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Villains or Heroes? Private Banks and Railroads after the Sherman Act

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Abstract

This paper analyzes and measures the value that American private banks added as directors of non financial companies. Using data between 1874 and 1913, and an event study from 1906, I find that bank directors added about 20% of a firm's market capitalization. Collusive practices encouraged by private banks accounted for 65% of this value, and were the equivalent of creating a three player market among railroads. About 35% of the value added by banks came from better governance. I argue that although policymakers were partly right in sidelining private banks as activist investors, this helped entrench managers.

JEL: G21, G24, G3, K21, L41, N21. Keywords: Antitrust; Collusion; Corporate Governance; Financial History.

The separation of ownership by shareholders and control by managers is a well known weakness of publicly traded companies in the United States. Berle and Means (1932) documented how these firms' ownership became dispersed at the end of the nineteenth century. This corporate governance setup has led to recurring scandals: in 1905, in the aftermath of the 1929 market crash, and at the turn of the twenty-first century. These commotions were no doubt exacerbated by the combination of powerful executives, pliant boards, and helpless equity holders¹. Roe (2004) argues that policymakers have only patched up the problems arising from these scandals, but have not resolved their root causes.

There are several explanations for the separation of ownership and control. Berle and Means (1932) argued that it resulted naturally from the trade-off between liquid capital markets and agency problems. For them, agency problems between managers and shareholders were outweighed by the benefits of liquid equity markets with dispersed owners. Following this train of thought, Jensen (1989) reasoned that if agency problems became too serious, it would be worthwhile to take the companies private again. The liquidity-agency cost trade-off explains why countries with more acute agency problems than those in the United States never saw the proper development of stock markets². Chandler (1977) argued that shareholders were not only unwilling but also unable to understand the complex organizations that emerged during the second industrial revolution, and that the separation of ownership and control was just a practical admission of this ignorance.

Roe (2004) distinguishes two problems arising from the separation of ownership and control. First, managers or large shareholders may engage in self dealing at the expense of small shareholders. The second problem is that managers may not exert themselves to shareholders' best interests. Roe argues that there are three types of institutions that can mitigate both these problems. First is the existence of vigorously competitive product and labor markets that discipline managers. The second set of remedies

¹Even within similar legal systems, American shareholders have significantly less powers than their British counterparts, as documented by Bebchuk (2005)

²This also explains why the United States witnessed a significant LBO movement in the eighties, as agency problems worsened significantly after the diversification merger wave in the early seventies.

includes temporary monitors such as raiders in hostile takeovers, event driven activist hedge funds, LBOs, bankruptcy, and lawsuits. These temporary instruments, however, work well only in some types of companies. The third solution is to have permanent managerial monitors, either through strong boards or powerful permanent investors³. This solution is unlikely to arise because boards without strong owners have little incentive to monitor. Furthermore, powerful owners are difficult to come by naturally, since not enough founders or their descendants are willing to keep undiversified and illiquid investments. Intermediary permanent monitors such as activist banks face legal restrictions in the United States. Roe has correctly argued that politics have played a critical role in American corporate governance by restricting such activist equity intermediaries. In fact, judges and lawmakers, from Brandeis (1914), the U.S. Senate through the Pecora Report (1934), to Douglas (1940), have resisted bankers from shaping corporate strategy⁴. Was this political decision rational?

This paper tries to show that blocking activist financial institutions did increase welfare, but that this solution was too blunt, as it damaged corporate governance and cemented the separation of ownership and control in the United States. There are four accusations that have been historically levelled against activist private banks (these were the American version of universal banks). The first criticism is that they had conflicts of interest as directors and suppliers of securities and other financial services. This was first aired in the Armstrong Investigation in 1905, and repeated during the Pujo and Pecora Federal Investigations in 1912 and 1934. I will try to show that there is no compelling evidence for this reproach at the time⁵. The second argument against private banks is that they were a tight oligopoly. This critique was first made in the Pujo Hearings in 1912⁶, and repeated later by Brandeis (1914) and Douglas (1940). Although it is true

³These monitors could, for example, create pay that would give executives an incentive to perform. In practice, Roe argues that incentive pay has been more a symptom of the problem of managerial self dealing than part of the solution to avoid their shirking.

⁴Douglas, SEC Chairman: "Insofar as management [and] formulation of industrial policies ... the banker will be superseded. Pecora Report (1934), "The investment company became the instrumentality of financiers and industrialists to facilitate acquisition of concentrated control of wealth and industries of the country' (p. 333)'

⁵See Kroszner and Rajan (1994) for an in depth study of this issue for later periods

⁶see Carosso 1970

that there are some bottlenecks in the finance industry - in the securities issuance, for instance - all the major antitrust suits against investment banks have gone nowhere. The third criticism of private banks is that they were unable to understand and control a manager in a modern corporation. Although the value of a monitoring and permanent equity intermediary has been theoretically established by Holmstrom and Tirole (1997)⁷, Chandler (1977) questions the idea that any outside director can meaningfully understand modern organizations. It is also true that Kuhn Loeb executives admitted this during the Armstrong Investigation. Nonetheless, a careful analysis of the data in this paper indicates that private banks added between 6 and 7 percent of value due to better governance. The fourth criticism against banks was first made by Moody (1904) and later repeated in the Pujo Hearings in 1912 and by Brandeis (1914). This was that private banks stifled non-financial competition, a result confirmed by Cantillo (1998).

This paper studies how exactly private banks limited railroad competition in the aftermath of the Sherman Act. After 1894, private banks reduced competition by spotting collusive deviations more easily, by molding railroads into more symmetric groups, by co-opting maverick railroads, by preventing excess capacity buildup, by increasing multi-market contact, and by encouraging railroad cross-shareholding. Using data from 1874 to 1913, I show that banker presence was more effective than explicit cartels in extracting rents and avoiding price or capacity construction wars. The paper estimates that private banks induced the equivalent of a three player market. I show that the effect of reduced competition on clients was very significant, in line with the results from MacAvoy (1965), Porter (1983), and Ellison (1994).

The events around the Armstrong Investigation allow me to quantify what part of the banker value came from better governance, and what from reduced competition. In 1905, The New York Senate and Assembly opened hearings - the Armstrong Investigation - of life insurance companies that deeply embarrassed private banks. The Hearings made it more difficult for private banks to remain involved in the affairs of non-financial corporations and prompted one - Kuhn Loeb - to resign from the board of all non-bank

⁷Shleifer and Vishny (1986) also develop a model where a large shareholder stake makes a value-adding takeover more likely.

corporations. The empirical results of this paper show that private banks add about 7 percent of corporate value from better firm specific performance, while about 13 percent of value came from collusive practices. The period under analysis also allows me to study the value added by four private banks rather than just J.P. Morgan & Co., who has been analyzed elsewhere and in detail.

The article's layout is as follows: Section 1 explains how and why private banks took an active part in the governance of non-financial firms. Section 2 discusses the immediate historical background surrounding the Armstrong Investigation. Section 3 presents the evidence of how private banks not only reduced railroad competition but also improved governance. Section 4 concludes the paper.

1 Reorganizations and Private Bank Control

Before 1890, most railroads and industrial firms were closely held by families or by small investor groups. Within two decades, American governance was transformed by massive reorganizations and mergers that allowed banks to control many railroads and industrial firms. The most important reorganizers were J.P. Morgan & Co. and Kuhn Loeb, who as private banks were not subject to close government regulation. These corporate reorganizers were called on to rescue companies in financial distress or to implement large mergers. Private banks played a triple role as investment bankers, commercial lenders, and activist institutional investors⁸.

