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Does Relationship Banking Matter?
Japanese Bank-Borrower Ties in Good Times and Bad

By Yoshiro Miwa & J. Mark Ramseyer*

Abstract: The Japanese "main bank system" figures prominently in the recent literature on "relationship banking." By most accounts, the main bank epitomizes relationship finance: traditionally, every large Japanese firm had one, and that bank monitored the firm, intervened in its governance, acted as the delegated monitor for other creditors, and agreed to rescue the firm if it fell into financial distress. Yet all this has begun to change, continue these accounts. Japan deregulated its financial markets in the 1980s, and many firms abandoned their relational lender for market finance. As the main banks then lost their ability to the constrain firms -- as relationship banking unraveled -- the firms gambled in the stock and real estate bubbles, the bubbles burst, and the firms threw the country into recession.

Using financial and governance data from 1980 through 1994, we show that none of this is true. The accounts of the Japanese main bank instead represent fables, stories we collectively recite because they so conveniently illustrate the theories and models we hope to develop. Whether during the 1980s boom or the 1990s recession, they bore no resemblance to any aspect of Japanese corporate finance or governance. Instead, even before the purported deregulation, large Japanese firms diversified their loans among a wide variety of lenders, and raised funds at competitive rates. Relationship banking theory may indeed explain financial practices among small firms in isolated communities. It does not explain them at the large Japanese firms.

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Banks mitigate adverse selection by screening applicants for loans. They reduce moral hazard by monitoring borrowers. Investors could do all that themselves, but because of scale economies delegate the screening and monitoring to banks.

Loans not only require screening and monitoring, but introduce problems of time-inconsistency. That to which a borrower would like to commit ex ante may involve strategies from which it would prefer to defect ex post. That to which a bank would like to commit may present parallel dilemmas. To mitigate these time-inconsistency problems, banks sometimes loan through long-term relationships.

In focusing on the resulting relational nature to business lending, scholars have developed a plethora of intriguing models and undertaken a variety of empirical projects. Yet to motivate their work, they often turn to accounts of "the Japanese main bank system." Every large Japanese firm has a long-term relationship with a leading bank, they recite. That bank -- called its "main bank" -- monitors the firm. It intervenes in its governance. Not only does it monitor for itself, it monitors on behalf of other creditors. It promises to rescue the firm should it fall into financial distress. And just as it contributed so much to Japan's post-war growth in its heyday, it unwittingly exacerbated the current malaise when de-regulation cut into its ability to monitor and control firms.

In short, in these stylized accounts Japanese main banks epitomize "relationship banking." Yet if the accounts seem too good to be true, they are. In a wide variety of areas, scholars have told tales about Japan to illustrate exceptions to general economic principles -- but the tales have usually borne no relation to actual Japanese practice.[1] Unfortunately, these accounts of the Japanese main-bank system represent yet another such tale. Like the oft-repeated stories about the GM-Fisher-Body merger or the QWERTY keyboard layout, they constitute fables, stories we collectively tell and retell not because they are true, but because we so badly wish they were true -- because they so neatly fit the theories we want to develop.

We begin by outlining modern banking and relationship banking theory (Section I.A.-B.). We summarize the “main-bank system” as described in the literature and locate its rhetorical role within relationship-banking theory (Section I.C.). Although scholars posit the main-bank phenomenon as involving the largest Japanese firms, we explain why one should not expect to see relationship finance among such firms (Section II). To test the various claims about the main banks, we then turn to our empirical exercise. We first introduce our 1980-94 data on the financial and governance arrangements at the 1000-odd largest Japanese firms (Section III.). Using this data, we ask how well it supports the conventional hypotheses about the main bank system, either during the booming 1980s or the depressed 1990s (Section IV.).

I. Banking and the Economics of Information

A. Informational Asymmetries and the Theory of Banks:

The economics of information figures prominently in modern banking theory. Indeed, until "the foundations of the economics of information were laid," write Freixas

[1] We describe these various tales in Miwa & Ramseyer (2002a, 2002b, 2003a, 2003b, 2003d).

& Rochet, the "microeconomic theory of banks could not exist" (1997: 8).[2] Enter the new theory, however, and the bank's role becomes clear: it "screen[s] the different demands for loans" to prevent adverse selection, and "monitor[s] the projects" to forestall moral hazard.

To screen and monitor, a lender will need to expend resources. Some of the resources it will invest in general information-gathering technology. Because of the scale economies to these investments, small lenders will tend to lend through intermediaries. Those intermediaries will then serve as their "delegated monitors" (Diamond, 1984). Hence banks: in depositing their money with banks, lenders delegate to the bank the task of screening and monitoring the firms that borrow.

Other resources a lender will invest in information specific to the borrower. Yet if general investments push lenders to work through intermediaries that lend to a variety of firms, specific investments push those intermediaries to lend through long-term relationships. The specific investments do so because of the time inconsistency problems involved (Mayer, 1988; Freixas & Rochet, 1997: 7). A bank may want to commit itself to a risky loan in order to encourage a firm to invest in a good project, for example -- but fear that the firm will switch lenders once the project succeeds; a borrower may want to invest in a project long-term -- but fear that the bank will exploit its vulnerability at the time of renewal; the bank may want to commit itself not to exploit such a borrower -- but fear that a long debt term would encourage moral hazard, and so forth. By lending in the context of long-term relations, banks and firms mitigate the effect of the time-inconsistency inherent in lending.

B. The Theory of Banks and Relationship Banking:

By the 1990s, scholars working on these time-inconsistency problems had created the new sub-field of "relationship banking." Although to date they have avoided a common definition (but see Boot, 2000: 10), most writers in the field use the concept to capture the polar case of a firm that works closely with a bank year after year. Each bank maintains ongoing relationships with a variety of debtors in these models, but each debtor borrows primarily from its relational bank.

This reliance by the firm on its relational bank generates several intriguing results. First, it gives the bank ex post "bargaining power" over the borrower (Rajan, 1992). As Rajan & Zingales (1998: 41) put it, the relational bank tries "to secure her return on investment by retaining some kind of monopoly power over the firm she finances."

Second, the relational bank may agree implicitly to rescue the firm if it falls into financial distress. It uses its “monopoly power to charge above-market rates in normal circumstances," explain Rajan & Zingales (1998: 42; see Petersen & Rajan, 1995). In return, it offers "an implicit agreement to provide below-market financing when [its] borrowers get into trouble."

Third, the bank's long-term "monopoly" fogs the firm's price signals. The “relationship-banking proximity” can create a “potential lack of toughness on the banks’ part in enforcing credit contracts,” writes Boot (2000: 16). Necessarily, this flexibility ex post generates a “soft-budget constraint” ex ante.

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[2] To similar effect: e.g., Hubbard, et al. (2002: 560); Stiglitz (2001: 513); Leland & Pyle (1977: 372).

C. Relationship Banking and Japanese Main Banks:

1. The main bank as fable. -- Much like the GM-Fisher-Body merger in the theory of the firm, the QWERTY keyboard in network-externalities theory, or the keiretsu corporate groups in Japanese industrial organization (Spulber, 2002; Miwa & Ramseyer, 2002b), accounts of Japanese banking figure prominently in relationship banking studies. And prominently they sport a "main bank." The accounts assert (as we detail in Subsections 2 and 3 below) that most Japanese firms maintain a long-term relationship with such a main bank; that these main banks intervene in the governance of their debtors through board appointments; that they monitor not just on their own behalf but on behalf of the other banks as well; that they agree in advance to rescue their debtors should they default; and that their decline in the 1980s explains the economic malaise in the 1990s.

All this makes the Japanese main bank, in Patrick's (1994: 359) words, nothing less than "the epitome of relationship banking." Scholars like Mayer (1988) and Rajan (1992) use the Japanese example to motivate their classic accounts of relational banking theory, and well they might -- for the stylized main bank in the existing literature fits the theory to a tee. As "a long-term relationship between a firm and a particular bank from which the firm obtains its largest share of borrowings," contend Aoki and his co-authors, the Japanese main bank system captures the essence of "relational contracting between banks and firms."[3]

Over the past couple of decades, scholars have used the concept of the main bank to illustrate a wide variety of issues in relational banking theory. Exploring collective action problems among creditors, Hoshi, Kashyap & Scharfstein (1990, 1991) claim main banks lower the cost of financial distress. Focusing more broadly on informational issues, Miyajima (1998: 43) states that they "facilitated corporate investment by mitigating information problems." Addressing the monopoly power of a relational bank, Weinstein & Yafeh (1998) and McGuire (2002) argue that main banks extract rents from their debtors. And studying the indeterminacy of price signals in a relational environment, Rajan & Zingales (1998) attribute the current Japanese depression to main bank finance.

