. We use Roll's (1984) model and

---

<sup>81</sup>The same fact was considered in 1906 by the tax administration as a good reason for raising the transaction tax without threatening the Paris market (see « Note du Mouvement général des fonds au cabinet du Ministre (bureau des travaux législatifs), october 13, 1906, CAEF box B.64.877). Even the Paris Chamber of commerce, certainly not favourable to the *Parquet* monopoly, considered the commissions as low compared to the responsibilities that the agents de change beared (malgré « le principe du monopole qui n'eut peut-être pas prévalu dans vos avis (...) il est même évident que dans certains cas ce nouveau tarif fixe ce courtage à un taux peu en rapport avec la responsabilité qu'assume l'Agent », rapport présenté au nom de la commission n°3 de la Chambre de commerce de Paris par M. Hugot, adopté et converti en délibération de la Chambre de commerce dans sa séance du 11 mai 1898, p. 2; CAEF, box B. 64.895).

one of its variants developed by George, Kaul and Nimalendran (1991) (henceforth GKN) in order to derive implicit spreads – a measure of the liquidity cost – for both the Coullisse and the Parquet in 1892, 1894 and 1903. We chose these dates in order to observe the impact of the 1893 change before the market boom and crash of 1895-6; then we chose 1903 as the last term of comparison because, as our narrative demonstrates, all the adjustments to the 1898 law were not ended until 1902.

One must consider that the Coullisse provided a higher immediacy, since on many securities its members were willing to buy or sell at any moment, when, after the opening fixing, Parquet members, as pure brokers, had to wait for a colleague to post an opposite order during the continuous auction. Furthermore, the Parquet was open only two hours a day, when the Coullisse opened much longer hours. The important advantage of immediacy had a price, which the spread certainly measures to some extent.

In a perfectly competitive and transparent market in which all agents have access to the same information, the spread must correspond only to their non-informational costs. An informed operator with dual capacity and no disclosure obligations can impose margins higher than these costs only in a situation of both opaqueness and asymmetric information. The Roll measure estimates realized spreads based on the autocovariance of past returns. George, Kaul and Nimalendran(1991) show that the Roll measure is downward biased because it is based on transaction returns which contain positively autocorrelated components. Roll's model also makes strong hypotheses such as: (1) the constance of the expected return of a security through time, and (2) the absence of adverse selection or inventory costs born by the market makers. These hypotheses are more restrictive than those in recent models (Glosten, 1987; Stoll, 1989; Roomans, 1993). Nevertheless, these models require more information (on volumes traded in particular) that are not available for our period. GKN (1991) propose a spread estimator which does not suffer from these biases and requires only data on transactions prices. It uses portfolio expected returns to extract the expected returns of individual securities, in order to purge realized returns from its time-varying expected return component (assuming that the bid-ask error component of securities are cross-sectionally uncorrelated). We used both Roll's and this spread in this paper.

We built portfolios corresponding to the various segments of the Paris stock market: not only the Parquet and the Coullisse, but their different sections, in order to compare properly average spreads. One methodological problem we faced is that, precisely because of the (changing)

regulations, the *Coulisse* and the *Parquet* didn't list entirely comparable securities. This is why we built quite diversified portfolios (see appendix 2), totalling respectively 45, 47 and 39 securities for the *Coulisse* in 1892, 1894 and 1903, and 47, 49 and 42 for the *Parquet* (changes result from the availability of securities in some small segments at some dates). We focused particularly on cross-listed securities (those listed both on the *Parquet* and the *Coulisse*, something which supposedly should have not existed before 1893 and should have disappeared after 1898 but existed in both cases<sup>82</sup>). For these securities (which represent above a third of our total sample), any result will appear as particularly strong since no fixed effect of the security can explain differences between the markets and affect the results. Furthermore, in order to facilitate the comparison between years, we also included as frequently as possible the same securities in the portfolios of consecutive years. We were able to include at least 75% of identical securities, which also reinforce our results.

We collected overall roughly 14,000 weekly prices for these securities. Based on the continuously compound return series, we calculated the spreads for each security (some spreads could not be calculated because prices were not available in sufficient numbers or the co-variances were positive); we averaged these spreads for various portfolios, built on a combination of the market where the securities were listed (*Parquet*, *Coulisse*, or both), the type of security (bonds or stocks), the nationality of the issuer (French or foreign), the type of operation (forward or spot) (see table 3)<sup>83</sup>. The spreads on the *Parquet* are regularly lower than the *Coulisse*'s ones, reflecting the differences in the trading systems. This is consistent with Pagano & Roell (1996), for whom a transparent market run by pure brokers with opening fixing and continuous auction produces tighter spreads; an opaque market run by informed dual capacity operators gives higher spreads, reflecting the rents *coulistiers* could extract from their superior information in an opaque market.

---

82 Nevertheless, illegal operations before 1892 and, after 1898, the publication of prices for transactions handled by the *coulistiers* having established their headquarters in Brussels allow us to collect the prices of cross-listed securities for these years.