Reorganizations due to financial distress were common during the 1890s, when one third of the U.S. railroad trackage fell into bankruptcy. The first bankrupt railroads were reorganized by J.P. Morgan & Co., and others later by Kuhn Loeb. Reorganizers would first determine the optimal leverage that a firm could hold. The next step was to reduce debt to that level, often by impelling creditors to exchange bonds for common stock, and by forcing old stockholders to inject fresh capital. Finally, private banks used voting

⁸See Daggett (1908) for an analysis of the Railroad Mergers, and Lamoreaux (1985) for industrial mergers. James (1983) looks at the technological changes that drove these innovations, dating a significant structural break after 1880. For private bank regulations, see U.S. Senate Hearings (1933), 25-101; U.S. Congress (1913), 57-65, 77-80; Carosso (1987), 628.

trusts to keep absolute control after the reorganization⁹. Even though private banks had taken an active role in mergers and reorganizations since 1865, and even though voting trusts had existed since the 1870s, it was not until the economic collapse in 1893 that these two elements were blended. Voting trusts allowed private banks to scatter the company's equity and keep effective control over managers, in effect creating liquidity and strong governance. Moody (1919b) describes how and why J.P. Morgan created the first voting trust:

The control of the properties lay in the voting power of the stock; and, if voting power could not be controlled, little could be accomplished ... [J.P. Morgan's] attempt to reconstruct the Baltimore and Ohio in 1887 was defeated entirely because the controlling interests checkmated him by voting his representative out. He devised a plan whereby he himself would control the voting power. Before undertaking a reorganization or finding the new capital, he provided for a 'voting trust,' a device which, for a number of years, placed in the hands of a few trustees selected by himself the entire voting power of the stock. This scheme was followed in the reorganization of the Southern Railway [in 1893-1894] and was adopted on all later instances.¹⁰

Voting trusts were intended to keep undesirable elements out of the board and to avoid detrimental policies. When voting trusts expired, usually five years after a reorganization, private banks kept their partners as members of the firm's board¹¹. The New York Times states the reason why Kuhn Loeb & Co. had board positions on railroads:

The members of Kuhn Loeb & Co. are believed to have held places on railroads principally for the purpose of being informed at first hand of the affairs of the railroads whose securities they were handling in large amounts, and to be in a position ... to fully protect the interest of their clients who purchased such securities from them Mr. Morgan and his associates are regarded as taking a much more active part than this in the management of a number of railroads that have been under Morgan domination.¹²

⁹For a detailed description of railroad reorganizations, see Carosso (1987), 363-390; Moody (1918), 29-34. For voting trusts, Carosso (1970), 40-41.

¹⁰Moody, 1919b, p. 30. Private banks need not have a large direct position to have a degree of control: for instance the Armstrong investigation revealed that the Railroad Securities Company (a voting trust for the Illinois Central) had 12.83% of the available stock (Report of the Joint Committee (1906) pp. 1099 and where the outstanding number of shares as of February 1901 was 600,000, from the New York Times).

¹¹Voting trusts were also used when no merging party was able to buy the shares from the other firm, or when one of the parties was unwilling to sell their shares to a former business rival, see Chernow (1990), 32. Carosso (1987), 368. For more on the mechanics of bank control, see U.S. Senate Hearings (1933), 54-57; Carosso (1987), 363-369

¹²March 5, 1905

Private banks would normally have a small debt and equity position of the firm under their control. While private bankers could take an equity position in a firm, national commercial banks could not. For this reason, it is likely that private bankers were more active directors than commercial bankers. Although banker-directors gave managers wide latitude, they intervened forcefully in a few areas, such as dividend and investment policies. Private banks were interested in retaining a reputation as issuers of safe securities¹³.

2 The Armstrong Investigation

The involvement of private banks in corporate boards quickly created a political backlash:

Americans traditionally harbored hostility toward monopoly, privilege and concentrated wealth. In all parts of the country small bankers and businessmen shared the farmers' antipathy against the great economic changes that had occurred in the nation since the close of the Civil War. They particularly feared and distrusted the giant corporate and financial institutions that had been organized by eastern businessmen and financiers ... The close business and personal ties that existed among the members of the leading investment houses, the executives of the companies they served, and the officers of the principal financial institutions caused increasing concern to trust-conscious Americans. The fact that a relatively few banking firms had sponsored most of the country's largest corporations emphasized still further the dominance of a few men over the economy. Most businessmen and financiers were well aware of the existence of these communities of interest. Not until 1904, however, did the public generally learn of the informal and subtle nature of these financial alliances, the extent of their influence, and the profits that were made in promoting and organizing mergers and consolidations¹⁴.

The Armstrong Investigation is rooted in events from the early 1890s, when liberal banking laws created financial trust companies. Trust companies could invest in more speculative assets than national banks or insurance companies, and for this reason were avoided by individual investors. Several officers and directors of life insurance companies saw an opportunity: they began depositing insurance funds in trust companies and taking out personal 'loans' from the life insurance firms to invest in financial trusts on their own account. By the end of the decade, private banks came into the picture, taking board

¹³On stakes, U.S. Senate Hearings (1933), 61, 100-101, 390-391, on policy, U.S. Senate Hearings (1933), 3-5, 33, 54-56, 61, 390-395; Carosso (1970), 33

¹⁴Carosso (1970), 110-112

seats in the most prominent life insurance and Trust companies¹⁵. For instance, Kuhn Loeb sat on the board of the Equitable Life Insurance Company, and George Perkins was both a J.P. Morgan & Co. partner and an executive in the New York Life Insurance Company. Moody (1919b) suggests that private banks engaged in significant self dealing:

During that remarkable period from 1898 to 1904, ... the assets of the insurance companies were handled with steadily increasing recklessness ... Not only were insurance companies of great strength 'allotted' abnormally large amounts of syndicate underwritings ... but their subsidiary trust companies were also loaded in the same way¹⁶.

The immediate event that triggered the Armstrong Investigation was the power struggle between James W. Alexander and James H. Hyde for the control of the Equitable, a nominally mutualized insurance company. This struggle created a public uproar that was further stoked by the belief that private banks had manipulated the Equitable and other insurance companies for their own personal gains. For instance, managers of the Equitable Life had personally pocketed all the syndicate profits from wholesaling securities to the insurance company itself. This practice was known and acquiesced by private banks. In July 1905, the New York Governor announced a legislative investigation of the matter. The Hearings, which began on September 6, 1905 and concluded on February 26, 1906, were held in New York City. John Moody comments:

A sensational insurance investigation which began in 1905 lasted for several months. Under the direction of Charles E. Hughes, it disclosed to the public the entire inside history of life insurance finance during the previous decade, with all its high finance, reckless manipulation of funds, waste, extravagance, and graft. The result of this investigation was that new and far more stringent laws were enacted looking to the safeguarding of the assets of policyholders and the proper investment of insurance funds¹⁷.

The investigation also painted an unflattering picture of private banks as directors of insurance companies. The Hearings disclosed situations where banks had conflicts of interest, as board members and bankers for these enterprises. Although no wrongdoings by private banks were uncovered, people were afraid of the potential for mischief:

¹⁵Moody (119b), p. 119-128

¹⁶Moody (1919b), pp. 129-130

¹⁷Moody (1919b), p. 132

What disturbed Hughes [the Hearings' Counsel] and a growing number of people who read the reports was the almost limitless authority individuals like Perkins [a J.P. Morgan partner] exercised over the investment policies of the great life companies. What was there to prevent these men from using their positions to guarantee their firms a sure, steady market for the securities they issued? ¹⁸

The public perception was that executives were personally enriching themselves at the expense of policyholders, and in so doing were aided and abetted by bankers. The following excerpt from a speculator turned muckraker is a sample of what was published at the time:

Under the pretense that is necessary to enable life-insurance companies to carry out their contracts, two million policy holders are annually tricked into contributing from their savings sums which not only insure the performance of these contracts but enable the officers and trustees - mere servants of the policyholders - to maintain the most gigantic stock-gambling machine the world has ever known. Through its operation the companies themselves not only make and lose millions at single throws of the dice, but the bands of schemers whose services it is pretended are essential for the transaction of the life-insurance business filch for themselves huge individual fortunes. Piled on these excessive charges are additional amounts which enable these tricksters to maintain palaces, hotels, bars, and every conceivable kind of business, to pay for armies of lackeys and employees and private servants of officers and trustees, and for debauches and banquets which vie with any given by the kings and queens of the most extravagant and profligate nations on earth; in addition, enough more to accumulate huge and unnecessary funds - which are juggled with for the enrichment of individuals. Such wicked exactions and shameful extravagances constitute an imposition of the most wanton and criminal character, and those responsible should be be sent to State prison for life, as too vicious and dangerous to be allowed freedom among an honest people. I would say further that the trickery and frauds that have been practiced by the New York Life and the Mutual companies are fully as bad as, if not worse than, those of the Equitable, now publicly confessed.¹⁹

Jacob Schiff, the senior partner of Kuhn Loeb, testified before the New York Senate on September 29, 1905. Schiff convincingly demonstrated that Kuhn Loeb had not engaged in self dealing. In first place, even though he had been offered a membership of the Equitable's Executive Committee, which decided what securities the Equitable would invest in, he had not accept it, for it would raise conflicts of interest. From 1900 to 1905,

¹⁸Carosso (1970), 122

¹⁹Lawson (1906), p. 549

the Equitable had bought \$197 million in securities, out of which only \$33 million were floated by Kuhn Loeb. In that period, Kuhn Loeb had sold \$1.36 billion in stocks and bonds. The Mutual Life - a firm where Kuhn Loeb had no board seat - had meanwhile bought \$42 million, and the New York Life \$31 million, so it was not the case that Kuhn Loeb had become part of the Equitable's board to exploit it²⁰.

