Preliminary and incomplete draft

Partnerships vs. Corporations in Investment Banking: Evidence From the Back Office Crisis in the 1960s

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In the wake of the sudden bankruptcy of Lehman Brothers and near-collapse of many other securities firms in 2008, academics and popular commentators called for investment banks to be reorganized as private partnerships as a means to restore financial stability.[2] Until the mid-twentieth century, nearly all investment banks were partnerships with unlimited liability. The long, successful histories of many well-known investment banking partnerships before they incorporated lends support to the notion that organization as partnerships was an important element of those firms' success (Morrison and Wilhelm, 2007). Advocates for the return to the use of the form have argued that unlimited liability would prevent excessive risk-taking and that the illiquid stakes of partners would create long-term incentives for successful management (Hill and Painter, 2010). Yet the partnership form also has significant limitations, particularly with regard to raising capital, which contributed to the industry's abandonment of the form. Given that a return to organization as partnerships would likely have costs as well as benefits for investment banks, whether it would actually be helpful on balance is ultimately an empirical question. Yet studying this question in the context of the 2008 financial crisis is not possible, since virtually the entire industry had adopted the corporate form by the turn of the twenty-first century.

To shed light into the effects of organizational form on financial stability, this paper analyzes the investment banking industry's transition from partnerships to the corporate form in the 1950s and 1960s. Some investment banking partnerships had actually sought to switch to the corporate form in earlier decades, but were unable to do so because the New York Stock Exchange's (NYSE) membership requirements prohibited corporations from becoming member firms. In 1953, the NYSE amended its rules and permitted corporations to join, and over the following years, large numbers of investment banking partnerships incorporated, and the industry became composed of a mix of partnerships and corporations. Then in the late 1960s, the investment banking industry was buffeted by a major crisis known as the 'back office' or 'paperwork' crisis. We use this crisis to compare the behavior and survival of investment banks organized as partnerships and as corporations.

The back office crisis had some elements that are familiar from other panics and crashes, but also some that are unique. Substantial growth in retail and institutional trading, fueled by strong stock market returns, overwhelmed the record-keeping capabilities of many investment banks, producing significant losses. These losses were compounded by a market downturn in 1969, which reduced the capital of many firms, as it had been invested in securities, and made raising additional capital more difficult. Making

[2] See, for example, James K. Glassman and William T. Nolan, "Bankers Need More Skin in the Game: Partnerships may be a more trustworthy business model than corporations," *Wall Street Journal*, 25 February 2009, and "A Partnership Solution for Investment Banks?" *New York Times* 'Dealbook' 20 August 2008. Academic commentary on the subject includes Hill and Painter (2010). Also common in the wake of the crisis were proposals to eliminate or curtail unlimited liability for some investment bank stockholders; while not actually proposing the adoption of the partnership form these proposals frequently drew on historical experience with unlimited liability partnerships in the industry (e.g. Goodhart and Lastra, 2010).

matters worse, investment banks were then permitted to use subordinated loans from customers as part of their capital, and in response to the deterioration of conditions at some firms, those customers simply withdrew that capital. More than 100 securities firms failed in 1969 alone, and over the following years several of the largest investment banks in the United States were closed or merged into other firms in dire circumstances.

We use firm-level data to compare the performance of investment banks organized as partnerships with those organized as corporations during the crisis. We find that the partnerships were no more likely to survive, and no less likely to imperil their financial stability by turning to subordinated loans from their customers as a source of capital. In spite of their unlimited liability for debts, the partners of some investment banks took risks that ultimately doomed their firms, and in spite of their illiquid shares and lack of obvious agency problems, mismanagement and incompetence were rampant. The SEC's review of the practices that led to the crisis concluded that a "major weakness of the broker-dealer community" was "the scarcity of individuals of managerial ability and talent" (SEC, 1971b: 18), and there is no evidence that talent was any less scarce among partnerships. The partnership form also likely made it more difficult for investment banks to raise much-needed capital, and this almost certainly accelerated the transition to the corporate form over subsequent years.

There are of course limits to the lessons that can be learned about financial regulations in the present from the experiences of investment banks in the 1960s, a very different technological and institutional environment. Another consideration that must be kept in mind is that although the NYSE permitted corporations to join in 1953, it did not permit *public* corporations to join until 1970. The corporations that are the focus of our analysis were all privately held, with substantial numbers of shareholders in some cases, but certainly not the same degree of separation of ownership from control that can occur in more diffusely owned firms. Nonetheless, the shareholders of the NYSE member corporations of the 1950s and 1960s did possess limited liability and could freely buy and sell their shares, which are attributes of the form that have been specifically identified as causes of the collapses of investment banks in 2008. Thus, our historical setting allows us to assess whether the corporate form, but not public ownership, can help reign in excessive risk-taking.

Our paper provides a detailed, firm-level analysis of an important financial crisis, and the role of investment banks' organizational forms in it. The back office crisis has not received much recent scholarly attention, but it was a major turning point in the history of American financial markets, and provoked fundamental changes in the organization the securities industry, and the adoption of new

computing technologies.[3] It also led to significant regulatory changes. The losses to customers from failed brokerages were so great that the trust funds established by the NYSE and other exchanges for use in such circumstances were quickly exhausted. Congress responded in 1970 with the Securities Investor Protection Act (SIPC), intended in part to protect such customers. The financial weaknesses of many investment banks revealed by the crisis also led to significant changes in the minimum capitalization standards for investment banks and their enforcement by the NYSE and SEC. The events that produced the crisis also contributed to the decision by the NYSE to admit public companies as members, and the amendments to the Securities Exchange Act in 1975 that ended the system of fixed commission rates for trades on the NYSE that had been in place since it was founded.

The transition from the partnership to the corporation within the investment banking industry during the period under analysis has been the subject of several studies. A theoretical literature has emphasized the importance of human capital in the industry (eg. Levin and Tadelis, 2005). Morrison and Wilhelm (2004) argue that the partnership form was valuable in investment banking because it created incentives for senior members to mentor junior members (Morrison and Wilhelm, 2004). The adoption of computing systems in the industry enabled physical capital to substitute for human capital, and contributed to the transition to the corporate form (Morrison and Wilhelm, 2008). Our paper complements that work by documenting the transition empirically, and also analyzing its consequences for financial stability at the firm level. The results of this paper also suggest that there may have been limits to the partnership form's ability to foster the development and utilization of human capital, given the poor management and operational weaknesses exposed by the crisis.