83 These portfolios indirectly give insights on the impact of market capitalization, since foreign government bonds are large caps, French private bonds and stocks listed on the *Parquet* mid-sized ones, and French cross-listed stocks small ones.

Table 3. Average spread mesures per portfolios

Spot Market average Roll mesures						
1892		1894		1903		
Fixed income	Stock	Fixed income	Stock	Fixed income	Stock	
Parquet_all	0.011	0.016	0.010	0.030	0.008	0.007
Coulisse_all	0.019	0.017	0.030	0.042	0.036	0.031
Cross_listed_all	na	0.014	na	0.029	na	0.020
Cross_listed_Parquet	na	0.016	na	0.012	na	0.007
Cross_listed_Coulisse	na	0.011	na	0.045	na	0.032
Parquet_only	0.011	0.015	0.010	0.049	0.008	0.007
Coulisse_only	0.018	0.022	0.019	0.039	0.009	0.029

Forward Market average Roll mesures						
1892		1894		1903		
Fixed income	Stock	Fixed income	Stock	Fixed income	Stock	
Parquet_all	0.015	0.021	0.007	0.014	0.004	0.005
Coulisse_all	0.020	0.021	0.011	0.066	0.026	0.009
Cross_listed_all	0.017	0.025	0.009	0.011	0.015	0.006
Cross_listed_Parquet	0.015	0.025	0.007	0.011	0.004	0.005
Cross_listed_Coulisse	0.020	na	0.011	na	0.026	0.006
Parquet_only	na	0.017	na	0.017	na	0.005
Coulisse_only	na	0.021	na	0.066	na	0.012

Spot Market average GKN mesures						
1892		1894		1903		
Fixed income	Stock	Fixed income	Stock	Fixed income	Stock	
Parquet_all	0.015	0.035	0.008	0.022	0.008	0.009
Coulisse_all	0.018	0.019	0.019	0.034	0.011	0.026
Cross_listed_all	na	0.021	na	0.028	na	0.011
Cross_listed_Parquet	na	0.029	na	0.017	na	0.008
Cross_listed_Coulisse	na	0.014	na	0.037	na	0.014
Parquet_only	0.015	0.039	0.008	0.024	0.008	0.009
Coulisse_only	0.018	0.023	0.019	0.037	0.011	0.029

Forward Market average GKN mesures						
1892		1894		1903		
Fixed income	Stock	Fixed income	Stock	Fixed income	Stock	
Parquet_all	0.013	0.02	0.006	0.018	0.006	0.004
Coulisse_all	0.013	0.017	0.009	0.035	0.026	0.013
Cross_listed_all	0.013	0.027	0.011	0.014	0.014	0.005
Cross_listed_Parquet	0.013	0.027	0.006	0.011	0.006	0.005
Cross_listed_Coulisse	0.008	na	0.009	0.012	0.026	0.006
Parquet_only	na	0.019	na	0.021	na	0.003
Coulisse_only	na	0.017	na	0.044	na	0.015

Despite the fact that all segments were not represented, the results of the diachronical analysis are quite clear: in the Parisian market as a whole, spreads rose after 1893 (by 35% and 12% on average) and decline after 1898 (by 45% and 52%) for both Roll and GKN measures. The increase in the spread of the Coulisse was markedly higher than the one in the Parquet. This suggest that the 1893 move gave to *coulistiers* the opportunity to increase their spreads,

thanks to their capacity to provide immediacy to a larger number of securities and their ability in using their private information in a more opaque market: in practice, the *coulissiers* were allowed to trade in all the securities without any juridical uncertainty. The increase in 1894 Coulisser's spreads were markedly strong in the spot and forward prices of single listed French and foreign shares. For these segments, the lack of competition allowed the *coulissiers* to widen more their spreads than on cross-listed securities<sup>84</sup>. In 1898 by contrast, the re-regulation imposed a reduction in spreads, which was particularly strong in the Parquet, mainly thanks to the consolidation of the order flow in a transparent market<sup>85</sup>.

If this hypothesis is true, spreads should be higher on average on the Coulisser, especially for cross-listed securities. This is clearly the case for most of our portfolios, but not true systematically (which may result from the small size of the portfolios).

In order to test more strictly for this, we regressed the individual securities' spreads (GKN) on a set of dummy variables for the different characteristics. We also included a measure of liquidity, quantified by the number of price quotations per day for the sample values, for each market in the following model (in natural logarithm):

$$\text{SPREAD} = \alpha \text{LIQUID} + \mu_1 \text{Year94} + \mu_2 \text{Year03} + \mu_3 \text{Type} + \mu_4 \text{Country} \\ + \mu_5 \text{Private} + \mu_6 \text{Crosslisted} + \mu_7 \text{Cash}$$

Where Type signals whether the security is a share or a bond, Country whether it is French or foreign, Private whether it was issued by a private or a public entity, Crosslisted whether it is listed on both the Coulisser and the Parquet and Cash whether the security is traded in cash or forward market..