2. The contours of the main bank relationship. -- (a) Introduction. Exactly what a main bank relationship entails is harder to know -- and for good reason: no one has seen a main bank contract. Even by the most committed of main-bank scholars, banks and firms make these arrangements "implicitly." Yet that they negotiated the arrangements implicitly, of course, is to say they did not negotiate them at all. Instead, they left them to mutually unstated assumptions.

The point is crucial. Scholars in the Japan field do not claim banks negotiated a contract but left it incompletely specified. Such contracts are still "explicit," and Japanese courts regularly enforce vague documents. They do not claim banks negotiated a contract but left it unwritten. Oral contracts are "explicit" as well, and Japanese courts regularly enforce them too.

[3] Aoki, Patrick & Sheard (1994: 3) and Aoki & Dinc (2000: 19); see Peek & Rosengren (2003: 3).

This absence of any contract among the parties makes hypotheses about the main bank system tantalizingly hard to test. Nonetheless, subject to variety of qualifications, most writers posit the following core propositions:

(b) Most big firms have one. First, most large firms have a main bank. As Flath (2000: 259) put it, "[a]lmost every large corporation in Japan maintains a special relationship with some particular bank, the company's 'main bank.'" Scholars may dispute how many small firms have a main bank, but virtually none contests the claim that most big firms have one (Patrick, 1994: 387).

(c) The main bank lends and gathers information. Second, the main bank serves as a firm's principal lender and a major shareholder, and through those ties acquires information. In the process, it becomes the "central repository of information on the borrower" (Milhaupt, 2001: 2087). The "close information-sharing relationship that exists between the bank and the firm," claims Sheard (1989: 403), constitutes the "cornerstone" of the system.

(d) It intervenes in corporate governance. Third, using that information, the main bank helps govern the firm. "The main bank system is central to the way in which corporate oversight," explain Aoki, Patrick & Sheard (1994: 4), "is exercised in the Japanese capital market." Indeed, writes Flath (2000: 288), "main banks could be counted upon to closely monitor the investment choices of their client firms." Declares Sheard (1994: 210), the "central role" of the main bank in "corporate governance of large firms is beyond dispute." Typically, it acquires that role through posts on the board. In Aoki, Patrick & Sheard's (1994: 15) words, the "main bank often has its managers sit as directors or auditors on the board of client firms."[4]

(e) It monitors on behalf of all debtors. Fourth, the main bank does not just monitor for itself; it monitors for all creditors. Restated, the other banks delegate to it the task of monitoring the debtor and skirt the duplicative monitoring that would otherwise ensue (Hoshi, 1998: 861; see Peek & Rosengren, 2003: 3; Aoki, 2001: 16). Because each money-center bank serves as main bank to a group of firms it monitors, no one bank incurs excessive monitoring costs. Because "reputational concerns" cause each to stay informed about those firms, through the reciprocally delegated monitoring the main bank system effectively "subjects firms to investor control" (Rajan, 1996: 1364).

(f) It agrees in advance to rescue distressed debtors. Fifth, the main bank agrees to rescue its financially constrained debtors. By Hoshi & Kashyap's (2001: 5) account, it "step[s] up and organize[s] a workout" when "firms [run] into financial difficulty." It launches "rescue operations [that] prevent the premature liquidation of temporarily depressed, but potentially productive, firms," contends Aoki.[5] Like an idealized textbook

[4] To similar effect: e.g., Flath (2000: 259, 279); Sheard (1996: 181); Kester (1993: 70).

[5] (2001: 86). To similar effect: e.g., Milhaupt (2001: 2086-88); Sheard (1989: 407); Gilson (1998: 210-11); Morck & Nakamura (1999a, 1999b). Given that main-bank scholars focus on board appointments as the mechanism by which the bank intervenes, in this article we do not test whether other intervention mechanisms exist.

bankruptcy regime, it first distinguishes financial constraints from economic malaise. It then rescues and restructures those firms that are economically healthy but financially constrained. Quite what the "rescue" entails (much less how one should operationalize it empirically), however, is an issue on which most observers seem not to agree.

3. The main bank and the current malaise. -- All this makes for a theoretically intriguing story but an equally elusive empirical quarry: no bank, firm, or scholar has ever seen a "main bank" contract. Fortunately for the empiricist, however, the 1990s depression introduces a more clearly testable hypothesis. According to main bank theorists, the firms that flirted with insolvency in the 1990s were those that had expanded most aggressively in the late-1980s. They had expanded during the late-1980s because the earlier financial deregulation had cut them loose from their main bank. Freed from the monitoring that had held them in check, they gambled badly in the late-1980s and suffered in the 1990s.

The deregulation matters because of its effect on competition, and the competition because of its effect on relational stability. According to the leading relationship-banking scholars, firms and banks can more effectively maintain stable long-term relationships when financial markets are less competitive. The "only way to promote relationships," suggest Petersen & Rajan (1995: 442), may be "by restricting credit-market competition." "Since the theoretic models rely on future rents or quasi-rents to maintain incentive compatibility," explain Gorton & Winton (2003: 33), "competition should ... undermine relationships."[6]

According to the conventional wisdom, the Japanese government had earlier promoted relationship banking by restricting financial competition (but see Miwa & Ramseyer, 2003b). Under the post-war regime, reasons Rajan (1996: 1364) -- accurately reflecting the literature -- the "restrictions on bond market financing forced firms to stay in long-term relationships" with banks. In turn, the resulting stability gave those "banks both the incentive to subsidize them in times of distress and the ability to recoup the subsidy in the long run."

When the government loosened those bond-market restrictions in 1980s, firms that could tap market finance did so and jettisoned their main banks. Alas, given the way investors for decades had relied on the main bank for monitoring, Japan lacked the monitoring mechanisms in place in other advanced economies. Effectively, the earlier main bank system had "obviat[ed] a need" for "more arm's length market-oriented" governance mechanisms to develop.[7] Because they could count on the main bank to monitor, writes Flath (2000: 288), shareholders had been able to "disengage from these activities with little fear of adverse consequences."

Once firms found that their main banks could no longer police them, main bank scholars continue, they gambled. Formerly well-run firms played the real-estate and stock markets, and fed speculative bubbles. When prices collapsed at the end of the decade, they found themselves without recourse.

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[6] Compare Rajan & Zingales (1998) and Yafeh & Yosha (2001), with Boot & Thakor (2000); Boot (2000).

[7] Aoki, Patrick & Sheard (1994: 5). See Miwa & Ramseyer (2002a, 2003c) for evidence to the contrary.

The tale appears in a wide array of accounts, but Aoki articulates it as well as any.[8] The new bond markets in the 1980s, he reasons, cut the ties between firms and banks. As those ties loosened, the firms became "freed from the bank's implicit and explicit intervention." This, in turn, "diminish[ed] the flow of information from firms to city banks and consequently the bank's ability to keep track of the firm's business" (Aoki, 1994: 137). In the process, the deregulation triggered "a negative incentive effect on the insiders of the firm, as they became free from any external discipline" (Aoki, 2001: 91; accord, Aoki, 1994: 137).

Once their best clients had abandoned them for bonds, the banks courted firms they had earlier spurned. With newfound access to cash, mediocre firms now found they could play the bubble too (e.g., Dinc & McGuire, 2002: 7). As deregulation let "key bank clients ... sharply reduc[e] their dependence on bank financing," contend Hoshi & Kashyap (1999: 4), banks turned to new clients. Unfortunately, those "new lines of business ... turned out badly." (id., at 4; see Gao, 2001: 186). Prices fell in the early 1990s, and these firms now failed as well.