This paper also contributes to a growing body of research analyzing the significance of the legal organizational form of enterprise in historical contexts.[4] Some of this work has shown that the corporate form can foster growth and improve productivity in enterprises formerly organized as partnerships (Gregg, 2020), whereas others that have shown that incentive problems in corporations can result in poor performance in contexts that are not well suited to the corporate form (Hilt, 2006). We advance this literature by studying a context in which organizational form was actually regulated, and that regulation was then relaxed.

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[3] Other than Wells (2000), little recent research has been focused on the back office crisis. Of course in the years immediately following the crisis, there was a great deal of analysis and commentary devoted to it; see, for example, Robbins et al. (1969), Welles (1971), Baruch (1971), and SEC (1971a, 1971b).

[4] Recent examples of this work include Lamoreaux (1998), Guinnane et al. (2007), Harris (2013), Artunç and Guinnane (2018), Bodenhorn (2011), Gómez Galvarriato and Musacchio (2006), and Guinnane and Martínez-Rodríguez (2018).

Partnerships in Investment Banking

Many 19th century investment banks originated as firms engaged in domestic or international trade. Larger and more successful merchant firms sometimes developed the capability to finance transactions, and some ultimately began to specialize completely in finance, evolving into merchant banks or investment banks. These firms were nearly always organized as partnerships, often with family ties binding together some or all the members.

The partnership was ideally suited to those businesses. A partnership's resources come from the members of the firm, who work together and share in its profits; the finances of the partners are intimately tied to the finances of the firm, and the partners bear unlimited liability for its debts. A partner's stake in their firm also cannot be easily sold, which can help create incentives for long-term success. Advocates for the view that modern investment banks should return to organizing themselves as partnerships argue that these attributes would produce more stable and responsibly managed firms. Only the most talented individuals would be admitted as partners[5]; important managerial decisions, especially related to risks, would be the focus of intense deliberation of the partners, since their own fortunes would be at stake[6]; and these incentives would be so powerful, little external regulation would be necessary.[7]

These arguments are not unreasonable, but the partnership form has other attributes that must be considered as well. Most importantly, partnerships can only raise capital (beyond the resources of their existing partners) by adding more partners, who will obtain an equal share in the profits. As the model of Levin and Tadelis (2005) makes clear, partnerships will therefore optimally choose to remain small, and maximize profits per partner in their investment decisions, rather than profits overall. In the context of investment banks, this might mean that adding to the firm's capital, or adding partners to improve some elements of the firm's operations, might be unattractive for the existing partners, as it might lower profits per partner. Commentators in the late 1960s noted that many of the industry's firms were reluctant to add additional capital.[8]

[5] Hill and Painter (2010: 1179): "In investment banking partnerships, it often took many years for someone to become a partner because the other partners had to be willing to risk everything on the new partner."
[6] Hill and Painter (2010: 1179): "Because they bore the collective responsibility of paying creditors, they were collectively involved in risk taking over certain dollar amounts, sometimes huddling together on their trading floor to discuss a big trade."
[7] Hill and Painter (2010: 1177): "[A partner] did not want or need the government to tell him how to run his business; if the business failed, the partner paid. Firms that did not exercise restraint failed in the next market downturn and they took their improvident partners with them."
[8] "Although the expanded operations created a need for increased capital and such capital was attracted by the obvious prosperity, in many instances there was a reluctance to accept the additional capital in sufficient quantities" SEC (1971b: 2).

In contrast, investment banks organized as corporations, which simply maximize profits rather than profits per partner, might be more likely to add additional capital, or make costly investments in improving operations. Of course, the corporate form has its own drawbacks. With large numbers of owners, corporations may suffer from agency problems, and the fact that the managers and investors are protected by limited liability might lead to excessive risk taking. But as the investment banking industry became more capital intensive, and the considerations related to raising capital became increasingly important, many firms gradually concluded that the corporate form was superior to the partnership.

Of course, that may have been the wrong decision, and the switch to the corporate form may have contributed to the industry's crisis in the late 1960s. In what follows, we will use firm-level data to test whether partnerships or corporations were more likely to survive that crisis, or to rely on riskier sources of capital. Before proceeding with that analysis, we first describe the evolution of the NYSE's membership rules and the switch to the corporate form, and also the back office crisis.

The NYSE's membership rules and the 1953 change

From its beginnings, only individuals affiliated with private investment banks organized as partnerships (or sole proprietorships) with unlimited liability were permitted to become members of the NYSE. Personal liability underpinned all trading on the exchange, and beginning in the mid-nineteenth century the NYSE published an annual directory that listed the names of all of the partners of the members. This created a public record of the identities of everyone affiliated with NYSE member firms, and provided information relevant to the assessment of counterparty risk and creditworthiness.

Restricting membership to partnerships served other purposes for the exchange as well. Although it had a quasi-public character, the NYSE was a private cartel that operated for the benefit of its members. Competition on commission rates was prohibited; all members agreed to adhere to a specific fee scale for trades executed for customers.[9] The exchange also prohibited members from sharing information with competing exchanges such as the Consolidated Stock and Petroleum Exchange, which was founded in New York in the nineteenth century and traded many of the same issues as the NYSE.[10] Members who failed to adhere to these rules faced expulsion from the exchange. Restricting member firms to

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[9] Fixed commission rates were part of the NYSE's constitution from its origins in the 18th century, and were later officially sanctioned by the SEC. In the mid twentieth century, they became the subject of investigations and hearings and studies by the SEC, the DOJ's Antitrust Division, and the NYSE. In 1975 commission rates were made negotiable. Baxter (1970) explores the legal history of the NYSE's cartel.

[10] The NYSE carefully policed who had access to its ticker and to current price quotations, to protect the value of trading on its floor. Its members faced expulsion if it maintained "any connection, direct or indirect, by means of public or private telephone, telegraph wire, or any electrical or other contrivance" with a member of the Consolidated Exchange. On the effects of competition from the Consolidated Exchange, see Brown, Mulherin and Weidenmeir (2008).

partnerships with publicly identified members enabled the exchange to exclude the "undesirable or unqualified" from joining, but it also ensured that it was not possible for individuals to circumvent expulsion through the memberships of their partners. It was therefore essential to the maintenance of the cartel.