The results confirm our hypothesis (table 4): spreads are significantly higher on the Coulisser in 1894 (and much higher: on average more than one percentage point higher, or 50% higher), and they are also significantly lower on the Parquet in 1903 (almost by the same percentage).

---

84 On the other hand, the Coulisser's spreads on cross-listed foreign bonds did not change much, which is not surprising since they were already traded by the *coulissiers* in 1892 and remained submitted to the competition of the Parquet in 1894.

85 Note that the increase in spreads should not result from the introduction of the tax since its rate is much lower (at most 0,005% for the tax compared to above 1% for the spreads); in any case, the tax remained in place in 1903, when spreads fell.

Table 4. GKN Spreads vs securities and markets (Parquet & Coullisse) characteristics

Parquet

Linear Regression - Estimation by Least Squares

Dependent Variable SPREAD (GKN)

Usable Observations 95 Degrees of Freedom 87

Centered R\*\*2 0.165796 R Bar \*\*2 0.098676

Uncentered R\*\*2 0.502285 T x R\*\*2 47.717

Mean of Dependent Variable 0.0171801352

Std Error of Dependent Variable 0.0210053302

Standard Error of Estimate 0.0199420566

Sum of Squared Residuals 0.0345986491

Log Likelihood 241.29717

Durbin-Watson Statistic 2.296882

Variable	Coeff	Std Error	T-Stat	Signif	
*****					
α LIQUID	0.003782	0.001481	2.55344	0.0124	**
μ1 YEAR94	-0.007094	0.004783	-1.48312	0.1416	
μ2 YEAR03	-0.0143	0.005013	-2.85330	0.0054	***
μ3 TYPE	0.011067	0.007324	1.51098	0.1344	
μ4 COUNTRY	0.001320	0.006287	0.21004	0.8341	
μ5 PRIVATE	0.002961	0.007027	0.42136	0.6745	
μ6 CROSS-LISTED	-0.000428	0.006069	-0.07062	0.9438	
μ7 CASH	-0.008377	0.006458	-1.29719	0.1979	

Legend: \*, \*\*, \*\*\* denote significant respectively at 10%, 5% and 1%.

μ1 YEAR92	1892=1, Other year=0
μ2 YEAR03	1903=1, Other year=0
μ3 TYPE	Stock=1, Fixed income security=0
μ4 COUNTRY	Foreign security=1, French=0
μ5 PRIVATE	Corporate security=1, else=0
μ6 CROSS-LISTED	Mono-listed security=1, Cross-listed=0
μ7 CASH	Cash market=1, Forward market=0

## Coulisse

### Linear Regression - Estimation by Least Squares

Dependent Variable SPREAD (GKN)

Usable Observations 88 Degrees of Freedom 80

Centered R\*\*2 0.121767 R Bar \*\*2 0.044922

Uncentered R\*\*2 0.564658 T x R\*\*2 49.690

Mean of Dependent Variable 0.0228615102

Std Error of Dependent Variable 0.0227957456

Standard Error of Estimate 0.0222778519

Sum of Squared Residuals 0.0397042148

Log Likelihood 214.09334

Durbin-Watson Statistic 2.099749

Variable	Coeff	Std Error	T-Stat	Signif
*****				
α LIQUID	0.001504	0.002095	0.71809	0.4747
μ1 YEAR94	0.012849	0.005206	2.46791	0.0157 **
μ2 YEAR03	0.003864	0.006583	0.58698	0.5588
μ3 TYPE	0.009482	0.008597	1.10293	0.2733
μ4 COUNTRY	-0.010277	0.008981	-1.14432	0.2559
μ5 PRIVATE	0.001896	0.008480	0.22359	0.8236
μ6 CROSS-LISTED	0.012859	0.006391	2.01198	0.0475 **
μ7 CASH	0.001373	0.006999	0.19629	0.8448

Legend: \*, \*\*, \*\*\* denote significant respectively at 10%, 5% and 1%.

μ1 YEAR92 1892=1, Other year=0

μ2 YEAR03 1903=1, Other year=0

μ3 TYPE Stock=1, Fixed income security=0

μ4 COUNTRY Foreign security=1, French=0

μ5 PRIVATE Corporate security=1, else=0

μ6 CROSS-LISTED Mono-listed security=1, Cross-listed=0

μ7 CASH Cash market=1, Forward market=0

### *Financial integration*

The Coulisse may impose higher transaction costs and still be necessary for the market to be efficient. As Hasbrouck (1995) put it, a market might have large spreads and a relatively slow price-adjustment, but if innovations in this market cause reactions in another market where spreads are smaller and adjustment more rapid, the first market can still be understood as informationally dominant. In our case, this would suggest that the Coulisse may be the most efficient (informationally) despite having larger spreads. Then the next step in this work entails measuring the degree of integration of the two markets. For that purpose, we study the co-integration of various portfolios for the Parquet and the Coulisse and test for Granger



causality between these series. This will allow us to understand better the relationship between the two markets.