Moreover, Schiff expressed serious doubts about the value to private banks of taking equity stakes and being on the board of non-financial corporations:

The system of directorship in great corporations of the city of New York is such that a director has practically no power; he is considered, in many instances, and I may say in most instances, as a negligible quantity by the executive officers of the society; he is asked for advice when it suits the executive officers, and if under the prevailing system an executive officer wishes to do wrong or wishes to conceal anything from his directors or commit irregularities such as have been disclosed here, the director is entirely powerless, he can only be used in an advisory capacity and can only judge of such things as are submitted to him²¹.

In the testimony, Schiff strongly hinted that Kuhn Loeb's practice of sitting on boards would no longer continue:

You might say to the directors, you made a mistake to become directors of the Equitable, and we did. We all learn by experience and I don't think I will go in the same system again, or be subjected to the consequences of the same system²².

In fact, four days after the Hearings concluded, on February 26, 1906, Kuhn Loeb announced its withdrawal from the boards of all non bank corporations.

In April 1906 the New York legislature forbade insurance companies from underwriting securities, from buying corporate stock or collateral bonds. Given the importance of New York State, these regulations affected one of the largest sources of capital at the time. By 1907, nineteen other states had enacted similar legislation²³.

²⁰New York State (1906), p. 1364

²¹Jacob Schiff in New York State (1906), Testimony taken ... pp. 1299

²²Schiff, New York State (1906), pp. 1312-1313

²³Carosso (1970) p. 125

3 How did private banks create value?

On February 26, 1906, Kuhn, Loeb & Co. announced that its partners would resign from the boards of all the non-bank corporations where they held a seat. This included insurance companies, steamboat firms, and railroads, among others. The reactions to the resignation ranged from muted to alarmed. The Wall Street Journal, for example, commented:

It is not anticipated, in railroad circles, that the resignation of members of the firm of Kuhn, Loeb & Co. from the directorates of the Pennsylvania and Harriman lines will affect the policies or financing of these companies ... the tendency will probably run toward the elimination of relationships that might even raise the question of "dual capacity"²⁴

The New York Times on March 5, 1906 mentioned

In connection with the reason assigned by Kuhn Loeb & Co. for their retirement from railroad boards, it is interesting to recall the statement made by Jacob H. Schiff ... that the average Director was a negligible quantity in the management of corporations ... The general belief in the financial district is that the action of Kuhn Loeb & Co. can be directly attributed to the developments in the insurance investigation... Kuhn Loeb & Co.'s actions gives special interest to the railroad alliances of other prominent banking houses ... J.P. Morgan & Co., for instance, ... hold directorates in no less than sixty two railroad corporations.

The New York Times then produced a list of railroads where J.P. Morgan and other private banks held board seats. The Commercial and Financial Chronicle was more worried by this development:

The action of the leading house of Kuhn, Loeb & Co. in deciding that its partners withdraw from all railroad directorates in which they now hold seat, is no surprise after the experiences of the past year, and yet it is most regrettable. If we assume this course followed by all our more prominent banking houses - a disposition not improbable - the movement would prove highly prejudicial to best management by our carriers. Moreover, security-holders would be deprived of the advantage of the most capable men we have for positions of that kind. There are no other sources for procuring suitable individuals to fill the places thus vacated. The experiences which have probably led to this action, and in fact are forcing it, are developments growing out of

²⁴Wall Street Journal, February 27, 1906

the investigations of corporations, preeminently insurance corporations, which have been a highly prominent feature among the events of recent months.²⁵

These quotes suggest that it was expected that other private banks would follow Kuhn Loeb's actions. Table 1 shows market-traded firms affected by this announcement.

Table 1: NYSE Traded Firms affected by Kuhn Loeb's Feb. 26, 1906 announcement

Kuhn Loeb & Co.	J.P. Morgan & Co.	Speyer, Hallgarten & Co.	No private bank
Baltimore & Ohio RR - Chicago Terminal (+) - Chesapeake & Ohio (*) - Norfolk & Western (*) - Pennsylvania RR (*) - Reading RR (*) Chicago & Alton RR Denver & Rio Grande RR Northern Securities - Northern Pacific (+) - Wisconsin Central (+) - Great Northern (+) Pacific Mail Steamship Southern Pacific RR Railroad Securities Co. - Illinois Central RR (+) Union Pacific RR	Atchison, Topeka, Sta Fe Baltimore & Ohio RR Canada Southern RR Clev., Cinc., Chic. & St. Louis RR Erie RR New York Central RR New York NH & H RR, NY, Ontario & W, RR. Northern Securities - Northern Pacific - Wisconsin Central - Great Northern Reading RR. Southern Railway	Baltimore & Ohio RR (S) Colorado Southern RR. (H) Rock Island RR (S) Southern Pacific RR (S) Toledo St. L. W. RR. (S,H)	Canadian Pacific RR. Chicago Gt. West RR, Chic, Milwaukee St. Paul RR Chicago & Northwestern RR Delaware Hudson RR. Kansas City Ft. Scott Memph Kansas City Southern RR Louisville & Nashville RR Mexican Central RR Minneapolis, St. Paul & Sault Ste. Marie RR., Missouri Kansas Texas RR. Missouri Pacific RR., Texas Pacific RR. Wabash RR.
	Non-competitors with Morgan & Co. Director		
	General Electric U.S. Steel Western Union		

Source: New York Times, March 5, 1906. Note: Speyer was also on the Board of Mexican National RR, although this was controlled by Weetman Pearson, not by American capital. (*) Have significant stakes in firms affected by the event, although Kuhn Loeb partners are not in the board. (+) Controlled by firm where Kuhn Loeb has a board seat. (S) Has a Speyer board member, (H) has a Hallgarten board member.

To investigate whether Kuhn Loeb added value by reducing competition among railroads, I identified the competitors of Kuhn Loeb represented firms²⁶. Note that some of

²⁵Commercial and Financial Chronicle, March 3, 1906, p. 476.

²⁶Table 1 shows that there were 15 actively traded firms that were directly affected by their announcement. Kuhn Loeb had a directorship in the Baltimore and Ohio railroad, which was part of the Pennsylvania Railroad "community of interest". I include the other railroads in that "community of interest" to account for any possible cross shareholdings they may have had. The Commercial and Financial Chronicle and Wall Street Journal thought it likely that other private banks would follow Kuhn Loeb, while the New York Times found this event unlikely, at least for J.P. Morgan. The methodology for selecting competitors is as follows: For railroads, the competitors are taken to be those in the same region as defined by the ICC. See Haney (1924) for more on this issue. At the time, the Baltimore and Ohio was controlled by the Pennsylvania, as Moody (1919a, p. 115) shows. The exclusion of the Pennsylvania

these competitors also had a private bank as a board member, and that a few private bank represented firms (General Electric, U.S. Steel, and Western Union) were not competitors of Kuhn Loeb represented firms. To further explore the effects of private banks on competition, I identified railroad clients and suppliers. I identified as clients those firms who were heavy transport users and as suppliers those companies that sold railroad equipment and the like. Steel companies are not used in this part of the analysis since it is difficult to settle now whether they are clients or suppliers. Table 2 shows the list of market traded clients, suppliers and steel companies.

Table 2: Clients and Suppliers affected by Kuhn Loeb announcement

Railroad Clients	Railroad Suppliers	Steel Companies
American Cotton Oil American Can American Sugar Refining Corn Products Distillers Securities National Biscuit Co. National Lead Virginia Carolina Chemicals	American Car & Foundry American Locomotive Pressed Steel Car	Colorado Fuel & Iron Republic Steel & Iron Sloss Sheffield Steel Tennessee Coal & Iron U.S. Steel

Sources: For clients, Chandler (1976), p. 327, 328, 336, 328, 355. For suppliers, Chandler (1977), p. 359. Notice that National Lead produced chemical compounds rather than lead products

3.1 Portfolio Time Series Results

Kuhn Loeb's announcement can be studied using the event study methodology, which assumes that stock returns follow a standard market model²⁷. I created the following non overlapping equally weighted portfolios:

- KL: the portfolio of 15 railroads with a Kuhn Loeb board member.