Limiting the membership to partnerships also ensured that the existing members would not face competition from corporations with the capacity to raise large amounts of capital in equity markets, and use that advantage to compete with the dominant incumbents, whose financial resources derived only from the personal wealth of their members. The NYSE was controlled by firms organized as partnerships who used their influence to block entry by any firms other than those who faced the same organizational constraints.[11]

The partnership rule also ensured that institutions with substantial trading needs, such as large insurance companies and commercial banks, and, later, institutional money managers, could not join the exchange. Virtually all of those firms were organized as corporations. Prohibited from becoming members, those institutions instead needed to have their trades executed through a member firm, and of course pay the member firm commissions.

Beginning in the early twentieth century, firms organized as corporations began to enter some of the business lines that were traditionally the domain of private investment banks. These included the securities affiliates of commercial banks, and some state banks and trust companies, which became active securities underwriters, particularly of bonds. They also included some full-service investment banks that began as partnerships but later incorporated to raise additional capital and pursue a retail-oriented business strategy with large numbers of branches. These latter firms were prohibited from being members of the NYSE only because they had incorporated.

The growth of incorporated, retail-oriented investment banks in the 1940s and 1950s raised concerns among some NYSE members that the rule restricting membership to firms organized as partnerships deprived member firms of a means of competing with those non-member firms, who could raise capital by selling shares. Members also raised concerns that some trading business was migrating away from the NYSE, as incorporated institutions traded with each other on the over-the-counter market, rather than through a member of the exchange.

[11] The number of memberships was also kept in limited supply, further restricting competition within the exchange, and ensuring that the price of a membership would remain high. The high price of memberships benefitted the members, and also created a strong financial incentive to oppose any changes that might reduce the profits that could be earned from membership. On the determinants of seat prices in the 1920s, see Davis et al. (2007).

Proposals to admit corporations were voted on by NYSE members in the late 1930s and several times in the 1940s, and defeated.[12] Finally, in 1953, the NYSE formed a special study group to analyze potential changes to its rules. The study concluded that "the advantages of the corporate form of doing business should be available to present and potential member firms of the exchange," and strongly recommended that the NYSE adopt an amendment to its rules to "permit admission to the exchange of corporations which are engaged in the securities business" (NYSE 1953: 31).[13] The NYSE's Board of Governors endorsed the proposal, and the members approved it, 594 to 538, in March of 1953.[14]

The proposal that was adopted ensured that the same scrutiny would be applied to the shareholders of potential member firms as had been applied to partners. Every stockholder would have to be approved, and would be listed in the exchange's directory. This ruled out public companies. The exchange also specified that corporations would have both voting and non-voting stock, and only "persons actively engaged in the business of the corporations" could own the voting stock (NYSE 1953: 31). This latter restriction ensured that control of the corporations would be held by management, and that outside shareholders would be completely passive, a structure resembling a limited partnership. But otherwise, the member corporations could possess all the attributes common to business corporations, including limited liability.

The income tax probably made the adoption of the corporate form unattractive relative to the partnership, since the corporation itself would pay the tax, as well as the shareholders. Some aspects of the tax code actually provided advantages to corporations, however. It was costly from a tax perspective for partnerships to set up pension funds for employees, or to set aside retained earnings to finance expansions, and this was not true of corporations. But apart from these tax considerations, the most important impetus for incorporating was likely that it enabled firms to attract equity investments that were easily transferable. Rather than needing to admit new partners to the business, an incorporated investment bank seeking to raise capital could simply sell shares to investors.

Figure 1 presents the organizational forms of all NYSE member firms at 5-year intervals from 1890 to 1975, both in terms of the numbers of firms of different types (upper panel) and the shares (lower panel). Until 1953, the exchange's member firms consisted entirely of partnerships, but there was a growing use of the limited partnership—a partnership that included 'special partners' who contributed

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[12] For example, proposals to admit corporations as NYSE were voted on by the members in 1947, and 1949. Contemporary reporting indicated that "Wall St. has squabbled fiercely" over the proposals ("New York Exchange to Vote Whether to Admit Corporations," *Chicago Daily Tribune*, 9 September 1949.)

[13] For reasons made clear above, the study also explicitly stated that "Banks, investment trusts or insurance companies would not be eligible" (p. 31).

[14] "N.Y. Stock Exchange Members Vote to Let Firms Incorporate," *Wall Street Journal*, 6 March 1953.

capital but were not involved in the management of the business, and enjoyed limited liability.[15] The limited partnership form offered the prospect of raising capital from outside investors, and by 1950, about 40 percent of NYSE member firms chose that form. Yet even though the stakes of special partners were protected by limited liability, they were relatively illiquid, which made them less attractive than share ownership in corporations.

When the NYSE amended its rules to permit corporations to become members, the new form was initially adopted relatively slowly. By 1960, only 10.3 percent of member firms were incorporated. However, the transition to the form accelerated over the following decades. In 1970, 35.8 percent of member firms were incorporated, and just five years later, in 1975, 49.6 percent had chosen to incorporate. The back office crisis of the late 1960s, which made capital-intensive changes to the industry's operations acutely necessary, likely accelerated the shift to the corporate form.

The Back Office Crisis

In the early 1960s, a time of rapid advancement of computing technologies and the adoption of 'Electronic Data Processing' (EDP) among businesses, the NYSE and the investment banks that dominated the securities business stood out in their resistance to operational modernization.[16] Some of this resistance was likely grounded in the perception that it could threaten the position of the incumbent firms that dominated the industry. It was well understood, for example, that computing hardware was quite expensive, and also held the potential to substitute for some of the specific human capital that was so central to the rents received by incumbents. The modernization of the industry would enable well-capitalized entrants to compete with the dominant, traditionally organized firms.[17]

An important example of the industry's resistance to change was its opposition to transitioning away from paper stock certificates in the settlement of securities transactions. The elaborate procedures required for an investment bank to receive, authenticate, process, record, and store certificates, and then to reverse those steps when shares were transferred, made the back-office work required to process transactions complex and expensive, often generating as many as 200 separate pieces of paper and

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[15] On the origin of the limited partnership in the U.S., and its adoption by merchant partnerships in New York in the nineteenth century, see Hilt and O'Banion (2009).
[16] Hoos (1960) studied businesses that had adopted EDP beginning in the late 1950s, and analyzed the impact of those changes on the workplace. Hoos documented the anxieties provoked by those changes, which are similar to those commonly expressed in response to the adoption of AI, robots, and offshoring today. On investment banks' resistance to new technologies, see Welles (1971).
[17] Morrison and Wilhelm (2008) argue this is exactly why the corporate form began to dominate the industry. Wells (2000) argues that the partnership form contributed to the resistance to computerization.

involving large numbers of clerks for a single transaction.[18] Figure 2 presents a flow chart of the steps undertaken in the back office as part of a buy order and a sell order, based on a study of 12 investment banks' operations in 1969.