We built portfolios for six segments of the market, and price indices for each portfolio; we calculated returns for these portfolios. Unit roots tests on the indices (in logs) showed that all indices were non-stationary and first order integrated. This allowed us to test for cointegration using the Engle-Granger (1987) test. Results are given in table 5. Unsurprisingly, cointegration is more frequent for cross-listed securities, since the same securities appear in both markets so that direct arbitrage is possible. It is also higher for securities traded on the more active forward market.

In order to apprehend whether one of the markets is dominant and influences the other, we tested for Granger (1969) causality using the returns on our indices. Results are reported in table 6. They are consistent with table 5 in that causality mostly appears for cross-listed securities and those traded on the forward market. Causality runs always from the Coullisse to the Parquet, suggesting the Coullisse was actually the market where information was gathered first, and then diffused towards the Parquet. There is one exception : the spot market for stocks, where, at least for cross-listed stocks in 1894, causality runs from the Parquet to the Coullisse; this is actually not surprising since the Parquet was well known among contemporaries as being the dominant market for most (at least French) stocks.

Both cointegration and causality are more frequent in 1894 compared to 1892 (most tests have higher values), which suggests that the 1893 deregulation had a positive impact on the efficiency of the market. Nevertheless, the level in 1903 is not much below that in 1894, suggesting the 1898 reform didn't have consequences symmetric to the 1893 change.

Table 5. Tests for cointegration of portfolio indices between Parquet and Coulisse

Portfolios	Engel-Granger (ADF)		
	1892	1894	1903
Cross-listed, fixed income, forward market	-1.56	-5.65 ***	-4.04 ***
Cross-listed, stocks, forward market	-7.51 ***	-6.80 ***	-6.61 ***
Cross-listed, stocks, spot market	-1.96	-2.78 *	-2.49
Mono-listed, stocks, forward market	-1.43	-2.32	-5.37 ***
Mono-listed, fixed income, spot market	-2.62 *	-2.12	-1.40
Mono-listed, stocks, spot market	-0.93	-2.28	-1.05

Legend: \*, \*\*, \*\*\* significant at 10% (-2.58), 5% (-2.89) or 1% (-3.51). The table provides the tests for cointegration (H0: absence of cointegration) between indices of two portfolios of securities in the same market segment traded on the Parquet and the Parquet.

The table provides the tests for cointegration (H0: absence of cointegration) between indices of two portfolios of securities in the same market segment traded on the Parquet and the Parquet.

Table 6. Granger-causality tests between portfolios of the Coulisse and the Parquet, by year (p-value)

	Granger causality from			1892	1894	1903
	Parquet	to	Coulisse			
Cross-listed, fixed income, forward market	Parquet	to	Coulisse	0.66	0.70	0.38
	Coulisse	to	Parquet	0.53	0.08 *	0.07 *
Cross-listed, stocks, forward market	Parquet	to	Coulisse	0.21	0.79	0.73
	Coulisse	to	Parquet	0.99	0.00 ***	0.91
Cross-listed, stocks, spot market	Parquet	to	Coulisse	0.97	0.00 ***	0.57
	Coulisse	to	Parquet	0.30	0.19	0.36
Mono-listed, stocks, forward market	Parquet	to	Coulisse	0.16	0.20	0.20
	Coulisse	to	Parquet	0.30	0.04 **	0.02 **
Mono-listed, fixed income, spot market	Parquet	to	Coulisse	0.47	0.62	0.62
	Coulisse	to	Parquet	0.07 *	0.53	0.72
Mono-listed, stocks, spot market	Parquet	to	Coulisse	0.59	0.75	0.65
	Coulisse	to	Parquet	0.41	0.61	0.36

Legend: \*, \*\*, \*\*\* significant at 10%, 5% and 1%.

The consistency of cointegration, shown in table 5, allows us estimating a vector error correction model (VECM) for the forward market of cross-listed stocks (BIVAT). A VECM estimation should show the long run relationship between the Parquet and the Coulisse in this segment. In this case such a model can be illustrated as:

$$\begin{cases} \Delta I_t^{Pa} = \alpha_1 + \phi_1 (I_{t-1}^{Pa} - I_{t-1}^{Co}) + \sum \beta_{1j} \Delta I_{t-j-1}^{Pa} + \sum \gamma_{1j} \Delta I_{t-j-1}^{Co} + e_{1t} \\ \Delta I_t^{Co} = \alpha_2 + \phi_2 (I_{t-1}^{Pa} - I_{t-1}^{Co}) + \sum \beta_{2j} \Delta I_{t-j-1}^{Pa} + \sum \gamma_{2j} \Delta I_{t-j-1}^{Co} + e_{2t} \end{cases}$$

Where  $I$  is portfolio index (in log) and the second term in the relations is the error correction term in which  $\emptyset_1$  and  $\emptyset_2$  are adjustment coefficients applied to a lagged difference relative to the Parquet index. It is the error, not in the sense of disequilibrium but in the sense of difference. Here  $\emptyset$  is interpreted as speed-of-adjustment parameter toward the Parquet index. According to Hasbrouck (2007) the magnitude of the adjustment coefficients suggests something about price discovery and leadership. In a sense, the process is like a bargaining situation in which the two sides each concede something to reach an agreement. Here the party (market) that changes position by the smallest amount is stronger (more efficient) and the party that moves more is the weaker (less efficient). Finally the right-hand side of the model contains the terms in lagged first difference ( $\Delta I_{t-1}$ ).