II. The Puzzle

A. Introduction:

We do not quarrel with the notion that banks economize on screening and monitoring costs, any more than we quarrel with Coase's point that firms economize on the costs of using the market. As Alchian & Demsetz (1972: 783) said about the latter, "it is a difficult proposition to disagree with or refute." Crucially, however, Alchian & Demsetz then pointed out that if the market is not free, neither is the firm -- and people have access to many ways of organizing their productive activities. To advance the empirical enterprise, we need to know the relative costs of the market, the firm, and these various alternatives.

So too with the economics of information and banking theory. Many banks do economize on screening and monitoring expenses over the market, but they introduce their own costs in the process. What is more, investors already face a wide variety of ways to screen and monitor. They face not just decentralized securities markets, but mutual funds, insurance companies, leasing firms, and a host of others besides. Given these alternatives, the possibility remains that banking -- as Merton Miller (1998: 8) put it -- "is not only basically 19th-century technology, but ... disaster-prone technology" that survives only as a regulatory artifact. At root, information economics does not give us a theory of banks. It gives us a theory of financial intermediaries more generally, and does little to distinguish those other intermediaries from the banks.

B. The Odd Applicability to Japan:

1. The puzzle. -- The issue at stake here, however, is what any of this has to do with any Japanese "main bank system." By its own terms, relationship-banking theory applies only to the least competitive financial markets, and within those markets only to the smaller firms. Crucial to the theory, after all, is the "monopoly power" the bank

[8] (2001: 91). To similar effect: e.g., Gao (2001: 184); Gilson (1998: 216-17); Kester (1992: 39); Miyajima (1998). Rajan & Zingales (1998) apply the logic to East Asia more generally, and Kaminsky & Reinhart (1999) and Hellman, Murdock & Stiglitz (2000) use a similar logic to argue that financial liberalization explains the incidence of financial crises.

acquires over the borrower. Fundamentally, the logic behind relationship banking theory simply does not apply to competitive modern capital markets.

Yet the large Japanese firms raise their capital in precisely such competitive modern capital markets -- and have been for decades. Elsewhere (Miwa & Ramseyer, 2003b), we explore how competitive Japanese financial markets were during the purportedly highly regulated 1960s and 1970s. Consistently, we find that the regulation did not bind. Instead, the large firms diversified their loans among over 100 banks and borrowed at market rates (Miwa & Ramseyer, 2002b). The government never tried to limit stock issues, and firms raised roughly similar amounts through equity as U.S. firms did. Although they faced some obstacles to bond-market finance, they raised enormous sums even through bonds.

Fundamentally, the logic behind relationship-banking theory simply does not apply to the big Japanese firms. These firms have been raising funds on competitive markets for decades: they borrowed from banks, they issued stock and bonds, they took loans from insurance companies, and they regularly borrowed large sums as trade credit from business partners. The 1980s "deregulation" to which observers so often refer primarily involved only the liberalization of the bond market and the elimination of restrictions on deposit interest rates.

2. Applying the theory. -- Relationship banking theorists themselves never claimed that their logic applied to large firms. Consistent with the theory, empiricists working on non-Japanese examples seldom find it there. In Petersen & Rajan's (1995) classic formulation, relationship banking in the U.S. characterizes only small-firm finance. Bernanke (1983) uses an earlier variant of the theory to study the impact of bank failures on small firms in the 1930s. Degryse & Van Cayseele (2000) apply it to small firms in Europe, while Berger & Udell (1995) and Blackwell & Winters (1997) again apply it to small firms in the U.S.

These limits to the logic, however, seem to have been lost on those who would apply it to Japan. There, scholars focus on the very biggest exchange-listed firms. They do not argue that most Japanese firms have a main bank. Instead, they argue that most large firms have a main bank. Of the many small firms in Japan, most observers instead claim that “few if any have main banks" (Flath, 2000: 283).

Yet relationship banking theory does not fit large listed firms. Much of the analytical apparatus hinges on the “monopoly power” a relational bank acquires over a firm through the information it collects. "Without market power,” reason Yafeh & Yosha (2001: 66), “banks would not be able to extract rents generated by investment in ties with firms, and consequently there would be little or no relationship banking." Without that market power, in short, most relationship-banking models simply unravel.

This “monopoly” or “market” power that a bank would acquire over a firm is a power it could plausibly acquire only over relatively small firms in relatively uncompetitive financial markets. Over firms that can readily borrow only from one or two regional banks, perhaps a relational bank (whether in Japan or anywhere else) could acquire that power in time. It will not acquire the power over the large. Exchange-listed Japanese firms typically borrow only 15-35 percent of their debt from their lead bank, and spread the rest over many others. Necessarily, if a firm raises equity capital on a

national exchange and borrows from many banks besides, no bank will have "monopoly power" over its finance.

III. Testing the Tale

A. Testable Implications:

Consider, now, whether the Japanese main-bank story fits the data. Because we define a firm's main bank as the bank that lends the firm the largest share of its debt, we do not test the proposition that all firms have a main bank.[9] Because observers attribute the phenomenon only to the largest firms, we table our misgivings above and direct our inquiry to the larger exchange-listed firms. We then extract the following testable implications from the main-bank literature:

1. Governance by main banks. If banks dominate corporate governance through board appointments, then most firms should include several representatives from their main bank on the board; if banks focus on their more troubled clients, then declines in firm performance should lead to increases in the number of main bank representatives on a board. Given that main-bank scholars focus on board appointments in their discussions of bank intervention, we do not ask whether banks intervene in governance through other mechanisms.
2. Delegation of monitoring. If a firm's secondary lenders delegate their monitoring to the firm's main bank, then banker-directors overwhelmingly should be affiliated with the main bank rather than other banks.
3. Rescues by main banks. If a main bank implicitly agrees to rescue troubled firms, then a decline in performance should lead to (i) a decrease in a firm's inclination to change its main bank affiliation, and (ii) an increase in the fraction of a firm's debt borrowed from the main bank.
4. Deregulation and the depression. If deregulation-induced disintermediation caused economic decline by reducing bank monitoring, then (i) those firms that most sharply reduced their dependence on bank debt should have grown most rapidly in the booming late 1980s, and (ii) those firms that grew most rapidly should then have earned the lowest profits in the depressed 1990s.

Addressing all of these hypotheses in a single article admittedly introduces a disjointed quality to the discussion. Yet the claims collectively form the image of Japanese banking that dominates the economic literature. To demonstrate that that image itself is nothing but a "fable," we show that none of the claims reflects actual Japanese banking practice. Toward that end, we address each in turn.

B. The Data:

[9] More precisely, for **Past Main-Bankers, Concurrent Main-Bankers**, **MB Loan Fraction**, and **MB Change**, a firm's main bank is the institution with the greatest amount of loans outstanding at the firm. Inter alia, this approach tracks Campbell & Hamao (1994), Kang & Stulz (2000), and Morck, Nakamura & Shivdasani (2000). By contrast, Weinstein & Yafeh (1998), Horiuchi, Packer & Fukuda (1988), Morck & Nakamura (1999), and McGuire (2003) use one of the several keiretsu rosters as a proxy for main-bank affiliation. For reasons we detail in Miwa & Ramseyer (2002b), however, these rosters capture nothing of economic significance and only loosely track each other anyway.

For this project, we examine all non-bank firms listed on Section 1 of the Tokyo Stock Exchange (TSE). These are the largest of the listed firms. We collect financial data from 1980 to 1994, and board composition data in 1980, 1985, 1990, and 1995. We take our basic financial data from the Nikkei NEEDS and QUICK data bases. From the Kabushiki toshi shueki ritsu, we then add shareholder returns, and from the Kigyo keiretsu soran gather information on board composition.[10]

C. The Variables:

With this data, we construct the following variables. We include selected summary statistics in Table 1.

[Insert Table 1 about here.]

1. Board composition variables.[11] -- As of 1980, 1985, 1990, and 1995:[12]

Past Bankers: The number of directors on the board with a past career at a bank.

Concurrent Bankers: The number of directors on the board with a concurrent position at a bank.

Past Main-Bankers: The number of directors on the board with a past career at the firm's main bank.

Concurrent Main-Bankers: The number of directors on the board with a concurrent position at the firm's main bank.