In spite of these costs, the requirement that trades could only be settled via the physical delivery of a stock certificate was understood to create a barrier to the adoption of computerized record keeping, preserving the role of existing operational methods and the firms that relied on them. It also conferred an advantage to the investment banks located in lower Manhattan, where the trades took place (Welles 1971: 144). Some New York investment were able to act as clearing agents for out-of-town firms, and shared in their commissions; a purely electronic settlement system might weaken the benefits enjoyed by firms actually located near Wall Street.

Another factor that probably also contributed to the industry's resistance to the adoption of more efficient methods was complacency. The systems used in the back offices of investment banks were understood to be antiquated and cumbersome, but experience had shown that they were adequate. Operations were not regarded as important to growth or profitability, and were not seen as a potential source of risk (NYSE, 1971).

This began to change in the middle of the 1960s. The developments that led to the crisis are documented in Figure 3, which presents daily dividend-adjusted closing prices for the S&P 500 index, in blue, and daily trading volumes on the NYSE, in red. As the stock market enjoyed strong returns, reflected in a significant rise of the S&P 500 index, trading activity from both individuals and institutions began to increase. Transactions volumes had been increasing steadily since the 1950s; in 1955, the total number of shares traded on the NYSE was 649.6 million, whereas by 1965, the number had increased to 1.556 billion. But subsequent years saw a rapid acceleration of this trend, and in 1968, the year regarded as the beginning of the crisis, the total volume of shares traded was 2.931 billion.

The antiquated operational systems maintained by most investment banks were completely overwhelmed. Their back offices were commonly described as having descended into chaos, with recordkeeping controls pushed to the point of failure. The exchange itself acted to help contain the problem by closing on Wednesdays, and, when this did not accomplish the desired goal, reducing the daily opening time period by one-and-one-half hours to four hours (NYSE 1971). But the backlog of record-keeping problems did not improve.

At the time trades were required to be settled, and stock certificates delivered from the seller to the purchaser, within five days. A consequence of the recordkeeping problems of the industry was that a

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[18] A report by Lybrand, Ross & Montgomery (predecessors of Coopers & Lybrand) offers a detailed analysis of back-office procedures associated with stock transactions, including the complex flow chart displayed in Figure 2. See Robbins et al. (1969).

significant volume of securities was not delivered within five days; it was not uncommon for securities to remain undelivered after 120 days (SEC, 1971a: 2). These so-called 'fails to deliver' reached $4 billion in 1968, more than the total capital of all NYSE members. Fails created problems for the back-offices of counterparties, and spread further as the shares that were not delivered were then sold and sold again. The strain on firms' record keeping was so great and persisted for so long that in some cases a full resolution proved "virtually impossible" (SEC 1971a: 96).

Unresolved fails created a significant source of financial risk for investment banks. If a customer's stock certificates were not delivered, their investment bank would have to purchase shares for delivery to the customer. The risks arising from fails persisted and grew over time in part because the upper management of most investment banks failed to understand them or take them seriously. One report on the industry noted that "often the highest level managers lacked an operational background and could not fully apprehend the scope of the problem" (Robbins et al., 1969: 39). The loss of recordkeeping control also led to a loss of physical control of securities certificates. It became difficult for investment banks to determine which certificates were on hand, and among those on hand, to whom they belonged. Ultimately this led to a significant problem of thefts of customer certificates, and estimates of the extent of the problem in 1970 ranged as high as $400 million (SEC 1971a: 145).[19]

The situation developed into a major crisis when a market downturn began in 1969. This reduced the value of many investment banks' capital, which had been invested in securities, and created an environment in which it was difficult to raise additional capital. In addition, some investment banks used subordinated loans from customers—essentially, securities held in customer accounts that were borrowed by the firm—as part of their capital. When conditions in the industry deteriorated, many of those customers withdrew their capital.

The result was a wave of capital impairments and failures.[20] In the years 1969-70, more than 100 investment banks were liquidated or merged. Figure 4 shows the exit rates of NYSE member firms at five-year intervals, to put this period in historical perspective. Each bar in the chart shows the share of NYSE member firms that were operating in the beginning of the interval, but were shut down by the end of the interval. This rate was slowly rising from the mid-1940s to the mid-1960s, and then more than doubled in 1970-75 relative to 1965-70. More unusual still was that the turmoil and financial distress was experienced by some of the largest investment banks. Table 1 shows the top 20 investment banks by net

[19] Inaccuracies in recordkeeping associated with transactions had a number of other implications for the functioning of securities markets that go beyond the scope of this paper's analysis. For example, dividend payments were often not received by current shareholders, since stock transfer ledgers were not updated. See SEC (1971a, 1971b).
[20] The SEC required investment banks to maintain a ratio of total debt to net worth that was below 20-to-1; the NYSE also maintains net capital rules for its members. Firm found to be in violation of these rules can be forced to suspend operations.

worth in 1965. Two of these firms, Francis I. du Pont & Co., and Goodbody & Co., essentially collapsed; du Pont was closed in 1974, and Goodbody was merged into Merrill Lynch.[21] Others, including Walston & Co. and Blyth & Co., were sold or merged. It is worth noting that all of these firms were organized as partnerships.

Empirical Analysis

Our analysis utilizes data obtained from NYSE directories, an annual publication that was digitized at 5-year intervals for the purposes of this paper. By matching firms across directories from different years, we are able to observe (approximately) when firms exit or enter, how their numbers of partners change over time, and whether they are organized as ordinary partnerships, limited partnerships, or corporations. The directories also list the locations of firms' headquarters, the number of branch offices they have, and indicate whether or not each firm had obtained subordinated loans from customers. The directory entries were then matched to data published in *Finance* magazine's annual net worth issues, which listed the capital of most large investment banks, and in 1968 also published the total value of outstanding fails to deliver by firm.