Table 7 depicts the results of a VECM model of the cross-listed stocks portfolios. The results confirm the short-term causality relation from Coulisse to Parquet in 1894 obtained with the Granger causality test (Table 6). But the adjustment coefficients suggests that there is no evidence of a long-term dynamic dominance of either market.

Table 7. VECM estimation on the returns of BIVAT portfolio

	1892		1894		1903	
	R_Parquet	R_Coulisse	R_Parquet	R_Coulisse	R_Parquet	R_Coulisse
Constant	-1.37 (-1.70)	-0.80 (-1.93)	0.03 (0.80)	0.04 (0.99)	4.53 (1.59)	5.71 (1.92)
EC(-1)	-0.00 (-1.70)	-1.27 (-1.93)	-0.00 (-0.77)	-0.00 (-0.95)	0.00 (1.59)	0.00 (1.92)
R_Parquet(-1)	<b>-0.34</b> <b>(-2.02)</b>	0.15 (1.58)	<b>-0.46</b> <b>(-3.12)</b>	-0.08 (-0.47)	-0.38 (-1.74)	0.11 (0.49)
R_Coulisse(-1)	0.40 (1.36)	0.08 (0.52)	<b>0.81</b> <b>(5.09)</b>	0.14 (0.80)	0.36 (1.75)	-0.18 (-0.81)

Legend: t-test statistics are shown in brackets. EC(1): residuals of one period lagged cointegration relationship between two indexes. R\_Parquet: returns of the Parquet portfolio. R\_Coulisse: returns of the Coulisse portfolio.

#### 4. Conclusion

Our analysis of the 1893 and 1898 regulatory changes suggests that the reforms had unexpected consequences for all the actors involved. The 1893 reform likely improved the efficiency of the market as a whole and reinforced the primacy of the Coulisse as the dominant market (in terms of returns' causality), a primacy that resulted less from its institutional position than from its large market share in transactions. Nevertheless, it is not

clear whether the 1893 reform would have facilitated a long term development of the market: in the short term, it probably contributed to the speculative bubble on the gold mines which ended with the 1895 crash; after that episode, transactions stagnated until the 1898 reform. Furthermore, the 1893 reform imposed substantial costs on investors: it allowed the *Coulisse* to enlarge its spreads, increasing transaction costs. By contrast, the 1898 reform look like mostly beneficial: transaction costs declined substantially thanks both to price controls on the *Parquet* (to a small extent) and (mostly) from the lower spreads on the now dominant transparent market. Immediacy was still available on the *Coulisse* for a number of securities, but most investors exchanged some immediacy for lower costs. Most importantly, the 1898 reform didn't provoke a decline in the market as a whole, which continued growing up to World War One. It may also have contributed to stabilizing it: the Paris Bourse escaped the 1907 crisis and remained more important at the international level than the French economy. The analysis of this episode then reinforces the literature emphasizing the capacity of dual market organizations in providing efficient services to the users of stock exchanges.

## References

### *Archives*

CAEF, centre des Archives Economiques et financières, Ministère des Finances  
Fonds Compagnie des Agents de Change de Paris, auprès du CAEF, centre des Archives Economiques et financières, Ministère des Finances.  
Minutes of the Chambre syndicale de la Compagnie des agents de change de Paris, Fonds Compagnie des Agents de Change de Paris, auprès du CAEF, centre des Archives Economiques et financières, Ministère des Finances, various years.  
Minutes of Assemblées Générales de la Compagnie des Agents de Change de Paris, Fonds Compagnie des Agents de Change de Paris, auprès du CAEF, centre des Archives Economiques et financières, Ministère des Finances, various years.

### *Bibliography*

Bernanke B., "Clearing and Settlement during the Crash", *Review of Financial Studies*, Vol. 3, No. 1 (1990), pp. 133-151.  
Birnbaum P., Les juifs d'état dans les guerres franco-françaises. Du boulangisme au front populaire », in *Vingtième Siècle*, Vol. 33, N° 1, 1992a.  
Birnbaum P., *Les fous de la république*, Paris, Seuil, 1992b.  
Coffee J., "Racing towards the Top?: The Impact of Cross-Listings and Stock Market Competition on International Corporate Governance", *Columbia Law Review*, Vol.