Past Banker Increase: The increase in the number of directors on the board with a past career at a bank, from 1980 to 85, from 1985 to 90, and from 1990 to 95.

Concurrent Banker Increase: The increase in the number of directors on the board with a concurrent position at a bank, from 1980 to 85, from 1985 to 90, and from 1990 to 95.

Total Banker Increase: The increase in the number of directors on the board with a past career or concurrent position at a bank, from 1980 to 85, from 1985 to 90, and from 1990 to 95.

Board Size: The number of directors.

2. Financial variables. --

ROI: Total annual shareholder returns on investment (annual rate of appreciation in stock price plus dividends received) for 1980-85, 1985-90 and 1990-95.

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[10] Nikkei QUICK joho, K.K., NEEDS (Tokyo, Nikkei QUICK joho, as updated); Nikkei QUICK joho, K.K., QUICK (Tokyo, Nikkei QUICK joho, as updated); Nihon shoken keizai kenkyu jo, ed., Kabushiki toshi shueki ritsu [Rates of Return on Common Stocks] (Tokyo: Nihon shoken keizai kenkyu jo, updated); Toyo keizai, ed., Kigyo keiretsu soran [Firm Keiretsu Overview] (Tokyo: Toyo keizai, as updated).

[11] For this and other director variables, the data cover those directors who, after serving in management elsewhere, are named to the board within 3-4 years of joining a given firm. The numbers include statutory auditors (kansayaku), on the grounds that Japanese discussions of "yakuin" (colloquially translated as "directors") typically include the kansayaku.

[12] That is, in most cases, the directors chosen at the first shareholders' general meeting after the 1980, 1985, 1990, and 1995 fiscal years. Because most firms hold their meetings in June and have an April-March fiscal year, the 1985 directors would be those selected in June 1986, after the end of fiscal 1985 (April 1985-March 1986).

Profitability: The ratio of a firm's operating income (#95 of the Nikkei NEEDS data base) to total assets (#89) for each year, averaged over 1980-85, 1986-90, and 1990-94.

Positive Profits: 1 if a firm's **Profitability** were positive, 0 otherwise, for 1980-85, 1986-90, and 1990-94.

Growth: The annual growth rate, in percentage, of a firm's total assets (#89), averaged over 1980-85, 1986-90, and 1990-94.

Total Assets: The average total assets of a firm (#89) over 1980-85, 1986-90, and 1990-94, in million yen.

Tangible Assets/TA: The average ratio of a firm's tangible assets (#21) to total assets (#89) over 1980-85, 1986-90, and 1990-94.

Leverage: The average ratio of a firm's total liabilities (#77) to total assets (#89) over 1980-85, 1986-90, and 1990-94.

Total Bank Loans: The average total of a firm's bank loans, over 1980-85, 1986-90, and 1990-94, in million yen.

Total Bank Loan Increase: The increase (as a fraction) of a firm's bank loans, within the periods 1980-85, 1986-90, and 1990-94.

MB Loan Fraction: The mean fraction of a firm's bank loans from its main bank, for 1980-85, 1986-90, and 1990-94.

MB Loan Fraction Increase: The increase (as a fraction) of a firm's bank loans from its main bank, within the periods 1980-85, 1986-90, and 1990-94.

MB Change: 1 if the identity of a firm's main bank changed, for 1980-85, 1986-90, and 1990-94.

3. Industry dummies. -- Dummy variables for affiliation in the construction (113 firms), trade (164), service and finance (78) (but excluding banks), transportation (101) (including utilities and real estate), light industry (150), chemical (170), machinery (324), and metals (126) industries.

IV. The Results

A. Monitoring by Main Banks:

1. Introduction. -- According to the conventional accounts, main banks dominate the firms for which they serve as main bank by posting their officers to the boards of the firms. In fact, they almost never do so. For each of the four years on which we have board composition data (1980, 1985, 1990, 1995), 92 to 96 percent of the firms had no main bank officer on their board (Tab. 2, Pan. A.).

[Insert Table 2 about here.]

Fundamentally, scholars and journalists confuse bank officers with retired bank officers. If a bank wanted to use board representation to monitor, it would not rely on someone who had quit the bank, had no plans to return to the bank, and depended instead on the firm for his future livelihood. Notions of "Confucian loyalty" do not reach that far in the world of modern finance, and the banks themselves do not locate future board posts for their officers once they have retired. Instead, the bank would send a relatively young executive on the bank payroll who forfeited his bank career if he proved disloyal.

Yet to the extent firms name anyone from the banking sector to the board, they name retired bankers. During our four years, 53 to 56 percent of the firms had a retired

bank officer on their board, and 38 to 40 percent had a retired officer from their main bank. Even retired bankers, however, the firms do not name many. The mean firm had 1.1 retired bank officers on its board. It had only 0.2 to 0.3 directors serving at a bank concurrently.

2. Determinants of banker appointments. -- Why do the firms that do name bankers to the board name them? After all, the banks do not have the power to name people to the boards of their debtors. They do not negotiate that right as a condition of their loans, and to our knowledge do not demand board representation even implicitly.

Instead, the firms appoint their own directors. Half appoint no bankers at all, those that do appoint bankers appoint only ones with no incentive to stay loyal to the bank, and even they appoint too few to let them "dominate" governance. Main bank theorists offer no theory for why so many firms appoint no bankers. But why do the firms that do name bankers do so?

(a) The Kaplan & Minton hypothesis. According to the now-classic Kaplan & Minton (1994) study, bankers and ex-bankers appear on boards because banks use them to monitor and control declining borrowers.[13] Banks somehow place their officers and retired officers on a borrower's board when the borrower falls into distress. Once there, the bankers then pressure the distressed firm to replace its CEO.

Kaplan & Minton assemble board composition and financial data on the 119 largest TSE-listed firms from 1980 to 1988. They then use logit regressions on the panel data to estimate the likelihood that a firm will appoint a new banker-director. A firm is more likely to do so, they find: (a) if it earned low stock returns the previous year (similarly, Morck & Nakamura, 1999), or (b) if it had a pre-tax loss (a dichotomous variable) that year. They locate no evidence that a firm's pre-tax income (as a continuous variable) predicts banker appointments.

(b) The puzzle. These are striking results. Rational shareholders would not radically change their governance structure after either a one-year stock return drop or a one-year accounting loss. Neither would a rational creditor radically change its monitoring strategy. Instead, rational shareholders (as principals) and managers (as agents) would have tried to structure their relationship ex ante to align the managers' incentives with shareholder preferences.

Granted, shareholders will never align their managers' incentives perfectly. If they cannot observe managerial effort or ability, they may then sometimes choose to reward or punish their managers after the fact. Yet if they do have access to information about either effort or ability, they will use that information rather than outcome measures. When forced nonetheless to rely on outcome, they will choose measures with as little noise as possible.

For several reasons, most Japanese firms have both (a) relatively reliable information about effort and ability, and (b) less noisy indices of outcome. Most Japanese firms pick most executives through internal tournaments rather than recruit

[13] The problems in Kaplan & Minton (1994) appear as well in the non-technical summary of the research that appears in Kaplan & Ramseyer (1996).

them on the lateral market. Necessarily, they will usually have elaborate information about the ability and work habits of their senior managers.

Japanese firms will also have access to less noisy indices of performance than either shareholder returns or pre-tax losses. Returns fluctuate widely, both by year and by industry. The correlation of **ROI** is -.51 between 1980-85 and 1985-90, and -.40 between 1985-90 and 1990-95. A regression of 1985-90 **ROI** on prior period **ROI** yields an R squared of 26 percent, and of 1995-90 ROI on the prior period of 15 percent. Within 1985-90, mean **ROI** ranged from 32.5 in construction, 21.8 in light industry, to 16.7 in chemicals.