One challenge presented by the directory data is that investment banks sometimes changed names. The well-known firm J.P. Morgan & Co., for example, was once named Drexel, Morgan & Co., and Dillon, Read & Co., was previously William A Read & Co., and before that, it was Vermilye & Co. The NYSE directory lists the names of all partners; we use this information to identify cases where a firm seems to have disappeared but a new firm with a different name and many of the same partners appears, and code those as the same firm.

With this detailed data on NYSE member investment banks, our empirical analysis proceeds in two steps. First, we study the issue of selection into the corporate form, by analyzing NYSE members before and after the 1953 rule change permitting the incorporation of member firms. In our second step, we compare the behavior and survival rates of investment banks that were organized as corporations and as partnerships during the back office crisis.

Selection into the corporate form, 1950 to 1965

To understand selection into the corporate form, we focus on NYSE member firms in 1950. These firms were all organized as partnerships, and were all constrained by the NYSE's rules from

[21] Merrill Lynch refused to bear additional losses associated with Goodbody in the merger; the NYSE had to make an assessment of its members to cover those losses.

incorporating. In 1953, this restriction was relaxed, and those firms were permitted to incorporate if they wished. We use those firms' 1950 characteristics to investigate which ones chose to remain partnerships, and which ones switched to the corporate form.

The firms that chose to incorporate generally did not do so immediately. We focus on the firms' organizational forms 12 years after the 1953 rule change, in 1965. A potentially complicating factor in this analysis is that over a time span that long, a significant fraction of firms will cease to exist. We therefore compare the characteristics not only of firms that incorporated and those that did not, but also between those that continued to exist (regardless of organizational choice) and those that did not, to understand this other source of selection.

This analysis is presented in Table 2. In column (1), we present the means of 1950 characteristics of the corporations that took advantage of the rule change and incorporated by 1965. In column (2), we present the means of those that remained partnerships in 1965. And in column (3), we present the means of 1950 characteristics of firms that had ceased to exist by 1965. Columns (4) and (5) present the differences in means between firms that would incorporate by 1965 and those that would not, and between firms that existed in 1965 and those that did not, respectively.

The comparisons between the characteristics of firms that would later incorporate and those that would not suggest that larger firms, measured as those with more partners, and firms with more branch offices, were more likely to choose the corporate form. These differences are large and statistically significant. On the other hand, the two groups of firms were about the same age, used the limited partnership at about the same rate, and were equally likely to be located in a major financial center (New York, Chicago, Boston, or Philadelphia).

For the purposes of our subsequent empirical analysis, which focuses on cross-sectional comparisons between outcomes for corporations and partnerships after 1965, it would be valuable to know whether these comparisons reveal that selection into the corporate form was positive or negative. Unfortunately, the comparisons between columns (1) and (2) do not suggest unambiguous patterns. The firms that incorporated were larger, which may be thought of as positive selection. But they also had more branch offices, which suggests that they were less likely to have been wholesale underwriters, and more likely to have had retail brokerage businesses. Although retail brokerage services were an important and growing market, the firms that provided those services were typically not among Wall Street's elite.[22] Age might be another sign of positive or negative selection; elite firms tended to have existed since the late 19th century. Yet the two groups of firms were of similar ages. Perhaps the best way to describe the differences between firms that incorporated and those that did not is that the future corporations were

[22] Frydman and Hilt (2017) analyze the role of the elite wholesale underwriters in the early 20th century.

larger, but also pursuing slightly different lines of business. In the analysis that follows, we will control for firm characteristics associated with those differences.

Column (3) reveals that both corporations and partnerships that existed in 1965 were positively selected relative to those that ceased to exist. We conclude that the both the surviving partnerships and corporations were positively selected, relative to firms that ceased to exist, but the distinctions between the two categories of surviving firms were smaller than those between either and the firms that did not survive.

Outcomes during the back office crisis

We next investigate whether investment banks organized as partnerships were less likely to have engaged in the practices that contributed to the crisis and firm failure. We study two such practices. First, we ask whether partnerships were less likely to employ subordinated loans from customers as part of their capital—that is, whether they sought to rely on more stable sources of capital. We cannot observe the volume of such loans at the firm level, but the 1965 NYSE directory indicates whether or not each member firm relied on such loans. As we show below, consistent with the findings of studies of particular investment banks in the crisis (e.g., SEC, 1971a), this indicator is positively correlated with firm failure.

Secondly, we ask whether the operations of investment banks organized as partnerships produced fewer fails in 1968, which would be an indication that their back office operations were better managed. Fails to deliver were an important source of risk for investment banks, and were the source of many of the losses that led to failures. It is important to note, however, that our measure of fails—the total market value of firms' outstanding fails to deliver in 1968, which was reported in *Finance* magazine in 1969—is an imperfect measure of the quality of investment banks' back-office operations. The total value of a firm's outstanding fails was likely a function both of the quality of its back office operations, and the scale of its trading on behalf of brokerage customers. Firms that pursued a business strategy focused on retail brokerage services likely had larger trading volumes, and even if their operations were well managed, they would likely have had a greater volume of fails compared to investment banks more focused on wholesale underwriting or other market niches. A measure that would more directly reflect the quality of a firm's back office operations would be fails to deliver scaled by total trading revenues or volume, and neither of the latter are available. We therefore use the measure available to us, which is only very weakly correlated with later firm failure.

We focus on cross-sectional comparisons of investment banks with different organizational forms. We estimate:

$$y_i = a + \beta_1 corp_i + \beta_2 X_i + e_i, \qquad (1)$$

where y_i is our outcome of interest, either an indicator for the use of subordinated loans as part of firm capital in 1965, or the log value of total outstanding fails to deliver in 1968; $corp_i$ is an indicator for whether or not the investment bank was organized as a corporation in 1965; and X_i includes investment bank characteristics related to its size and business strategy, such as its number of branch offices (as reported in the NYSE directory), total capital in 1965 (as reported in *Finance* magazine), age, and the location of its headquarters.