RR from the portfolio yields very similar results quantitatively and qualitatively. The Baltimore and Ohio also controlled the Reading Railroad as Moody (1919, p117) points out. The Railroad Securities Company was a voting trust for the Illinois Central (Armstrong Investigation p. 1101). Finally, the Wisconsin Central RR. was part of the Northern Pacific (see Chandler 1977, p. 168).

²⁷Returns are assumed to follow a process $r_{it} = \alpha_i + \beta_i r_{mt} + \epsilon_{it}$ $\epsilon_{it} \sim N(0, \sigma_i^2)$, where r_{it} is the return of a stock or a portfolio of stocks, r_{mt} is the market return, and ϵ_{it} is an error term. To calculate the α_i and β_i , parameters, I used the monthly returns of 71 actively traded corporations in the New York and Curb Stock Exchanges between February 1900 and August 1905. The market return is defined as an equally weighted portfolio of these 71 actively traded firms. For a detailed analysis of the event study methodology, consult Campbell, Lo, and MacKinlay (1997), Chapter 4.

- PB : the portfolio of 11 railroads that competed with KL, with other private bank as a board member²⁸.
- CKL: the portfolio of 14 railroads that competed with *KL* and had no private banker on its board.
- Client: the portfolio of 9 railroad client firms.
- Supplier: the portfolio of 3 railroad supplier companies.
- PBI: the portfolio of 3 industrial companies with a private bank as director.

The cumulative abnormal return (*CAR*) is the sum of forecast errors for the period surrounding the announcement:

$$CAR_{id} = \sum_{s=k+1}^{k+d} (r_{is} - [\hat{\alpha}_i + \hat{\beta}_i r_{ms}]) \quad (1)$$

The event window begins on September 27, 1905 before Jacob Schiff's testimony, and concludes on February 28, 1906, after Kuhn Loeb's announcement. I also calculate the abnormal returns until April 17, 1906 - the day before the San Francisco Earthquake - to see if any of these effects were temporary or not. Table 3 shows that the impact of the news had been digested by December 31, 1905 and that investors interpreted Jacob Schiff's testimony on September 29, 1905 as a farewell to Kuhn Loeb's governance of non-bank corporations.

The portfolio of railroads with a Kuhn Loeb partner on its board fell significantly, namely 9.1% or 9.9%, depending on whether the cutoff date is December 1905 or April 1906. Railroad competitors with some other private bank board member also fell significantly, anywhere from 13.6% and 13.0%, depending on the cutoff date. One cannot reject the hypothesis that the Kuhn Loeb and private bank portfolios dropped equally²⁹. The portfolio of railroad competitors without a private bank on its board also fell significantly,

²⁸Note that at the time the Northern Pacific was controlled by both Kuhn Loeb and by J.P. Morgan & Co., but I assign it exclusively to the Kuhn Loeb portfolio- I do a cross section estimate below to disentangle any concurrent status of a given company. The results do not change.

²⁹The portfolio shorting one and holding the other yields a t-stat of 0.5359 as of April 17, 1906

Table 3: Cumulative Abnormal Returns for affected Portfolios

Portfolio:	KL	PB	CKL	Clients	Suppliers	PBI
9/27/1905 To:	value (t-stat)	value (t-stat)	value (t-stat)	value (t-stat)	value (t-stat)	value (t-stat)
10/31/1905	-2.7068 (1.5891)	-0.7051 (0.3456)	-2.5946 (1.3286)	4.4691 (1.3103)	14.7693 (2.3109)	-1.2376 (0.3827)
12/31/1905	-9.0750 (3.0250)	-13.5716 (3.7772)	-7.3061 (2.1241)	24.1604 (4.0219)	11.4175 (1.0143)	-3.7933 (0.6660)
2/28/1906	-7.9730 (2.0353)	-11.3402 (2.4171)	-7.6688 (1.7075)	19.3338 (2.4648)	12.2898 (0.8361)	-4.4111 (0.5931)
4/17/1906	-9.9172 (2.1974)	-13.0236 (2.4094)	-10.7269 (2.0731)	25.5050 (2.8222)	11.9504 (0.7057)	-4.9630 (0.5792)

KL: Portfolio of firms with Kuhn Loeb director **PB:** Portfolio of competitors of KL with another private bank director **CKL:** Competitors of KL, excludes firms in PB. **Clients:** Portfolio of railroad users **Suppliers:** Portfolio of railroad suppliers. **PBI:** portfolio of industrial firms with a private bank director. The market return is computed using an equally weighted return of all actively traded firms (71 firms). The standard error formula is corrected for an error in variables estimation of the benchmark period.

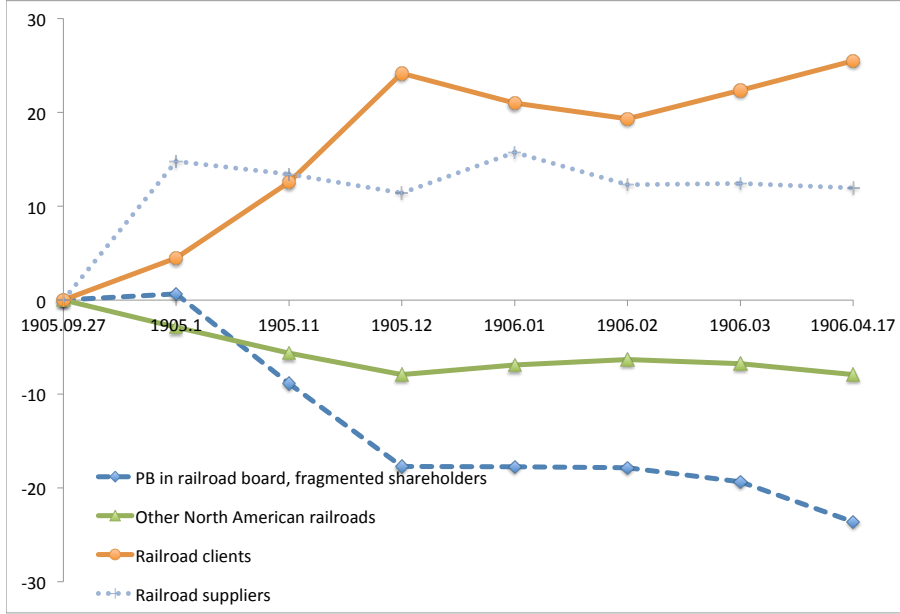
anywhere from 7.3% and 10.7%, depending on the cutoff date. This is statistically the same as the fall of railroads with a private banker board member ³⁰. Railroad clients benefited greatly, with a positive CAR_i between 24.2% and 25.5%, depending on the cutoff date. Figure 1 shows the evolution of these cumulative abnormal returns. The other portfolios had no statistically significant changes.

The results suggest that around the time of the Armstrong Investigation and the Kuhn Loeb resignation there was a shock that damaged all railroads similarly, regardless of their board composition. Given that Kuhn Loeb resigned from all boards, we can also rule out Cantillo's (1998) signalling hypothesis, whereby the fall in price resulted from the negative information of the firm being abandoned, and positive information of the firms being retained. This shock also benefited railroad clients significantly, consistent with the hypothesis that private banks weakened competition. If so, railroads without private bank directors were simply free riding on a cooperative industrial arrangement engineered by private banks. Another way to measure the governance effect of private banks is to look at the portfolio of industrial firms with a Morgan director. This portfolio fell by 3.78% to 4.94%, but not in a statistically significant way. The portfolio results suggest that private banks did not add differential value relative to peer railroads, and that there is no great social loss from throwing them out of the boards. This conclusion

³⁰The portfolio shorting one and holding the other yields a t-stat of 0.0702 as of April 17, 1906

will be tempered when we look at individual cross-sectional returns.

Figure 1: $CARs$ for affected firm portfolios



The dramatic effect on railroad clients is coherent with results from MacAvoy (1965), who found that prices in a 'price war' season were on average 24.12% lower than the previous comparable 'cooperative' season, with the mildest drop being 8.24% and the most severe breakdown leading to a 42.87% price drop. Porter (1983) studied railroad cartels from 1880 to 1886, and fitting his results into a structural model, found that a price war translated into a 40% drop in prices³¹.

Railroad suppliers had a positive but statistically insignificant reaction, with a CAR_i between 11.4% and 12.0%, depending on the cutoff date. However, this is statistically significant only the first month after Schiff's testimony.