Pre-tax losses similarly include noise. By their nature losses are transitory. A "firm has an abandonment put option to discontinue the loss-making ... operation and recoup the book value of the firm's assets," explains Kothari (2001: 132-33). "So, only firms expecting to improve will continue operations, which means that observed losses would be temporary." Precisely because they are transitory, losses bear but a tenuous relation to a firm's expected cash flows. Whether among U.S. firms (Hayn, 1995) or Japanese (Obinata, 2003: 14-16), losses have but a loose association to stock prices.[14]

If all this is true (i.e., if firms choose their governance structures to align the incentives of their officers and shareholders, and monitor officers by more finely turned measures than loss years) then we should observe no statistically significant relation between director turnover and accounting losses. Although this is not a happy situation for the empiricist, it is one he often faces when markets work well. If markets clear, for example, producers will rarely earn extra profits (a principle about which Stigler [1963: 54] declared that "[t]hat there is no more important proposition in economic theory") -- but the empiricist cannot prove the point through significant results. If they impound information quickly, stock makets will be informationally efficient -- but the empiricist will not have significant results to prove it (Fama, 1998). Our claim -- that Japanese firms will choose governance structures that align managerial and shareholder incentives reasonably well -- is exactly such a claim: markets work effectively.

(c) Our exercise. To explore these puzzles in more detail, we replicate the Kaplan-Minton study but from a slightly different vantage. First, where they use data on the 119 largest TSE firms, we study all Section 1 firms (the largest 900-1,000 firms). Second, where they end their study in 1988, we extend it through 1994. This lets us study purported bank monitoring in both good times and bad.

Third, where Kaplan & Minton group retired bank officers with those holding concurrent bank appointments, we disentangle the two. The two groups face fundamentally different incentives: retired bankers will never again work at the bank, while concurrent bankers have careers that hinge on their loyalty to it. If banks put people on boards to intervene on their behalf, they ought primarily to use current officers rather than those who have quit.

Fourth, where Kaplan & Minton use a panel dataset, we use semi-decanal averages. Although this forces us to regress board changes on performance in the same

[14] Firms with low profitability tend to rebound quickly (Fama & French, 2000). Accounting earnings are problematic for a host of other reasons as well, of course (e.g., Hayn, 1995: 125-26). For a more general critique of the literature tying accounting data to stock returns, see Holthausen & Watts (2001).

period, it lets us ask whether any apparent governance shift is more than temporary. Simultaneously, it lets us ask whether those governance shifts that are long-term reflect long-term performance patterns.

Fifth, where Kaplan & Minton use a binary variable equal to 1 if a firm appoints any new banker-director (analogously, Morck & Nakamura, 1999), we use a continuous variable that reflects the net change in banker representation on the board. This lets us capture shifts in the magnitude of the banking industry's representation on the board, and lets us focus on those banker appointments that genuinely alter bank representation. As Kaplan & Minton (1994: 233) note, 45 percent of the new bankers merely replace other bankers.[15]

Sixth, where Kaplan & Minton (1994: 228) base their accounting measures on "current or pre-tax income," we use "operating income." This is not a trivial distinction. For the typical firm, operating income (which is also before taxes) will equal its revenues less costs of goods sold, direct selling expenses, advertising costs, and R&D. To derive its "pre-tax income," it will make a variety of additional discretionary adjustments both in non-operating income and expenses and in extraordinary gains and losses.

Because of this discretionary element to the calculation of pre-tax income, pre-tax income typically shows a much looser association to stock returns than does operating income. Obinata (2003: 12-14), for instance, tests the association between stock prices and various accounting measures in Japan. As logic would suggest, he finds substantially greater association between rates of return on stock and operating income than between rates of return and pre-tax income.

Last, where Kaplan & Minton use only year dummies as additional explanatory variables, we add further controls. Because a firm's willingness to appoint an outside director may vary with the total number of directors, we include **Board Size**. Because that willingness may also vary with a borrower's size and leverage, we include **Total Assets**, **Leverage,** and **Total Bank Loan Increase**. Because a borrower's ability to provide mortgageable assets may reduce a lender's need to monitor, we include **Tangible Assets/TA**. Because any bank's interest in monitoring a firm may depend on the extent to which the firm has diversified its borrowings, we include **MB Loan Fraction**. And because all this may vary from sector to sector, we include seven industry dummies (the omitted industry is metals).

For our dependent variable, we use the change in the number of past, concurrent, and total bankers on the board over each of our three periods: **Past Banker Increase, Concurrent Banker Increase,** and **Total Banker Increase**, over 1980-85, 1985-90, and 1990-95. We focus on the two right-hand variables closest to those that Kaplan & Minton find significant -- a firm's stock returns (**ROI**) and a dummy variable equal to 1 if a firm's profitability is positive (**Positive Profits**) -- and add **Profitability** for reference. To study whether banks respond quickly or more deliberately, we alternately regress our dependent variable on (a) the independent variables for the same half decade and (b) on those variables for the preceding half decade.

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[15] In other words, 45 percent of the data points in their dependent variable capture appointments that do not change the level of banker representation on the boards. Arguably, those 45 percent merely add noise. Yet to the extent that losses continue for two or three years, their approach introduces bias as well. If losses affect board appointments, they will likely affect appointments for 2 or 3 years. In such a world, Kaplan & Minton's panel approach potentially counts the loss year twice or more.

Readers may note that a firm's stock market performance is plausibly endogenous to the firm's expected board appointments. That endogeneity, however, is not unique to our specification. Instead, it is basic to the Kaplan & Minton study that we replicate here.

We report our coefficients and t-statistics on Table 4.[16] For our first set of results, we include coefficients and t-statistics for all variables (Panel A). To conserve space, for the rest of our results we report the coefficients and t-statistics only for our key performance variables.

[Insert Table 3 about here.]

[Insert Table 4 about here.]

(d) Our results. Summary measures. At least by the summary statistics of Table 3, the data show little evidence that banks appoint bankers to the boards of firms that fall into distress. During all periods, most firms -- whether profitable or unprofitable -- choose not to change the number of bankers on their boards. Although some firms do increase the number of bankers, about the same number reduce them. What is more -- and contrary to the bank-monitoring hypothesis -- the firms that increase their bankers are not disproportionately underperformers. Instead, profitable firms sometimes increase their banker directors too. Whether the least profitable firms appoint more or fewer bankers seems to vary both by the period involved, and by whether we examine retired or concurrent bankers. In all periods and for both categories of bankers, however, most firms leave the number of banker directors unchanged.

Regression results. Whether the Kaplan-Minton effect appears in the regressions depends heavily on the specifications. First, the regressions involving retired banker appointments consistently generate insignificant coefficients on the performance variables (Panel I). This holds true whether we use same-period (Panel I.A.) or prior-period (I.B.) independent variables. It also holds true whether we use the performance indices closest to those in Kapan & Minton (**ROI** and **Positive Profits**) or simple **Profitability**. Given that firms appoint many more retired bankers than concurrent bankers, the regressions involving all bankers (whether retired or concurrent) yield similarly insignificant results (Panel III).

Second, the regressions involving concurrent banker appointments are haphazard (Panel II). On the one hand, firms do seem to appoint more concurrent bankers when accounting profitability falls, at least in the first and last periods. On the other, however, in at least one of the periods they appoint more concurrent bankers when stock-market performance rises -- exactly the opposite of what Kaplan & Minton find.

Rather than advance a "spin" on why concurrent banker appointments would fall with accounting profitability but rise with stock-market performance, we suggest that the results are just haphazard. At root, very few firms appoint directors with concurrent bank posts. Of all our firms, 82-86 percent had no such directors (Tab. 2), and even most loss firms had none. Of the 14 loss firms in 1980-84, 11 had no concurrent banker-directors; of the 48 in 1990-94, 41 had none. Among those 14 loss firms in 1980-84, only 3

[16] We use OLS rather than Poisson both because the **Increase** variables can take negative values, and because of the reasons given in [this note + 1], infra.

increased their concurrent banker-directors; among the 48 in 1990-94, only 6 increased their concurrent banker directors.[17]

Kaplan & Minton's own result hinges on very small numbers. In their panel dataset, they included 933 firm-years. Of those observations, 8.8 percent involved negative earnings (82 firm-years), and 7.5 percent involved a new banker appointment (70 firm years). Kaplan & Minton calculate that the odds of appointing a banker increased at the loss firms from 7.5 percent for the sample at large by an additional 12.9 percentage points.[18] Apparently, the firms subject to the 82 loss firm-years appointed about 17 bankers. Absent the extra 12.9 percent, they would have appointed 6. During the 9 years Kaplan & Minton studied (and given average director tenure of about 8 years), their 119 firms would have appointed over 2,000 directors. Their loss-based evidence for bank monitoring, however, lies in the 11 extra bankers appointed during those 9 years.