- 102, No. 7, Nov., 2002, pp. 1757-1831.
- Duffy D., Zhu H., “Does a Central Clearing Counterparty reduce Counterparty Risk?”, WP, Stanford University, July 1<sup>st</sup> 2009.
- Engel, R.F., and C. W. J. Granger, 1987, “Co-integration and error correction: Representation, estimation, and testing”, *Econometrica* 55, 251-276.
- Gehrig, Th. and C. Fohlin, “Trading Costs in Early Securities Markets: The Case of the Berlin Stock Exchange 1880–1910”, *Review of Finance*, 10, 4, pp. 587-612
- George, Th. J., G. Kaul and M. Nimalendran, 1991, “Estimation of the Bid-Ask Spread and its Components: A New Approach”, *Review of Financial Studies*, 4, 4, pp. 623-656
- Glosten, L. R., 1987, “Components of the bid-ask spread and the statistical properties of transaction prices”, *Journal of Finance* 42, 1293-1308.
- Granger, C. W. J., 1969, “Investigating Causal Relations by Econometric models and Cross-Spectral Methods”, *Econometrica* 37, 424-38.
- Hasbrouck J., (2007) *Microstructure of Financial Markets*, Oxford University Press, New York.
- Hasbrouck J., “Trades, quotes, inventories and information”, *Journal of Financial Economics*, 1988, 22, pp. 229-252.
- Hasbrouck, J., 1995, “One Security, Many Markets: determining the Contributions to Price Discovery,” *Journal of Finance* 50: 4, 1175-1199.
- Hautcoeur P.-C., Riva A., « The Paris Financial Market in the 19th Century: an efficient multi – polar organization? », paper presented at the World economic History Congress, Utrecht, 3-7 August 2009.
- Kroszner R., “Can the Financial Markets Privately Regulate Risk?”, *Journal of Money, Credit, and Banking*, Vol. 31, No. 3, (August 1999, Part 2), pp. 596-618.
- Kroszner R., “Central Counterparty Clearing: History, Innovation, and Regulation,” European Central Bank and Federal Reserve Bank of Chicago Joint Conference on Issues Related to Central Counterparty Clearing, Frankfurt, Germany, April 3, 2006.
- Joly L., “L’entrée de l’antisémitisme sur la scène parlementaire française. Le débat sur l’« infiltration juive » à la Chambre en mai 1895”, in *Archives Juives*, vol N° 38-2005/1, 2005.
- Joly L., “Antisémites et antisémitisme à la Chambre des députés sous la III<sup>ème</sup> République”, in *Revue d’histoire moderne et contemporaine*, n° 54-3, 2007.
- Lagneau P., Riva A., « Les archives de la Compagnie des Agents de Change de Paris », WP IDHE, n° 2007 – 08.
- Lagneau P., Riva A., « Les opérations à terme à la Bourse de Paris au XIX siècle », in Levratto N. - Stanziani A. (s.d.d.), *Droit et crédit : la France au XIX siècle*, Bruylant, forthcoming (2010).
- Madhavan A., Smidt S., “A Bayesian model of intraday specialist pricing”, *Journal of Financial Economics*, n° 30, 1991.
- Pagano M., Roell A., “Transparency and liquidity: A comparison of auction and dealer market with informed trading”, *Journal of finance*, vol. 51, n°2, June 1996.
- Riva A., « Les grandes Bourses italiennes à l’époque giolittienne », in *Entreprises et Histoire*, september 2007, n° 4.
- Riva A. – White E., « Danger on Exchange: Counterparty Risk on the Paris Stock Exchange in the XIX Century », NBER WP n° 15634, January 2010.
- Roll, R., 1984, “A simple implicit measure of the effective bid-ask spread in an efficient market”, *Journal of Finance* 39, 1127-39.
- Roomans, M., 1993, « Asymmetric information in securities markets: an empirical

- investigation of serial covariance models of the spread», Working paper, The Wharton School, University of Pennsylvania.
- Seppi D., “Liquidity Provision with Limit Orders and Strategic Specialist”, *The Review of Financial Studies*, Vol. 10, No. 1, Spring, 1997, pp. 103-150
- Stoll H., “Inferring the components of bid-ask spread: Theory and empirical tests”, *Journal of Finance*, 1989, vol. 44.
- Stoll, H. R., 1989, “Inferring the components of the bid-ask spread: theory and empirical tests”, *Journal of Finance* 44, 115-134.
- Tetreau F., *Le développement et les usages de la Coullisse aux XIXème et XXème siècles*, PhD dissertation, Paris II University, Paris, 1994.
- Verley P., “Les opérateurs du marché financier parisien”, in Gallais-Hamonno G., Hautcoeur P.-C. (eds.), *Le Marché financier français au XIX*, Paris, Presses Universitaires de la Sorbonne, 2007.
- Verley P., “Organizations of the national financial markets and convergence of the practices: Parisian brokers’ institutions and networks of in the XIXth century”, in Baubeau P., Ogren A. (eds), *Convergence and Divergence of National Financial System*, Pickering and Chatto, 2010 forthcoming
- Vidal E. (Courtois A.), *Traité des opérations de bourse et de change*, Paris, Garnier, 1904, 13th ed.
- White E., Competition among the exchanges before the SEC: was the NYSE a natural hegemon?”, paper presented at the International Conference « Les places financières comme pôles de compétitivité », Paris, Université Paris Ouest La Défense, January 30, 2008.