3.2 Private Banks and Railroad Competition: 1874-1913

So far, the results suggest that practically all the value of banker-directors came from reducing competition. To study this issue further, I will now use observable outcomes

³¹Lamoreaux (1985) documents how the nail industry was able to raise prices by 60% in 1895, to be followed by a 64% price collapse in 1896. She also documents American Sugar Refining was better able to extract rebates from railroads during price wars.

rather than cartel agreements that became difficult to spot after the Sherman Act was passed.

To proxy for transport costs, Table 4 shows the average price differentials of hard wheat for four city pairs: New York - Chicago, Liverpool - New York, Liverpool - Chicago, and Liverpool - Odessa. Odessa was the gateway for the Black Sea wheat, the main competitor for American wheat exports. Liverpool was the access point to the biggest wheat consumer market at the time. The price differentials are taken as a proxy for transport costs, either steamboat-railroad costs for the New York-Chicago price differentials, ocean rates for port cities price differentials, and a composite transport cost for the Liverpool-Chicago price differential³². The periods studied are 1879 to 1893, a period when private banks took no board seats in U.S. railroads, and from 1894 to 1906 when private banks took on a more activist role in railroad boards.

Table 4: Hard Wheat Price Differentials, in gold dollar cents

City Pairs		1879-1893	1894-1906
New York - Chicago	Average Differential	10.2	10.0
	Standard Deviation	11.4	8.7
Liverpool - New York	Average Differential	11.8	3.1
	Standard Deviation	4.3	5.5
Liverpool - Chicago	Average Differential	22.0	13.1
	Standard Deviation	13.0	8.5
Liverpool - Odessa	Average Differential	19.1	13.7
	Standard Deviation	7.7	5.9

Source: Harley (1980), Appendix Table, and MacAvoy (1965). This uses term averages. Odessa had a slight cost advantage over Chicago of 7.3 cents in the first period, and of 10.6 cents in the second period.

A number of facts emerge from Table 4. First, the transport costs for the New York - Chicago routes are more stable in the second period - when private banks were directors - than in the first period³³. The second observation is that the Chicago to New York transport costs dropped by a mere 1.64% while all the other transport costs fell dramatically (74% for the Liverpool-New York differentials, and 28% for the Liverpool-Odessa). This is clearly not due only to an improvement of ocean transport productivity,

³²For this, I assume that all the wheat in New York came from within the US or Canada. In fact, from 1871 to 1906 there were three years when the Odessa prices were extremely low, and when the New York price fell below the Chicago price, a definite anomaly.

³³However, this difference in variance is not statistically significant, with an F test of $F_{25,29} = 0.76$, with a critical value at the 5% confidence of 1.92

since we would have had a more proportional drop in both ocean routes. The third fact is that the New York - Chicago differential captures 76.47% of the Liverpool-Chicago transport costs in the second period versus only 46.21% in the first period. All these facts are consistent with the hypothesis that private banks softened competition among railroads, in this case the Chicago to New York routes³⁴. How could banks do this?

To begin with, private bankers doubted the value of competition. A Morgan partner testified at the Pujo Hearings in 1912 that: "The old idea that we were raised under, that competition is the life of trade, is exploded. Competition is no longer the life of trade, it is cooperation"³⁵. In creating U.S. Steel in 1901, International Harvester, and the International Mercantile Marine (IMM) in 1902, J.P. Morgan & Co. made the explicit point of creating firms with well over half of the market share of their segments. J.P. Morgan & Co. refused to help in the Consolidated Steel and Wire merger because they believed it was inherently unstable, and J.W. Gates, a Morgan partner said about this merger that "Some arrangement whereby prices can be maintained is absolutely essential to success"³⁶.

The railroad industry was a key sector where competition and collusion regularly clashed. Cartels arose almost as soon as the railroads themselves. MacAvoy (1965) studied the Trunk-Line Cartels from 1871 to 1899. Of the 57 terms analyzed, he found that 24 corresponded to a price war³⁷. Porter (1983) and Ellison (1994) studied weekly prices from 1880 to 1886. They found that during 'cooperative' periods, railroad rates were close to their monopoly prices, and that during price wars the values dropped, either

³⁴This would mean that New York City paid for the higher transport costs if we assumed that the ocean freight and wheat production were competitive. Harley (1980), Table 2 documents that railroads gave a rebate to wheat shipments meant for export, which is evidence that railroads had some market power, and that the Liverpool was a more competitive venue than New York.

³⁵Pujo Hearings (1912), 1019. Morgan's declarations on competition are reprinted in the Wall Street Journal, December 20, 1912. Chandler (1977), 317-319. They were not alone, as some respectable economists in the American Economic Association had embraced "German" school of economic policy regarding competition. For an in depth discussion, consult Letwin (1965) pp. 71-77. Carosso (1970), 138. By the way, private banks were not alone in distrusting competition. For instance, the American Economic Association was very ambivalent at the time that the Sherman Act was passed (See Letwin (1965), pp. 72-73

³⁶On the monopolizing nature of the IMM, see Chernow (1990), 100-101, and Carosso (1987), 482-483. On the Steel and Wire merger, Lamoreaux (1985) p. 73

³⁷There are seven price wars during the period, and its the average duration was was about 21 months. Whether these price wars were an equilibrium or an off-equilibrium responses is studied by Porter (1984) and Ellison (1994).

to a Cournot or to a Bertrand equilibrium, depending on the econometric model used. MacAvoy found that the Interstate Commerce Commission (ICC) in 1887 made collusion more sustainable, and that Court decisions beginning in 1893 that weakened the ICC's power again destabilized cartels. Cartels did not work very well because they could not engage maverick or weakened railroads, and because of changes in demand.

When private banks began reorganizing railroads in the 1880s, they were mostly concerned about guaranteeing the soundness of the securities they sold. Morgan and Kuhn Loeb's experience in the railroad industry had shown them that price competition destabilized the industry and cash flows promised by the instruments that they had floated. To counter this, private banks first tried persuasion as this 1886 newspaper article shows:

Anthracite Coal Combination: Representatives of the various coal [Railroad] companies met at the house of Mr. J. Pierpont Morgan this week, and informally decided to limit coal production and maintain prices ... Mr. Morgan recognized the value of the monopoly element when acquiring control of and consolidating coal fields of Pennsylvania³⁸.

Private banks suggestions gained more weight after the 1894 reorganizations gave them board seats.

Private banks lobbied hard for their positions. This letter by President Theodore Roosevelt reflects on the calls by bankers to tone down his antitrust policy around the time of the Northern Securities Case:

I am very fond of George Perkins ... But, to be perfectly frank, he did not appear to advantage in the talk he had with me on the evening in question ... He was occupying exactly the same attitude that Bob Bacon occupies on this question, and of Bob Bacon I am even fonder. Both of them are men of the highest character, who are genuine forces for good as well as men of strength and weight. But on this particular occasion they were arguing like attorneys for a bad case, and at the bottom of their hearts each would know this if he were not personally interested; and especially, if he were not the representative of a man so strong and dominant a character as Pierpont Morgan. In plain

³⁸Commercial and Financial Chronicle, 3/27/1886, cited in Moody (1904), p. 443. In the end, Morgan convinced the presidents and traffic managers of the Philadelphia & Reading, the Delaware, the Lackawanna & Western, the Lehigh Valley, and the Delaware and Hudson railroads to "manage" the anthracite coal traffic. Chandler (1977) believed that banks gave up on their attempts to cartelize after the Sherman Act was enacted in 1890. However, it was not until 1897 (in *United States v. Trans-Missouri Freight Ass'n*) that the Supreme Court settled the illegality of railroad cartels. Moreover, Posner and Easterbrook (1981, p. 100) argue that railroads continued to fix prices after 1898.

English, what Perkins wanted me to do was to go back on my messages ... I intend to be most conservative, but in the interests of the big corporations themselves and above all in the interest of the country I intend to pursue, cautiously but steadily, the course to which I have been publicly committed again and again, and which I am certain is the right course. I may add that I happen to know that President McKinley was uneasy about this so-called trust question and was reflecting in his mind what he should do in the matter. Perkins wanted me to do nothing at all, and say nothing except platitudes.³⁹

By 1900, banks looked for other ways to reduce railroad competition. Private banks encouraged Eastern railways to make "communities of interest", where large railroads took a non-controlling minority stake in smaller competitors⁴⁰. Stigler (1964) argued that two factors that sustained collusion are effective enforcement of the agreed terms and a small number of symmetric sellers. The communities of interest engineered by private banks increased concentration and reduced asymmetry by embracing straggling small railroads into wider alliances. The effect of cross shareholding as a way to enhance 'coordinated effects' is well understood by antitrust authorities.⁴¹ These communities of interest waned because of strong public disapproval, as noted by Moody (1919a):

These and other purchases, and the consequent voice acquired in the management, established comparative harmony among Eastern railroads for a long time; they stabilized rates and enabled formerly competing roads to parcel out territory equitably among the different interests"

The American public ... believed that the "community of interest" plan was merely a scheme to defeat the Interstate Commerce Act and the Sherman Act and to maintain secretly all the old railroad abuses.⁴²

Communities of interest were eventually dissolved, but the idea that private banks took control only to reduce competition remained⁴³.