Firm capital and 1968 fails are only available for a subset of NYSE member firms; in what follows we restrict our analysis to those firms.[23] It is important that we observe these firm characteristics, especially whether or not the corporate form was used, prior to the onset of the crisis. The crisis likely induced endogenous responses which may complicate inference in this setting. For example, many investment banks that had been organized as partnerships and faced significant losses incorporated as part of efforts to raise capital and rescue their firms from failure—in these cases, the circumstances that led to the decision to incorporate would likely have had a much more powerful impact on the firm's behavior than incorporation itself.

The results are reported in Table 3, with the determinants of the use of subordinated loans from customers in columns (1) and (2), and the determinants of fails to deliver in (3) and (4). In none of these regressions is there any evidence supporting the argument that corporations performed worse (and therefore partnerships performed better.) In columns (1) and (2), the point estimate of the corporation indicator is very small, and the 95 percent confidence intervals rule out large positive or negative effects. About 9 percent of the sample firms used subordinated loans, and the only firm characteristic that exerted a large impact on this variable was the indicator for firms whose headquarters were in New York City. Those firms may have been more likely to hold large accounts, which would have been much more attractive as a source of capital.

The point estimate of the corporation indicator in the log fails regressions in (3) and (4) is positive but statistically insignificant. However, the standard errors are very large, and we cannot rule out very large negative or positive effects. There is no clear evidence supporting a difference in fails across organizational form. Consistent with fails being the product of greater trading volumes, the log capital

[23] Regressions in which we relax this restriction and study the determinants of the use of subordinated customer loans for all NYSE member firms and exclude capital from the regression produce very similar results.

variable, an indicator of firm size, and the log number of branch offices, which was likely related to the scale of a firm's brokerage services, both exerted large positive effects on fails.

These results indicate that when we look at outcomes related to the causes of financial distress during the crisis, partnerships did no better than corporations. Our data also allow us to focus more directly on firm exits, either through liquidation or merger. We construct this measure by starting with the investment banks that were NYSE members in 1965, and determining whether they remained in the NYSE directories in 1970 and 1975.[24] We use 1975 as an endpoint because some of the largest firms that faced difficulties in the crisis were able to keep operating for some time; Francis I. du Pont & Co. was not shut down until 1974.

To investigate the determinants of exits empirically, we construct an indicator variable for firms that had been shut down or merged into other firms by 1975, and estimate a model similar to (1). The results are reported in Table 4. Around 37 percent of the NYSE member firms in 1965 were gone by 1975, but the estimates in columns (1) through (3) show no difference between partnerships and corporations. It was simply not the case that partnerships survived at higher rates. When we control for firm characteristics in column (2), we find that capital reduces failure rates, and branch offices increase it, which is consistent with brokerage services being an important source of problems during the crisis. Interestingly, New York City firms also closed at higher rates. Those firms may also have had larger trading operations, but it is also generally true that New York City tended to have much more exit (and entry) relative to other cities in earlier periods as well.

In column (3), we add our indicator for subordinated loans from customers in firm capital. This is strongly predictive of failure; investment banks relying on this source of capital failed at rates that were 50 percent higher than other firms. This validates both earlier studies of particular firms that suggested that such loans were an important source of financial fragility in the crisis (e.g., SEC 1971a), and also validates our use of this indicator as a marker for firms using a risky financing strategy.

Of course, the corporations were a non-random subset of investment banks, and it is worth revisiting the issue of selection. The results in Table 4 above suggested that the firms that incorporated were pursuing a slightly different business strategy than those that were not; brokerage services were likely more important to those firms, as suggested by their larger numbers of branch offices. We do control for branch offices in our regressions, helping appease this concern to some extent. But if corporations were pursuing a business strategy that exposed them to the fundamental problems that produced the crisis at (unobservably) higher rates than partnerships—meaning that the shock that

[24] We also focus on firms that existed in 1965 to exclude some small firms that entered during the peak of the trading boom in 1967 or 1968; many of these firms were badly undercapitalized and failed quickly once the market turned.

corporations faced was greater than the shocks faced by most partnerships—then the estimated differences of Tables 3 and 4 would understate the survival advantage of the corporations, and overstate that of the partnerships. It is not possible to know conclusively whether this was actually the case, but it is worth bearing in mind that this would imply that the estimated zero effect of the partnership form on survival may in fact be an overstatement.

Conclusion

It is tempting to look back on the history of the investment banking industry and conclude that organization as partnerships was critical to its celebrated firms' successes early in the twentieth century. The results of this paper suggest that at least in the 1960s, this was not the case: partnerships did not survive at higher rates, and were no less likely to engage in practices that imperiled their stability.

Beyond our comparisons of corporations and partnerships, it is worth noting that this was an era when the entire industry was found to be poorly managed and inadequately capitalized. Careful studies of some of the many failures concluded that the underlying causes included "operational losses, mismanagement, market decline, back-office difficulties, inoperable modernization programs, insufficient initial capitalization, and fraud" (SEC, 1971a: iii). The industry certainly did not cover itself in glory during that era, and its transition to the corporate form was enacted in part to solve some very deep problems. Our paper suggests that proposals to impose the partnership form to address agency problems are far too simplistic, and may not on their own improve stability in financial markets.

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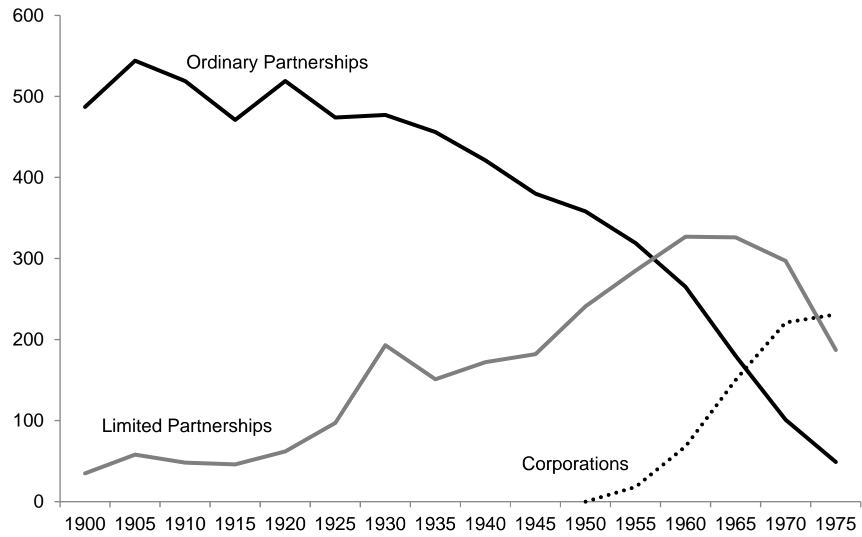