3. Stock measures rather than flow. -- Might the reason under-performing firms do not increase their banker-directors be that they already have plenty? Might the right measure of bank intervention, in other words, be not the "flow" of new directors but the "stock"?

Although Table 3 suggests that the lower-performing firms may have more banker-directors than the higher, even the under-performers have relatively few. Most basically, most firms have no directors concurrently holding a bank position. Whether profitable or no, 80-90 percent of the firms have none (Tab. 3, Pan. A). Even retired bankers do not dominate the boards: the mean firm has about one retired director, and 35-60 percent have none. Although the less profitable firms do seem to have more retired bankers than the more profitable, this effect too remains small: from the least profitable quartile to the most, the fraction of firms with no retired directors rises from 0.38 to 0.56 (Pan. B).

To explore these issues further, we regress the total number of past and concurrent banker-directors on selected independent variables (Table 5). As our dependent variable, we use the number of banker-directors at the beginning and end of each half decade, and as independent variables use the mean figures for the period.[19] In the first column of Table 5, for example, we regress **Past Banker** for 1980 on the 1980-84 independent variables, and in the second column regress 1985 **Past Banker** on the same independent variables. To measure firm performance, we again use **Positive Profits**, **ROI,** and **Profitability**.

[Insert Table 5 about here.]

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[17] To replicate their study more closely, we tried restricting our sample to the largest 100 firms. We abandoned it, though, when we found that none of the 100-biggest firms had negative earnings for the first (1980-84) five-year period. In the second period, only one did, and in the third only three.

[18] Morck & Nakamura (1999: 366) obtain what are apparently even smaller effects: a fall in performance from the industry median to the lowest quartile raises the probability of a banker appointment from 6.3 percent to 6.7 percent, and a fall to the lowest decile raises it to 6.8 percent.

[19] We stress our OLS results rather than Poisson because of the stringent requirements relating to the mean and variance of the data for use of the latter. See Greene (1997: 937). However, for reference we include the Poisson results as Appendix A-2.

We find the results haphazard enough to raise doubts about any "stock" version of the bank-intervention hypothesis. First, the concurrent bank officers are at the better performing firms. Basic principal-agent theory suggests that if banks used board appointments to intervene in a firm, they would use concurrent rather than retired officers. Yet Table 5 Panel II.A. indicates that the concurrent bank officers are not at the loss firms. Instead -- and directly contrary to the literature -- they serve at the better-performing firms. As with the results on concurrent banker appointments in Table 4, we do not suggest that firms deliberately appoint bankers when their performance improves (we explore whether bankers raise performance in Miwa & Ramseyer, 2003a). Instead, we suspect the phenomenon merely reflects the very small number of concurrent bankers involved.

The worse-performing firms do seem to have more retired bankers on their boards. In the early 1980s, the number of retired bankers is negatively associated with stock-market **ROI**, and in the late 1980s and early 1990s with accounting **Profitability** (the coefficients on **Positive Profits** are insignificant in all regressions). Yet here too the magnitude of the effect is modest. Fundamentally, the coefficients suggest that although firms may consider performance in deciding whom to appoint to the board (and it is the firms themselves that choose the directors, not the banks), it is only one factor among several -- and not the most important at that.

Instead, the Table 5 coefficients suggest a more mundane logic to board appointments: firms appoint retired bankers when they think they might benefit from their financial expertise. First, firms are more likely to appoint bankers if they are in the financial services industry: in the early 1980s, financial firms appointed 0.4 more retired bankers than those in the metals industry, and in the late 1980s and early 1990s appointed nearly 1.5 to 2.0 more retired bankers. Second, firms are more likely to appoint bankers if they are highly leveraged: a one-standard-deviation increase in **Leverage** raises the number of retired banker appointments by about 0.3.

Third, smaller firms appoint more bankers: a one-standard-deviation increase in **Total Assets** cuts the number of retired banker appointments by 0.1 to 0.2. Last, firms with smaller stocks of mortgageable assets appoint more retired bankers: a one-standard-deviation increase in **Tangible Assets/TA** reduces the number of retired bankers by about 0.15 (though not in the late 1980s).

The effect of firm performance on the stock of retired bankers appointments is much smaller than of industry affiliation, and possibly smaller even than that of the other factors (a point consistent with the absence of significant results in the “flow” regressions in Table 4). In the early 1980s, a one-standard-deviation increase in **ROI** reduces the number of such bankers by 0.11. In the late 1980s and early 1990s, a one-standard-deviation increase in **Profitability** reduces the number of retired bankers also by 0.11 in the early 1990s, but the late 1980s by only 0.08.

4. An alternative explanation. -- Although Kaplan & Minton follow the literature in interpreting their results as bank intervention, these regressions suggest another hypothesis: perhaps the very worst-performing firms sometimes just replace their directors en masse. Perhaps, in other words, the shareholders at the most troubled firms in the Kaplan-Minton dataset sacked most of their directors, and then appointed new bankers at the same time that they replaced the others. Because Kaplan & Minton

examined only directoral appointments for bankers and a few others, they would not have noticed the rest of the new appointments. Yet the firms would not have appointed bankers to facilitate bank intervention. Instead, they simply would have replaced the bankers for the same reasons they replaced the rest.

Consider the two alternatives in more detail. If banks placed bankers on the boards of troubled firms to intervene on their behalf, then economic distress (a) would trigger the appointment of additional bankers, but (b) would not trigger the replacement of existing bankers with new ones. Conversely, if the most troubled firms sometimes replaced their entire board, then (provided they kept the ratio of bankers to non-bankers constant) economic distress (a) would trigger the replacement of existing bankers, but (b) would not trigger the appointment of any additional bankers. Consistent with the latter hypothesis but not the former, Kaplan & Minton find that loss firms do appoint new bankers while we find that they do not appoint additional bankers.

Kaplan & Minton focus on firms that post a loss year, and accounting scholars do suggest that firms sometimes time those losses to coincide with restructuring. In the U.S., for example, when new senior executives take over troubled companies they sometimes accelerate discretionary expenses to post a "big bath."[20] In Japan, departing senior executives of troubled companies are said sometimes to accelerate losses on their way out. If departing executives did choose to accelerate losses, Kaplan & Minton's pre-tax income would reflect it. Because pre-tax income comes net a variety of discretionary gains and losses, Japanese CEOs hoping to defer a loss can do so by defering depreciation allowances or selling appreciated stock. CEOs determined to post a "big bath" can do the opposite.

Take the shipbuilding industry in the late 1980s. Although firms in most industries did well throughout the booming 1980s, shipbuilding firms found themselves in crisis. By the middle of the decade, the tanker sales boom caused by the earlier oil price hikes had collapsed. In compiling their accounting statements, the firms then took a variety of tacks. According to securities filings, Kawasaki Heavy Industries had positive operating profits in 1984 and 1986, but posted pre-tax losses. Mitsui Shipbuilding had operating losses of 28 billion yen in 1988, but increased its "non-operating income" and "extraordinary gains" to post a pre-tax gain. Hitachi Shipbuilding had operating losses of 37 billion that year, but similarly accrued "extraordinary gains" to post a pre-tax gain.

Those firms that did decide to post a pre-tax loss sometimes also replaced much of their board. As Table 6 shows, all but one of the principal shipbuilders posted at least one loss-year over 1986-88. Several also had high board turnover. In general, Japanese directors serve about eight years. Had they done so here, the firms would have had annual board turnover rates of 12 percent, and over the two years would have replaced a quarter of their directors. Of the eight shipbuilding firms, only Kawasaki replaced fewer than a quarter. Two firms replaced about 30 percent, and two replaced about 40. Mitsubishi (with no loss years) replaced half, and two others replaced almost all.

The loss firms that replaced their board did not necessarily appoint additional bankers. Despite the many changes the shipbuilding firms made to their boards, two

[20] E.g., Kothari (2001: 133); Pourciau (1993); Murphey & Zimmerman (1993). Not all studies reach this conclusion.

firms cut the number of bankers on their board, and three kept it unchanged. One firm increased its banker directors by 1, and two increased them by 3.