39

Roosevelt letters III, 159f, quoted in Letwin (1965), p. 204

⁴⁰Among industrial corporations, this was practiced in the Gunpowder Trade Association, for example, Lamoreaux, p. 101

⁴¹ICN (2006) Merger Guidelines, p. 48: 'if a firm has equity participation in a competitor, the scope for collusion may be enhanced. Links between competitors can make it easier to coordinate pricing and marketing policies, or to exchange information on these matters. Also, incentives to compete might be reduced in such cases given that the financial performance of the firm is affected by the profits of the competitor in which the firm has participation.'

⁴²Moody (1919a, p. 44, 116)

⁴³Moreover, this reduced competition worked not only among railroads. For example, North (1954) states: "Following the railroad reorganizations the investment banker turned to the consolidation of

Multimarket contact is another factor that helps collusion, as proven theoretically by Bernheim and Whinston (1990)⁴⁴. Empirical studies using that framework have found that greater multimarket contact raises prices in the airline, hotel, and mobile phone industries (Evans and Kessides 1994, Fernandez and Marín 1998, Parker and Roller 1997). Private banks represented railroads in every region, so multimarket contact widened and became prevalent.

Another element that helped sustain collusion was a lower debt level and familiarity with one's competitors⁴⁵. Lowered debt was one of the consequences of the 1894 reorganizations.

Among railroads west of the Mississippi, a very important factor limiting competition was construction restraint. The value of such control was shown theoretically by Kreps and Scheinkman (1983). Harley (1982) studied collusion among railroads by examining the trackage construction in western states. He shows that in this region, railroads were able to coordinate and not build ahead of demand until the late 1870s. However, by 1883, this understanding had broken down, with specially acute capacity buildup in 1886 and 1887. Harley (1982) argues that the construction peaks in 1871, 1882, and 1887, have no relationship to economic activity but rather to a breakdown in cooperation. Private banks were well positioned to observe and act on railroad construction, as they normally handled or underwrote the security issues not only of the railroad systems where they had a board member, but of other systems as well⁴⁶. For example, In 1889, the Eastern Trunk line and the Southern Railway and Steamship associations developed as cartels that tried to enforce the rates and allocate traffic, but

When the Southwestern Association failed to do the same, Morgan brought the presidents or general managers of leading western roads and representatives

other fields of transport and industry in order that competition might be eliminated from these fields as well and the security-holder guaranteed a safe return on his investment" North (1954), p. 213. Moody (1919b), pp. 110-111 for example mentions the failed attempt to cut the competition among transatlantic companies.

⁴⁴This is embedded in competition authorities best practices, see ICN (2006), p. 49

⁴⁵Lamoreaux 1985, pp. 58-59

⁴⁶The New York Times, in discussing Kuhn Loeb's resignation announcement, mentioned that this private bank handled the security issues of Gould's railroads, even if this created some conflict of interest because of their membership in the board of the Southern Pacific railroad. cfr. New York Times, March 5, 1906

of leading banks to a series of meetings in New York. At these meetings the Western Association was formed, this association agreed to follow the lead of other associations. At the same time Morgan emphasized his determination to **discipline competitive construction** as well as competitive rate making.⁴⁷

Construction statistics show that in fact railroad construction growth dropped from 4.6% in 1874-1893 to 1.76% in 1894-1913, when bankers took board seats. However, this result is most likely due to network saturation.

To study the issue with a better control, I compare the growth rates of railroad mileage in Western Canada and the United States Northwest railroad region. Table 5 shows the averages and standard deviations for the growth series of Western Canada and Northwestern United States. The western Canadian railroads had no private bankers as directors during the whole period, and their annual mileage growth rate did drop from 7.42% in 1874-1893 to 3.51% in 1894-1913. Meanwhile, the Northwestern U.S. mileage dropped more steeply, from 6.81% in 1874-1893 to 2.11% in 1894-1913.

Table 5: Growth In Western Canada and Northwestern U.S.

Period	1874-1893	1874-1893	1894-1913	1894-1913
Sample moments:	\bar{x}_i	σ_i	\bar{x}_i	σ_i
Industrial Production, U.S.	4.73%	7.06%	4.66%	8.61%
Mileage growth, Northwest U.S.	6.81%	4.77%	2.11%	1.11%
Mileage growth, Western Canada	7.42%	3.82%	3.51%	1.84%

Sources: industrial production: Davis (2004); mileage growth: Harley (1980).

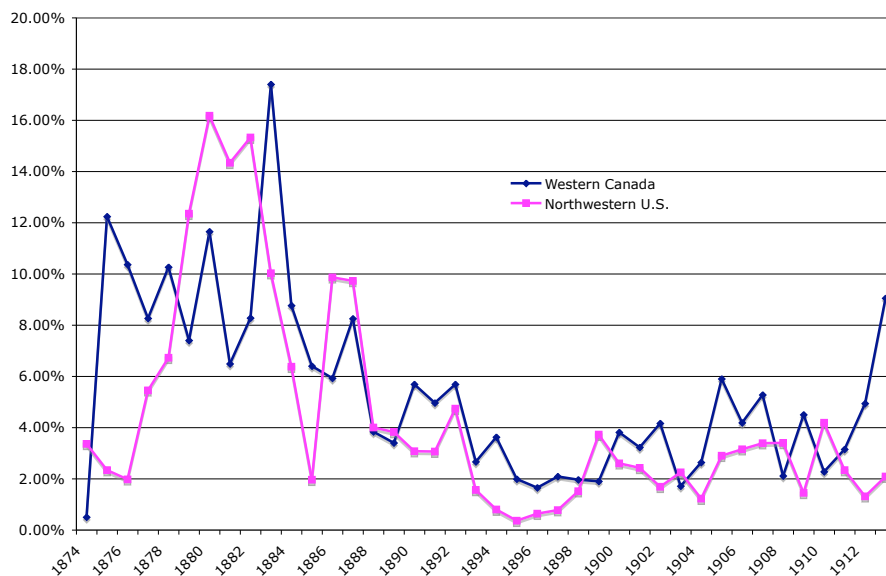
We cannot reject the hypothesis that the series have the same means and variances for the 1874-1893 periods, while for the 1894-1913 period we can reject those hypotheses at the 5% confidence⁴⁸. In other words, construction in the Northwestern United States slowed significantly and was much more stable relative to its Canadian counterpart, in spite of equivalent growth and volatility of industrial production in both periods. These results are consistent with the hypothesis that private banks were able to prevent competitive capacity construction. Figure 2 shows that Canadian railroads did experience construction booms after 1894, an event that never again occurred in the Northwestern

⁴⁷Chandler (1977), p. 171, bold letters are mine

⁴⁸F-test for the means was 4.1207, and for the variances was 4.2329. The critical value for the t-test of sample means is 2.093, and for the F-test of variances is 2.168, see Hogg and Ledolter (1987)

United States. It is possible, of course, that both regions were no longer comparable in the 1894-1913 period, but this is unlikely.

Figure 2: Railroad mileage growth in Western North America



Source: Harley (1980). States for the U.S. are those that belong to the ICC's Northwestern Region, see Haney (1924), Figure 20.

3.3 Cross Sectional analysis

The portfolio analysis has shed much light about private banks, but it also has thrown away important company specific information. Kuhn Loeb's announcement was massive, affecting at least 50 firms in complex ways. To disentangle these effects, it is better to run a multivariate regression, and to better do so, we must first recall our findings.

Bank involvement has two potential effects. First, it lowers the probability of a price war in an industry j , p_j , so that all firms in said industry j are close to their collusive value q_i , whether they have a private bank on their board or not. Private banks can also affect corporate value at a particular firm i beyond the collusive effect. It would reduce value if it engaged in self dealing, and raise it if it improved the level, growth, or safety

of equityholder cash flows. Firm value in an industry pacified by banks is given by:

$$v_i = (1 + \gamma B_i)q_i$$

Here, I assume that the probability of a price war p_j is nil. B_i is an indicator function that takes a value of one if the firm has a private bank in its board. The parameter γ measures the governance improvement (if positive) or the rent extraction (if negative) caused by the bank's board membership.