## Appendix 1 Securities listed on the Parquet and the Coulisse

### Parquet

	1890	1894	1900	1913
<b>French and colonial securities</b>	1-VII	31-XII	31-XII	31-XII
	Théry	us	us	us
Government bonds	6	8	11	27
Regional governments bonds	35	5	8	9
Local governments bonds	19	40	38	37
Railroads bonds	92	74	82	100
Transportation bonds		40	17	21
Other bonds	68	72	110	143
<b>Total French bonds</b>	<b>220</b>	<b>239</b>	<b>266</b>	<b>337</b>
Railroads stocks	37	27	40	39
Finance stocks	53	43	41	58
Insurance stocks	47	33	32	37
Various stocks	167	101	143	239
Canals and transport stocks		32	30	51
<b>Total French stocks</b>	<b>304</b>	<b>236</b>	<b>286</b>	<b>424</b>
<b>Parquet : total number of French securities</b>	<b>524</b>	<b>475</b>	<b>552</b>	<b>761</b>
	us	us	us	us
<b>Foreign securities</b>				
Government bonds	91	114	141	167
Regional governments bonds	5	7	3	6
Local governments bonds	1			3
Railroads bonds	33	36	38	77
Other bonds	8	16	21	50
<b>Total foreign bonds</b>	<b>138</b>	<b>173</b>	<b>203</b>	<b>303</b>
Railroads stocks	15	12	17	20
Finance stocks	18	11	13	43
Insurance stocks		1	2	2
Various stocks	7	13	28	64
<b>Total foreign stocks</b>	<b>40</b>	<b>37</b>	<b>60</b>	<b>129</b>
<b>Parquet : total number of foreign securities</b>	<b>178</b>	<b>210</b>	<b>263</b>	<b>432</b>
<b>Parquet : total number of listed securities</b>	<b>702</b>	<b>685</b>	<b>815</b>	<b>1193</b>

## Coulisse

	<b>1890</b>	<b>1894</b>	<b>1900</b>	<b>1913</b>
	1-VII	31-XII	31-XII	31-XII
<b>French and colonial securities</b>				
Government bonds		2		
Regional governments bonds	1	2	1	
Local governments bonds	3			
Railroads bonds	1	1	3	
Transportation bonds	6	1	4	
Other private bonds	26	17	32	
<b>Total number of French bonds</b>	<b>37</b>	<b>23</b>	<b>40</b>	<b>0</b>
Railroads stocks	1	1	2	
Finance and insurance stocks	1	4	14	17
Transportation stocks	3	9	18	25
Other stocks	55	36	129	134
<b>Total number of french stocks</b>	<b>60</b>	<b>50</b>	<b>163</b>	<b>176</b>
<b>Coulisse : total number of French securities</b>	<b>97</b>	<b>73</b>	<b>203</b>	<b>176</b>
<b>Foreign securities</b>				
Government bonds	13	25	17	42
Regional governments bonds		4		8
Local governments bonds	17	20	17	38
Railroads bonds	23	24	15	
Various private bonds	7	24	16	
<b>Total number of foreign bonds</b>	<b>60</b>	<b>97</b>	<b>65</b>	<b>88</b>
Transportation stocks	4	4	2	16
Finance and insurance stocks	9	6	5	8
Various stocks	39	65	121	58
<b>Total number of foreign stocks</b>	<b>52</b>	<b>75</b>	<b>128</b>	<b>82</b>
<b>Coulisse : total number of foreign securities</b>	<b>112</b>	<b>172</b>	<b>193</b>	<b>170</b>
<b>Coulisse: total number of securities</b>	<b>209</b>	<b>245</b>	<b>396</b>	<b>346</b>



## Appendix 2 : details on the spreads by segment for the Parquet and the Coulisse

### GKN

#### Coulisse

			Number of securities per category			Number of spreads available			Average spread		
			1892	1894	1903	1892	1894	1903	1892	1894	1903
<b>Bi-listed securities</b>											
Fixed income, forward market			6	6	6	3	5	2	0,01	0,01	0,03
	Foreign	Government	6	6	6	3	5	2	0,01	0,01	0,03
Stocks, forward market			1	4	4	na	2	1	na	0,01	0,01
	Foreign		1	4	4	na	2	1	na	0,01	0,01
Stocks, spot market			9	9	2	6	6	1	0,01	0,04	0,01
	French	Corporate	9	9	2	6	6	1	0,01	0,04	0,01
<b>Securities listed only on the Coulisse</b>											
Fixed income, spot market			11	11	11	11	10	6	0,02	0,02	0,01
	Foreign		11	11	11	11	10	6	0,02	0,02	0,01
		government	6	6	6	6	6	4	0,02	0,02	0,01
		Corporate	5	5	5	5	4	2	0,02	0,02	0,01
Stocks, spot market			11	11	11	7	10	5	0,02	0,04	0,03
	French	Corporate	6	6	6	3	5	2	0,03	0,05	0,05
	Foreign	Corporate	5	5	5	4	5	3	0,02	0,03	0,01
Stocks, forward market			7	6	5	6	5	4	0,02	0,04	0,02
	Foreign	Corporate	7	6	5	6	5	4	0,02	0,04	0,02