[Insert Table 6 about here.]

Consider the implications: if this example generalizes to other industries, board appointments at loss firms may not indicate that "pressures from banks, corporate shareholders, and corporate groups play an important role in linking firm performance and managerial rewards" (Kaplan & Minton, 1994: 257). Instead, they may just reflect more general restructurings where loss firms replace most of their boards, bankers and non-bankers alike.[21]

B. Delegation of Monitoring:

The conventional accounts also posit that the main bank serves as exclusive monitor: rather than waste resources in duplicative monitoring, secondary banks delegate all monitoring to a firm's main bank. Suppose banks did make these arrangements. If current and retired banker-directors monitor on behalf of banks, then virtually all banker directors should come from a firm's main bank.

Suppose, however, that secondary banks do not delegate their monitoring to the main bank. Because firms will generally have the most contact with their main bank (after all, by definition they borrow the most money from it), they would probably still appoint more directors from the main bank than from the other banks. Because they also deal regularly with the other banks (the mean firm borrowed only 29 to 33 percent of its bank debt from its main bank), however, they would probably appoint substantial directors from other banks as well.

Our data show no evidence that secondary banks delegate monitoring to the main bank. In 1985, for example, our firms recruited only 57 percent of their retired banker-directors from their main bank.[22] The mean firm had about 1.1 directors who had retired from any bank, but only 0.6 who had retired from its main bank. It had about 0.2 who concurrently worked at any bank, but only 0.04 to 0.08 who concurrently worked at its main bank.

C. Main Bank Rescues:

1. Introduction. By most accounts, Japanese banks implicitly agree to rescue those distressed clients for which they act as main bank. Although scholars vary in what they consider a rescue, many claim that the main bank agrees to lend the firm money even when other banks would refuse. The claim appears routinely, but is bedevilingly hard to test.

The claim is hard to test because it posits only an "implicit" deal -- no firm or bank actually negotiates such an agreement. And even in Japan, firms do fail routinely (Miwa & Ramseyer, 2002a: 418). Even there, banks do not necessarily rescue troubled clients. Absent identifiable contracts, the easy response to a bank that jettisons a distressed client is to claim ex post that the firm must not have had a main bank ex ante.

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[21] Though the coefficient on earnings loss for appointments of directors from other corporations is not statistically significant in Kaplan & Minton (1994).

[22] Separately calculated. The data on Table 2 are consistent with this.

Some observers attribute the rescue obligation only to the more committed main banks (e.g., Sunamura, 1994: 298), but this only compounds the problem.[23] Absent a way to identify "strong" ties ex ante, the easy response is -- again -- to turn the claim tautological: if a bank does not rescue a firm ex post, the firm must not have had strong ties with the bank ex ante.

Still other proponents claim that main banks agree to rescue only economically viable firms (Aoki, 2000: ch. 5; Patrick, 1994: 399), but this variant is almost as non-testable as the others. Suppose a bank does not rescue a given firm. If the firm survives anyway, it must not have been truly distressed -- and the bank would have faced no obligation to rescue. If the firm fails, it must not have been economically viable -- and as it has now disappeared, that non-viability is almost impossible to contest.

To date, even main bank theorists have not tried systematically to show that these rescue agreements exist. They instead collect only anecdotes. To be sure, they collect many. In one study alone, Sheard (1994: 213-26) lists 42. Yet absent a more systematic approach, the anecdotes show only that some banks sometimes rescue some firms -- and that, of course, is beside the point. Try as creditors might to avoid the quandary, sometimes they find that lending a defaulting debtor extra funds or renegotiating an debt will cut their losses. That they sometimes do either does not mean they agreed to rescue ex ante. It may just mean they failed to notice the firm's travails until it was too late to pull their loans.

Given these problems, we take a different approach. We first survey the extent to which firms rely on their lead banks for loans (Subsection 2). We then ask which firms switch their lead banks (Subsection 3), and which increase the amounts they borrow from them (Subsections 4). We conclude by examining main-bank loans to a smaller sample of more seriously distressed firms (Subsection 5).

2. Main-bank dependence. Suppose main banks provide implicit insurance policies against financial or economic distress. The firms most likely to be "collecting" on the policy will be those closest to insolvency. If so, then on average the nearly insolvent firms should be borrowing a larger fraction of their loans from their lead bank than the other firms.

In fact, the least profitable firms do not borrow more from their lead bank than other firms. Consider Table 7. To construct the table, we partition the firms by their profitability (the columns) and by the total amounts they borrow from banks (the rows). For each of the resulting 16 cells, we then calculate the mean of the fraction of bank debt that the firms borrow from their main bank. We give the number of firms in each cell in parenthesis. We exclude firms that change their main bank during the period (generating uneven quartile sizes). Thus, in 1980-85, there were 12 firms that (i) did not change their main bank affiliation, (ii) were in the least profitable quartile, and (iii) were in the quartile that borrowed the least from banks. These 12 firms borrowed a mean .493 of their bank loans from their main bank.

At least during the 1980s, we find that the least profitable firms may have borrowed less from their main bank than their more profitable peers. During 1980-85,

[23] Some observers use a firm's purported keiretsu affiliation as a proxy for relational strength, but this fails for reasons we discuss in Miwa & Ramseyer (2002b).

the 186 firms in the least profitable quartile borrowed 27.8 percent of their loans from their lead bank, while the firms in the other three quartiles borrowed 30.6; during 1986-90, firms in the least profitable quartile borrowed 32.0 percent from their lead bank while the others borrowed 33.9. Only during 1990-94 did the least profitable borrow more: then, they borrowed 34.4 percent while the others borrowed 33.8. None of the differences are significant at the 5 percent level, and the main bank loan fraction figures in Table 7 do not fall from left to right as the bank rescue hypothesis would predict.

[Insert Table 7 about here.]

Given the costs involved in bank monitoring, all else equal firms might find it more efficient to borrow only from one bank. After all, the major Japanese banks are big enough to handle the debt of most of these firms. Nonetheless, the firms do not. Apparently, they worry about exactly the monopoly power that relationship-banking theory posits banks have, and diversify their loans to make certain they do not face it.

Because borrowing from any given bank does involve substantial fixed costs, however, a firm borrowing large amounts will more often find it cost-effective to borrow from several sources than will a firm borrowing less. If so, then the extent to which firms diversify their borrowing will increase with the total amounts they borrow. So Table 7 shows -- the fraction falls from the top row to the bottom.

To clarify the correlation between outstanding debt levels, profitability, and loan diversification (we do not claim to test causation), we offer a simple OLS regression of **MB Loan Fraction** on **Total Loans** (the source of the Table 7 quartiles) and **Profitability**:[24]

1980-85: **MB Ln Frac** = .273 - 1.23 **Tot Loans** + .551 **Profitability**
(16.64) (3.55) (2.19)

1986-90: **MB Ln Frac** = .319 - .775 **Tot Loans** + .442 **Profitability**
(18.51) (3.25) (1.38)

1990-94: **MB Ln Frac** = .336 - .280 **Tot Loan**s + .168 **Profitability**
(20.14) (1.81) (0.45)

As logic predicts, for each of the periods **MB Loan Fraction** is negatively associated with **Total Loans** -- during the 1980s at more than the 1 percent level and during the early 1990s at 10 percent. Contrary to the implications of main bank rescues, it is if anything positively correlated with **Profitability**.

In creating Table 7, we drop those firms that changed main banks during a given period. If we re-run our regressions on the entire sample with **MB Change** as an additional explanatory variable, we obtain:

1980-85: **MB Ln Frac** = .270 - 1.36 **Tot Loans** + .608 **Profitability** - .057 **MB Change**
(17.56) (3.70) (2.62) (5.75)

1986-90: **MB Ln Frac** = .322 - .847 **Tot Loans** + .393 **Profitability** - .062 **MB Change**
(21.26) (3.28) (1.44) (4.79)

1990-94: **MB Ln Frac** = .329 - .384 **Tot Loan**s + .392 **Profitability** - .067 **MB Change**
(23.24) (2.14) (1.37) (5.47)

The results remain largely unchanged: **MBLoan Fraction** is associated with **Total Loans** negatively, and with **Profitability** positively if at all. As one might expect, those

[24] The absolute values of the Huber-White corrected robust t-statistics are in parenthesis. The coefficients on **Total Loans** are multiplied by 10^7.

firms that change main bank affiliation borrow a smaller fraction of their debt from their lead bank.