If a private bank abandons an industry j , it will increase the probability $p_j(Y_j)$ of a price war. The probability of a price war depends on industry characteristics Y_j such as market concentration, barriers to entry, etc. If a price war occurs, it will affect all firms in that industry. The new collusive value for each firm is $q'_i \equiv q_i \eta_i$, where $\eta_i(Z_i)$ reflects the specific natural defenses or weaknesses that a firm has once banks are gone. Examples of such natural defenses Z_i are "community of interest" cross-shareholdings or natural multimarket presence. Suppose that if there is a price war, the firm will lose ω percent of its collusive value. The expected value of a firm i in industry j that has been left behind by private banks is:

$$v'_i = (1 - p_j)q'_i + p_j(1 - \omega)q'_i = [1 - p_j\omega]q_i\eta_i$$

The returns are then given by:

$$r_i = \ln\left[\frac{v'_i}{v_i}\right] = \ln[1 - p(Y_j)\omega] + \ln[\eta(Z_i)] - \ln[1 + \gamma B_i] \quad (2)$$

$$r_i \simeq \delta_0 + \delta'_y Y_j + \delta'_z Z_i + \delta_\gamma B_i + \varepsilon_i \quad (3)$$

In other words, we can decompose returns in three parts. The first considers the industry variables that affect the likelihood of a price war. The second includes the individual characteristics that protect a firm once private banks are gone. The third effect is how bank board membership changes a firm's performance beyond its competitive

effect. The econometric implementation of equation (3) runs cumulative abnormal returns as a linear function of different firm or industry attributes:

$$CAR_i = \delta'X_i + v_i \quad v_i \sim N(0, \sigma_i^2) \quad i = 1, 2, \dots, 70 \quad (4)$$

where CAR_i is calculated from September 26, 1905 to December 31, 1905⁴⁹, or through to April 17, 1906. X_i represents a vector of corporate or industry attributes.

Table 6: Railroad Markets and Concentration

Western Markets	HHI	Top 4	Eastern Markets	HHI	Top 4
Northern Transcontinental	1970	88%	New England	2716	83%
Granger Route	1801	69%	Trunk Line	1362	69%
Southwestern Route	1763	68%	Coal Railroads	2368	89%
Rocky Mountains	2829	90%	Chicago Southeast	1979	81%
Central Transcontinental	3557	90%	Atlantic Coast, South	3135	90%
Southern Transcontinental	1626	76%	Mississippi Valley	2063	78%
Pacific Coast	2714	85%			

Source: Haney (1924) definition of relevant markets. Poors (1903) mileage for all railroads with over 100 miles. The Rocky Mountains Market spans the triangle of Ogden UT, Cheyenne WY, and Santa Fe NM. The HHI Index is calculated as if all railroads below 100 miles are atomized. For railroads in multiple markets, I use a weighted average (by miles) of each market's HHI and Top 4 measure.

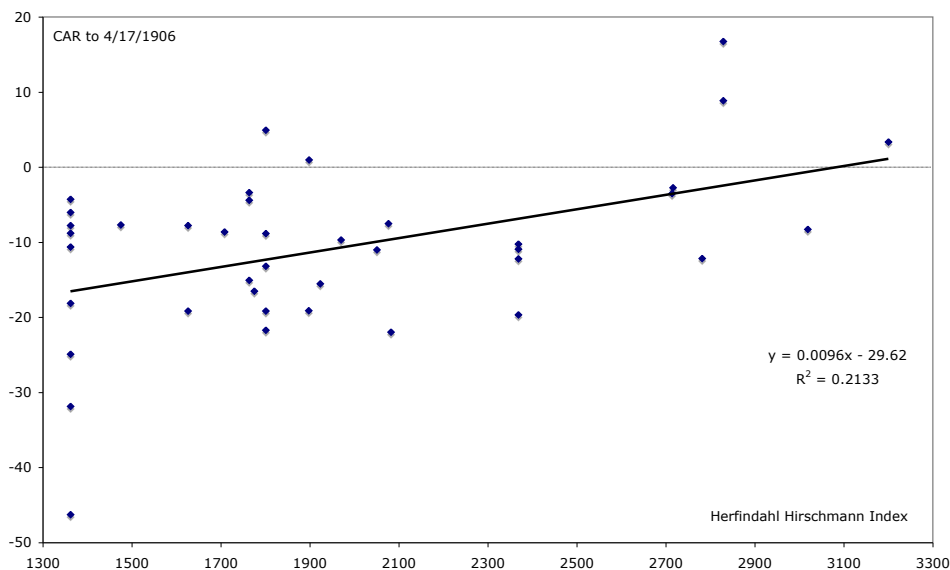
The first variable is whether a firm belongs to a market affected by the announcement, i.e., North American railroads. To refine this classification further, I identified in Table 6 the different relevant markets as defined by Haney (1924). I estimated the Herfindahl-Hirschmann Index for each market, using railroad mileage as the metric of market share, and drawing the data from Poor's Manual of Railroads (1903) for all railroads over 100 miles, traded or not. The hypothesis is that if private bankers helped firms collude, then their departure would be more damaging for railroads in low concentration markets, where tacit collusion would be harder to sustain. Figure 3 shows a simple correlation between the HHI_j and CAR_i up to April 17, 1906⁵⁰. The equation crosses the x axis at an $HHI_j = \frac{29.62}{0.0096} = 3085$. At this level, roughly equivalent to a market with three equal railroads, banker presence would have no differential impact. Private banks sat on the

⁴⁹I used this three month window because the results in the the event study show that the information was absorbed by December 31, 1905.

⁵⁰The result is statistically significant, at $F_{1,39} = 10.57$ with a critical value at the 5% of 4.08. The value remains significant if we exclude the two railroads that operate only in the Rocky Mountains, Denver and Rio Grande and Colorado Southern, who seem like an outlier. The result also follows if we regress the top 4 market share.

board of railroads whose average HHI was 1678, slightly below the average industry HHI of 1955. This makes sense, as private banks would enter where they could add most value or prevent the most serious price wars. Firms in less concentrated markets were also more likely to have gone bankrupt and to need reorganizing after the 1893 Depression.

Figure 3: CAR as of April 17, 1906 versus Herfindahl Hirschmann Index



Source: Harley (1980). States for the U.S. are those that belong to the ICC's Northwestern Region, see Haney (1924), Figure 20.

To test the hypothesis that cross shareholding blunted competition, I created a dummy set to 1 when a railroad had significant ownership of (over 5%), or was partly owned by another railroad. The data is obtained from Poor's Manual of Railroads of 1903. To test the hypothesis that multimarket presence weakened competition, I created a dummy variable if the railroad spanned several markets.

An important attribute for the regression is whether a firm had a private bank as a board member⁵¹. This will be used to estimate if private banks created value beyond the competitive effects mentioned before.

For those firms not directly affected by the announcement, I included a dummy of

⁵¹Table 1 shows that some railroads had several private banks in their board. I can individually partition the firms by each private bank, although the results are qualitatively the same.

whether a firm is a client or supplier of the railroads affected by this announcement. Steel companies were identified as clients, since the dummy estimates (not presented here) were always statistically equivalent to the client dummy, and statistically different from the supplier dummy.

Finally, to disentangle any sector specific shocks, I used a dummy for U.S. railroads⁵². The Hepburn Act was passed on June 29, 1906. This Bill enhanced the Interstate Commerce Commission's powers to set railroad rates, and may have affected the U.S. railroad returns at this stage.

As a robustness check, I calculated a market adjusted return ($MAR_i = r_i - r_m$) to control for any possible misspecification or error in variables biases. Table 7 shows the results. The dependent variable in the first two columns are the adjusted returns from September 26, 1905 to December 31st, 1905. The last two columns show the regressions for the longer event window going from September 26, 1905 to April 17th, 1906.

The results on the U.S. Railroad variable suggest that the Hepburn Act did not have any strong or predictable effect at this time. It also rules out the hypothesis that this event was driven by some regulatory or sector specific shock unrelated to Kuhn Loeb's announcement.

As with the portfolio time series, we can see that railroad suppliers benefited from this announcement, but not in a statistically significant way except in one case. Railroad clients did benefit greatly and in a statistically significant way from the announcement. Railroad clients had adjusted returns between 15 and 25 percent. The size of these jumps is consistent with price drops of the unstable cartels prior to the Sherman Act, as documented by MacAvoy (1965).