			Number of securities per category			Number of spreads available			Average of the spreads		
			1892	1894	1903	1892	1894	1903	1892	1894	1903
<b>Bi-listed securities</b>											
Fixed income, forward market			6	6	6	5	1	3	0,01	0,01	0,01
	French	Government	1	1	1	1	NA	NA	0,00	NA	NA
	Foreign	Government	5	6	7	4	1	3	0,02	0,01	0,01
Stocks, forward market			1	3	4	1	3	3	0,03	0,01	0,01
	Foreign	Corporate	1	3	4	1	3	3	0,03	0,01	0,01
Stocks, spot market			9	9	2	5	5	1	0,03	0,02	0,01
	French	Corporate	9	9	2	5	5	1	0,03	0,02	0,01
<b>Securities listed only on the Parquet</b>											
Fixed income, spot market			12	12	12	11	8	9	0,02	0,01	0,01
	Foreign		12	12	12	11	8	9	0,02	0,01	0,01
		Government	6	6	6	5	4	5	0,01	0,01	0,01
		Corporate	6	6	6	6	4	4	0,02	0,01	0,01
Stocks, spot market			12	12	11	9	9	6	0,04	0,02	0,01
	French	Corporate	7	7	7	4	5	4	0,06	0,02	0,01
	Foreign	Corporate	5	5	4	5	4	2	0,03	0,03	0,01
Stocks, forward market			7	7	7	6	6	3	0,02	0,02	0,00
	Foreign	Corporate	7	7	7	6	6	3	0,02	0,02	0,00

ROLL

Parquet

			Number of securities per category			Number of spreads available			Average of the spreads		
			1892	1894	1903	1892	1894	1903	1892	1894	1903
Bi-listed securities											
Fixed income, forward market			6	6	6	4	2	5	0,016	0,008	0,005
	French	Government	1	1	1	1	na	na	0,003	na	na
	Foreign	Government	5	6	7	3	2	5	0,02	0,008	0,005
Stocks, forward market			1	3	4	1	2	3	0,026	0,011	0,006
	Foreign	Corporate	1	3	4	1	2	3	0,026	0,011	0,006
Stocks, spot market			9	9	2	5	5	3	0,017	0,013	0,007
	French	Corporate	9	9	2	5	5	3	0,017	0,013	0,007
Securities listed only on the Parquet											
Fixed income, spot market			12	12	12	10	10	10	0,011	0,011	0,009
	Foreign		12	12	12	10	10	10	0,011	0,011	0,009
		Government	6	6	6	5	4	6	0,012	0,005	0,005
		Corporate	6	6	6	5	6	4	0,01	0,015	0,014
Stocks, spot market			12	12	11	8	7	5	0,016	0,049	0,007
	French	Corporate	7	7	7	3	4	4	0,017	0,07	0,005
	Foreign	Corporate	5	5	4	5	3	1	0,024	0,022	0,017
Stocks, forward market			7	7	7	5	6	4	0,018	0,018	0,006
	Foreign	Corporate	7	7	7	5	6	4	0,018	0,018	0,006
Coulisse											
			Number of securities per category			Number of spreads available			Average spread		
			1892	1894	1903	1892	1894	1903	1892	1894	1903
Bi-listed securities											
Fixed income, forward market			6	6	6	2	4	2	0,02	0,012	0,026
	Foreign	Government	6	6	6	2	4	2	0,02	0,012	0,026
Stocks, forward market			1	4	4	na	na	na	na	na	na
	Foreign		1	4	4	na	na	na	na	na	na
Stocks, spot market			9	9	2	5	6	2	0,012	0,045	0,033
	French	Corporate	9	9	2	5	6	2	0,012	0,045	0,033
Securities listed only on the Coulisse											
Fixed income, spot market			11	11	11	11	11	7	0,018	0,019	0,01
	Foreign		11	11	11	11	11	7	0,018	0,019	0,01
		government	6	6	6	6	6	4	0,019	0,021	0,013
		Corporate	5	5	5	5	5	3	0,018	0,017	0,006
Stocks, spot market			11	11	11	7	9	5	0,023	0,04	0,03
	French	Corporate	6	6	6	3	5	2	0,023	0,043	0,054
	Foreign	Corporate	5	5	5	4	4	3	0,022	0,035	0,014
Stocks, forward market			7	6	5	6	5	2	0,022	0,067	0,012
	Foreign	Corporate	7	6	5	6	5	2	0,022	0,067	0,012

This table provides information on the number of securities in each portfolio, on the spreads available (by construction, the spread is unavailable when the covariance in the security prices is positive), and the average spread used for graph 2.