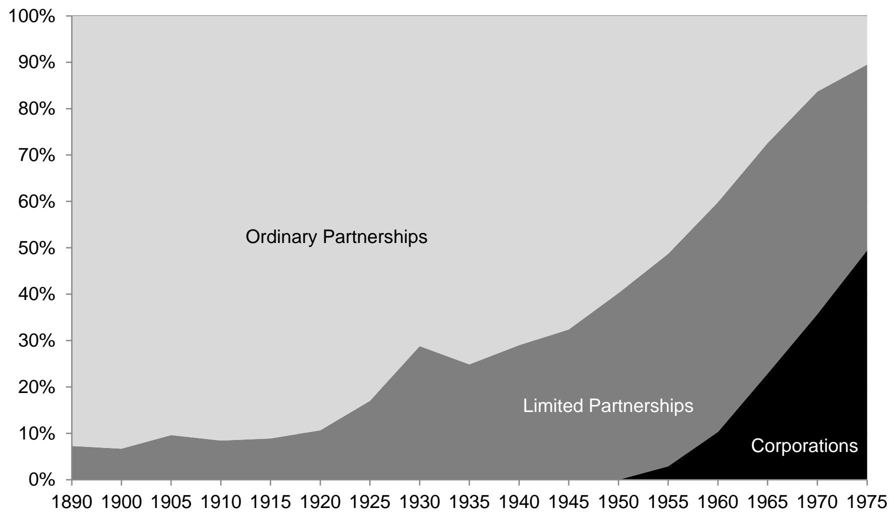

Figure 1:
Composition of NYSE Member Firms, by Organizational Form, 1890-1975

The top panel shows the composition of NYSE member firms, measured by the numbers of firms of different types, at five-year intervals. The bottom panel shows the same data, expressed in shares. The source for the data is the NYSE directory, various years.

Figure 2:
Flow Chart, Investment Bank Back Office Operations

Flow chart of back-office procedures for stock transactions, based on a study of investment banks by Lybrand, Ross Bros. & Montgomery, as printed in the *New York Times*, 17 January 1971. The part above the dashed line shows the procedures associated with a buy order; below the dashed line is a sell order. The report concluded that the elimination of stock certificates would make all steps in the shaded areas unnecessary.

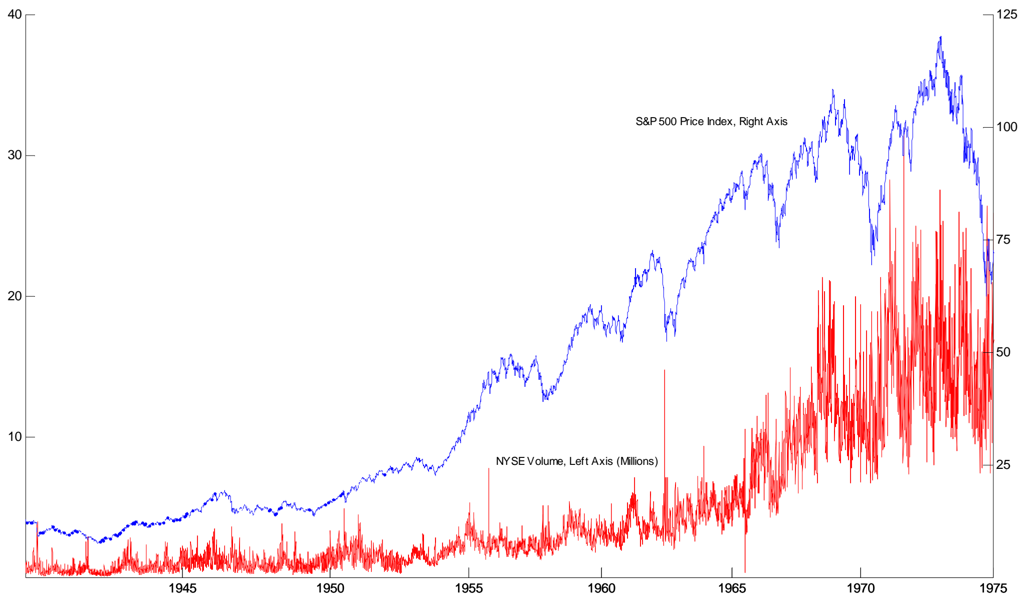

Figure 3:
Daily Share Prices and NYSE Trading Volumes, 1940-1975

This figure presents daily dividend-adjusted closing values for the S&P 500 index, in blue, and the volume of shares traded on the NYSE, in red. The volume data corresponds to the axis at left, and is expressed in millions, and the price index data corresponds to the axis at right.

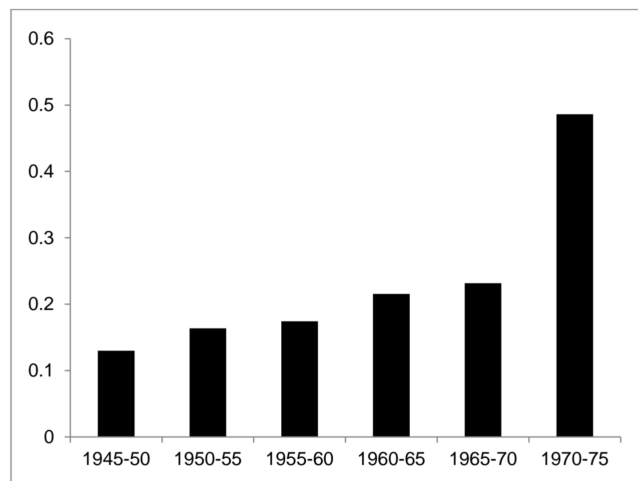

Figure 4:
Exit Rates from the Investment Banking Industry, 1945-1975

This figure presents the fraction of NYSE member firms that went out of existence at five-year intervals. These firms were either shut down or merged into other firms. Source: authors' calculations from the NYSE directory.