The first natural defense for a railroad are "community of interest" cross-shareholdings. This variable is always positive and mostly significant at the 95% confidence. The point estimates say that cross shareholdings softened the drop by 6.5% to 9.2%, and confirms Moody's conjecture that "communities of interest" weakened competition significantly.

⁵²We are lucky to have several Canadian and Mexican railroads, and some American steamship that were affected by the announcement but not directly subject to the regulatory shock. In fact, from April 1906 onwards, we can detect a shock that affected American railroads.

Table 7: The Cross-Sectional Impact of Kuhn Loeb Retirement on Firms' CAR_i

Model Name	CAR_3	MAR_3	CAR_7	MAR_7
Start Date	9/27/1905	9/27/1905	9/27/1905	9/27/1905
End Date	12/31/1905	12/31/1905	4/17/1906	4/17/1906
Dependent Variable	CAR_i	MAR_i	CAR_i	MAR_i
No. Observations	71	71	71	71
R^2	0.4505	0.4108	0.4184	0.3800
Adjusted R^2	0.3796	0.3348	0.3434	0.3000
Variable	coefficient (t-stat)	coefficient (t-stat)	coefficient (t-stat)	coefficient (t-stat)
Constant	7.7062 (1.2723)	4.8122 (0.7499)	3.4193 (0.5205)	0.3562 (0.0530)
Market Player	-23.5294 (2.8358)	-21.8014 (2.6921)	-35.9965 (3.1721)	-36.8091 (3.2196)
Market Concentration (HHI)	0.0071 (2.9522)	0.0074 (3.1356)	0.0117 (3.8071)	0.0126 (4.3297)
Railroad Cross-shareholding	6.7352 (2.2706)	6.7173 (2.4792)	6.5080 (1.9179)	9.1923 (3.0162)
Multimarket Presence	-5.9524 (1.9804)	-5.9313 (1.9595)	-2.4450 (0.7867)	-1.9569 (0.6174)
Private Bank in Board	-7.1471 (2.3971)	-7.0935 (2.5727)	-5.6325 (1.6212)	-6.7181 (2.0894)
Railroad Client	14.5538 (1.8818)	15.9157 (2.0343)	23.2473 (2.3803)	20.5733 (2.2920)
Railroad Supplier	4.2308 (0.5012)	9.0339 (1.0963)	9.8987 (1.3122)	14.0510 (2.0791)
U.S. Railroads	-4.4702 (1.2479)	-2.8753 (0.9173)	1.3453 (0.2340)	5.0535 (0.8491)

All t-statistics use heteroskedastic consistent standard errors. $CAR_{id} = \sum_{s=k+1}^{k+d} (r_{is} - [\hat{\alpha}_i + \hat{\beta}_i r_{ms}])$ and $MAR_{id} = \sum_{s=k+1}^{k+d} (r_{is} - r_{ms})$

The other railroad characteristic to guard off competition without a private bank, i.e., multimarket contacts, did not soften but intensify competition. The point estimates are between 2.0% and 6.0%. However, half of the multimarket contact estimates are statistically insignificant, so it may be idle to conjecture the reasons behind this unexpected sign.

What was the value of banker directors? The econometric model allows us to estimate the value from reduced competition and from firm specific improvements, that I will henceforth call better governance. Table 7 shows that all players in the market were affected, with highly fragmented railroad markets being the most vulnerable. We can calculate the HHI_j at which the announcement had no competitive impact. We will call

this the artificial HHI created by bank specific facilitating practices. Using the average HHI of 1678 for bank represented railways, we can infer the value generated by collusion. For example, using the first regression estimates, bank induced collusive practices added a value of $z_{collusion} = 23.5294 - 0.0071 \times 1678 = 11.61\%$, while a bank board seat added a railroad-specific value of 7.15%, or about 41% of the total value. Table 8 summarizes the results for the different sources of value. Table 8 also combines the regression results with equation (2) to infer the value ω destroyed in a price war⁵³.

Table 8: Sources of Private Bank Value Added

Model	CAR_3	MAR_3	CAR_7	MAR_7
Average HHI of railroad with Private Bank	1678	1678	1678	1678
Equivalent HHI with Private Bank	3311	2941	3088	2929
Gains from facilitating practices (% of value)	11.61	9.36	16.44	15.72
Firm specific gains (% value)	7.15	7.09	5.63*	6.72
Total Gains	18.75	16.46	22.07	22.44
% from better governance	38	43	26*	30
Estimated ω , value lost in price war %	31	26	43	42

* means this is **not** statistically significant

On average, private banks added about 20% of value by being on a board. About 13.3% of that value was due to practices that facilitated collusion not only among railroads represented by banks, but by their competitors. About 6.7% of value came from better governance. Both sources of value are consistently estimated. The collusion results are always statistically significant, and the governance results are all significant at the 95% confidence in all but one case. There was no significant difference due to a specific private bank, i.e, Morgan represented railroads did not fall more than, say, Speyer represented railroads. These results contrast with Schiff’s assertion that private bank directors were ‘negligible quantities’. In fact, the New York Times ran an article on October 3, 1905 entitled “Directors do Direct, These Financiers Say” . It quoted, among others, Dumont Clarke, then the President of the American Exchange National Bank, who said:

The director can at least judge the honesty and efficiency of those to whom
he delegates power, and he has the means at his command to right a situation

⁵³To identify this number, I use MacAvoy’s results about the Trunk Line Cartels, where he found the frequency of price war without banks was $p_j(HHI_j = 1362) = \frac{24}{57} = 0.4211$, i.e. 24 terms out of 57 studied.

that does not meet his approval.

The results on value added by banks are higher than Cantillo's (1998) - who estimated that a banker director in 1914 added value from 6.76% to 7.96%; his results are in turn higher than DeLong and Ramirez's (1995) study of bank directorships in 1939. These numbers soundly refute those who argued that bank control destroyed corporate value by self dealing. The decline of banker directors' value could be ascribed to: 1) more stringent corporate governance legislation that restricted private bank involvement, 2) more effective antitrust legislation that blunted banks' devices to reduce competition, 3) more complex company structures that sharpened the asymmetric information problems faced by outside directors. Becht et al. (2008) calculate agency costs at 11.5% in present-day U.K. firms targeted by activist investors. Meanwhile, Brav et al. (2006) and Klein and Zur (2006) find a 6% and 7.3% return respectively for activist hedge funds in the United States. Becht and al. (2008) study in some detail the reforms advocated by activist investors, that include divesting unfocused assets, limiting acquisitions or capital expenditures, changing board membership, capital structure, and particularly payout policy. Cella (2009) finds that long term institutional investors limit the over-investment problem. From this perspective, private banks can be seen as a force for good, notwithstanding their dislike for competition.

4 Conclusion

The era of financial capitalism in the United States can teach us a number of lessons. The first interesting fact is the invention by J.P. Morgan & Co. of the voting trust as a control device. This allowed private banks to have an important say in a company's affairs and to create a liquid market for its securities. It would be interesting to consider if this or a similar device may be used nowadays to have effective governance and liquid equity markets.

The second finding from that period is that private banks used their power both to limit competition and to improve governance. Private banks weakened competition by

becoming watchful agents of symmetric alliances, by encouraging cross shareholdings, and by greatly extending multi-market contacts. Furthermore, private banks struck at the root of unstable cartels by threatening to block security issues of maverick railroads that wanted to build excess capacity or start price wars. From the pre-Sherman studies, notably MacAvoy's (1965), we know that maintaining collusion was very important, since prices fell by about 25 percent with cartel breakdowns.

The Armstrong Investigation argued that private banks seldom intervened in corporate affairs, or that if a "crooked" executive wanted to, he could easily fool outside directors, even experienced private bankers. This is in line with Chandler's (1977) belief that an absolute separation of ownership in control is the only possible outcome in a market with dispersed equity holders. The results in this paper qualify this view, since it finds that about 35% of the value created by banks came from better governance. At 6.5% of company value, this improvement was significant.

In summary, private bankers' methods were socially unsound on the whole, and their beneficiary corporate governance was insufficiently understood. With all the exposed drawbacks, Republican and Democratic legislators and Presidents began enacting laws that prevented private banks from controlling corporations. These laws helped competition but hurt corporate governance, and explain how managers became entrenched without any countervailing force to check them.

This study has explored the ways in which private banks reduced competition in the railroad industry. It explained why it was understandable that financial capitalism was phased out of the United States, even though it had undeniable benefits to shareholders. It would be interesting to see if the good elements of corporate governance innovations from a century ago can be used nowadays, without the negative side effects that undoubtedly existed at the time.

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