Table 1:
The Top 20 Investment Banks, 1965

Rank	Name	Capital	Branches	Headquarters	Organizational Form
1	Merrill Lynch, Pierce, Fenner & Smith, Inc.	114,998,116	175	New York	Corporation
2	Equitable Securities Corp.	49,883,501	12	Nashville	Corporation
3	Allen & Company	45,070,543	1	New York	Partnership
4	Francis I. du Pont & Company	41,861,996	111	New York	Partnership
5	Bache & Company	41,762,994	125	New York	Corporation
6	Eastman, Dillon, Union Securities & Co.	30,353,889	33	New York	Partnership
7	Lehman Brothers	29,412,206	6	New York	Partnership
8	Dean Witter & Company	29,134,018	64	San Francisco	Partnership
9	Blyth & Company, Inc.	28,917,624	42	New York	Corporation
10	Shelby Cullom Davis & Company	27,734,480	3	New York	Partnership
11	Wertheim & Company	26,770,000	1	New York	Partnership
12	Walston & Company Inc.	24,601,400	104	New York	Corporation
13	Carl Marks & Company, Inc.	23,920,680	1	New York	Corporation
14	The First Boston Corporation	23,732,959	8	New York	Corporation
15	White, Weld & Company	22,212,280	18	New York	Partnership
16	Halsey, Stuart & Company, Inc.	22,055,726	18	Chicago	Corporation
17	Goldman, Sachs & Company	20,365,861	9	New York	Partnership
18	Goodbody & Company	20,000,000	99	New York	Partnership
19	Salomon Brothers & Hutzler	19,700,000	9	New York	Partnership
20	Hornblower & Weeks, Hemphill, Noyes, & Co.	19,264,667	63	New York	Partnership

This table presents the 20 largest investment banks in 1965, by capital. The column at right lists whether or not the firms were incorporated in 1965. The data on branches, headquarters locations, and organizational forms comes from the NYSE directory. Capital data is from *Finance* magazine.

Table 2:
Selection into the Corporate Form, 1950-65

	Status in 1965:			Differences:	
	Corporation In 1965 (n=40)	Partnership In 1965 (n=315)	Did not exist In 1965 (n=244)	(1) v (2)	(1) and (2) v (3)
	(1)	(2)	(3)	(4)	(5)
Number of partners, 1950	11.525	7.270	4.197	4.255***	3.553***
	(14.507)	(5.345)	(2.482)	(1.171)	(0.473)
Number of branch offices, 1950	5.975	1.790	0.730	4.185***	1.532***
	(16.813)	(4.472)	(2.317)	(1.175)	(0.472)
Limited partnership, 1950	0.525	0.463	0.303	0.062	0.167***
	(0.506)	(0.499)	(0.461)	(0.084)	(0.040)
Age (years in NYSE, 1950)	22.125	21.905	16.352	0.220	5.577***
	(20.346)	(18.011)	(16.618)	(3.069)	(1.464)
HQ in major financial center	0.750	0.810	0.885	-0.060	0.082***
	(0.439)	(0.393)	(0.319)	(0.067)	(0.031)

This table analyzes the 1965 status of all of the NYSE's 1950 member firms. Column (1) presents the mean values of the 1950 characteristics of firms that had incorporated by 1965. Column (2) presents the mean values of 1950 characteristics of those that remained partnerships in 1965. And column (3) presents the 1950 characteristics of firms that ceased to exist by 1965. Column (4) presents the means and standard errors of the differences between the 1950 characteristics of firms that incorporated by 1965 and those that did not. Column (5) presents the means and standard errors of the differences in 1950 characteristics between firms that existed in some form in 1965, and those that no longer existed. ***, **, and * denote significance at 1%, 5% and 10%, respectively, for t-tests of the differences.

Table 3:
Partnerships vs. Corporations: Subordinated Loans From Customers and Fails to Deliver

	Subordinated Loans from customers In Capital, 1965 (Mean: 0.086)		Log(Fails to Deliver), 1968 (Mean: 12.976, SD: 2.672)	
	(1)	(2)	(3)	(4)
Firm organized as corporation	-0.007	0.006	0.117	0.368
	(0.040)	(0.040)	(0.400)	(0.377)
Log(Capital, 1965)		0.013		0.777***
		(0.021)		(0.176)
Headquartered in NYC		0.097**		0.609
		(0.040)		(0.402)
Log(Branches, 1965)		0.015		0.592***
		(0.023)		(0.154)
Age (years since joining NYSE)		-0.000		-0.005
		(0.001)		(0.010)
Observations	222	222	193	193
R-squared	0.001	0.048	0.001	0.307

This table presents regressions where the dependent variable is an indicator for the use of subordinated loans from customers as part of firm capital in 1965, in columns (1) and (2), and the log value of fails to deliver in 1968, in columns (3) and (4). These variables are regressed on an indicator variable for organization as a corporation in 1965, our main variable of interest, and other firm characteristics that may also have influenced its behavior. Robust standard errors in parentheses; ***, **, and * denote significance at 1%, 5% and 10%, respectively.

Table 4:
Partnerships vs. Corporations: Firms Shut Down or Merged, 1965-75

	Firm Shut Down or Merged, 1965-75 (Mean: 0.369)		
	(1)	(2)	(3)
Firm organized as corporation	-0.007	-0.041	-0.043
	(0.069)	(0.078)	(0.077)
Log(Capital, 1965)		-0.077*	-0.081**
		(0.041)	(0.041)
Headquartered in NYC		0.285***	0.262***
		(0.082)	(0.083)
Log(Branches, 1965)		0.057*	0.054*
		(0.033)	(0.032)
Age (years since joining NYSE)		-0.001	-0.001
		(0.002)	(0.002)
Subordinated loans from customers as capital			0.234*
			(0.128)
Observations	222	222	222
R-squared	0.001	0.063	0.081

This table presents regressions exploring the determinants of an indicator for firms being shut down or merged during 1965 to 1975. This is regressed on an indicator variable for organization as a corporation in 1965, our main variable of interest, and other firm characteristics that likely influenced survival. Robust standard errors in parentheses; ***, **, and * denote significance at 1%, 5% and 10%, respectively.