Table 7 suggests two related observations, both of which imply that economically distressed firms do not collect on any bank-rescue insurance policy. First, among the firms most dependent on their main bank (the quartile with the least outstanding debt, where the **MBLoan Fraction** is highest), in each of the three periods more firms are in the profitable half than the unprofitable (for 1980-85, 93 firms compared to 32). Among the firms that borrow the most (very high outstanding debt), during the 1980s the most profitable firms relied more on their main bank (.292 for 1980-85) than the least (.215). More basically, neither comparison -- nor any other aspect of Table 7 of which we are aware -- suggests main banks offer distressed firms extra loans.

3. Main-bank stability. -- If main banks offer implicit insurance policies against financial distress, then the firms closest to insolvency should have the most stable relationship with their main bank. After all, a healthy 35 year-old might switch life insurance firms, but not a terminally ill 80 year-old. By hypothesis, the troubled firm has paid the main bank its implicit insurance premia for years. At the very point at which it might collect on its implicit policy against financial distress, it will not cancel that insurance coverage and look for another carrier.

If financially distressed firms do switch main banks, they do so either because the main bank has reneged on its rescue obligation or because it never offered coverage against distress in the first place. In fact, the two explanations come to much the same thing: if main banks regularly renege, no rational firm would pay the necessary premia ex ante; if no firms pay the premia, no rational bank would offer the rescue package ex post. If distressed firms regularly switch main banks, firms and main banks must not be contracting for insurance.

To explore these issues, in Panel A of Table 8 we calculate the percentage of firms in the lowest profitability quartile that change main bank affiliation during our three periods. We further compare that percentage with those of the top three quartiles. Lest we exaggerate the extent of the main bank shifts, we code as "main bank change" only those shifts that are definite. Where the data leave main bank affiliation unclear, we instead code the relationship as stable. For expositional simplicity, we do not partition firms by loan size. Instead, we simply extract the firms most likely to be collecting on their rescue insurance (the least profitable firms) and compare them against all others.

[Insert Table 8 about here.]

According to Panel A, main bank relations are not stable. For each of the half-decades, a fifth to a third of the firms switch their main banks. This is true not just of the higher performing firms but of those in the lowest quartile as well. Fundamentally, a firm's propensity to switch main banks is not tied to its profitability. The differences between the lowest quartile and the others are not significant at the 5 percent level, and the correlation between **Profitability** and **Main Bank Change** is uniformly insignificant. Firms that switch once do tend disproportionately to switch again, however. Of the firms that switched main banks in 1980-85, 43 percent switched again in 1986-90 (but only 12 percent of the others). Of the firms that switched main banks in 1986-90, 58 percent switched again in 1990-94 (and 20 percent of the others).

As in the previous subsection, to explore the correlations (not causation) more closely we offer some simple OLS regressions:

1980-85: **MB Change** = .309 - 2.12 **Tot Lns** + .208 **Profitability**
(11.77) (2.71) (.063)

1986-90: **MB Change** = .221 - 1.23 **Tot Lns** + .048 **Profitability**
(10.53) (4.35) (0.14)

1990-94: **MB Change** = .268 - 1.24 **Tot Lns** + .820 **Profitability**
(11.03) (5.10) (1.59)

1986-90: **MB Change** = .128 - .811 **Tot Lns** - .028 **Profitability** + .322 **80-85MB Change**
(6.60) (3.42) (0.09) (10.04)

1990-94: **MB Change** = .186 - .880 **Tot Lns** + .776 **Profitability** + .376 **86-90MB Change**
(8.42) (4.48) (1.73) (10.07)

As with **MB Loan Fraction**, **MB Change** is strongly and negatively correlated with **Total Loans** for all of the three periods. Whether a firm changed its main bank affiliation in one period also strongly predicts whether it will change it again in the next. Crucially, however, **MB Change** is <u>not</u> correlated with **Profitability**.

4. <u>Increases in **MB Loan Fraction**</u>. -- According to the conventional accounts, the main bank implicitly agrees to shoulder a disproportionate amount of any extra debt a troubled firm may need. In general, a main bank should lend additional funds to healthy firms in rough proportion to its outstanding debt. To distressed firms, however, according to main-bank theorists it should lend more than its proportional share.

In Panel B of Table 8, we compare (a) the mean increase in the **MB Loan Fraction** for the most distressed quartile of firms against (b) the mean increase at all other firms. By the standard accounts, the increase should be larger at the distressed firms than at the others. It is not. Instead, for two of the three periods the main bank increased its debt share at the healthy firms more than it increased it at the distressed; for the third period, it cut back its share less at the healthy firms than at the distressed (the differences are not significant at the 5 percent level). During the booming 1980s (when by conventional wisdom most firms could freely borrow) the main bank lent to the profitable and unprofitable firms alike; once firms hit hard times in the 1990s, it may have favored the former over the latter. The moral is simple: the main bank does not help the least profitable firms. If anything, it avoids them.

Suppose a distressed firm needs additional debt: suppose, in other words, that it is economically healthy but financially distressed, and needs additional funds to invest in facilities that will help return it to financial health. If the main bank bears a disproportionate share of any additional loans to such firms, then the correlation coefficient at those firms between (i) the increase in **Total Loans** and (ii) the increase in **MB Loan Fraction** should be positive. In fact, according to Panel C.1, it is significantly negative: when a distressed firm increases its loans (172 firms in 1980-85, 152 in 1986-90, and 188 in 1990-94), its main bank tends to fund less than its proportional share of the new debt.

Among the distressed firms that reduce their total loans (82, 109, and 78 firms, by period), the correlation between the increases in **Total Loans** and **MB Loan Fraction** is also negative (Pan. C.2). This is an ambiguous result. On the one hand, it could reflect main bank rescues: as other banks try to recover their debt before it becomes

uncollectable, the main bank replaces their loans to help the firm stay in business. On the other, it could also reflect bad main bank management: the main bank failed to pull its loans as quickly as the other banks. Indeed, it may have become the main bank precisely because of that mismanagement -- it may have become the firm's largest lender simply because it did not pull its loans as quickly as the others.

More basically, Panel C suggests that main banks do not favor distressed over profitable firms. In advancing the rescue hypothesis, theorists effectively claim that main banks agree implicitly to favor distressed firms over profitable firms. In fact, Panel C shows little difference in how a main bank responds to the two groups of firms. Even when bottom quartile firms fell on hard times in the 1990s, main banks did not treat them more favorably than their more profitable competitors.

5. Failing firms, pre-1980s firms. -- Finally, to explore bank lending at the most troubled firms, we examine loans to the 134 non-financial firms listed in an August 11, 1984 issue of the Japanese Business-Week equivalent (Shukan toyo keizai) as "endangered." These represent all exchange-listed non-financial firms with at least three consecutive loss (after interest but before extraordinary gains and losses) years as of 1984. Of the 134, 33 firms had disappeared from the exchanges by 2001, most through merger but about one-third through bankruptcy. The sample thus represents a more seriously distressed group than our bottom **Profitability** quartile.[25]

Again, suppose main banks implicitly agree to lend distressed clients amounts they could not obtain elsewhere. If so, then among our firms the main bank should have increased its loan share during their most troubled years. For them, these would have been the 1981-84 years -- after all, our firms had incurred at least three consecutive loss years by 1984. Consistent with the results from Table 8, the main banks did not increase their loan share at the troubled firms (Tab. 9). Instead, they cut it. What is more, even as loans to Japanese businesses grew explosively in the boom years of the late 1980s (see Tab. 1, Pan. A.), loans to these distressed firms stagnated (Tab. 9).

Nor was this absence of bank "rescues" a 1980s development. The 1974 oil crisis threw the Japanese economy into a prolonged recession. With business down, many firms posted losses, and as they did the business press published the predictable articles about the highest risk firms. In one April 1978 study, the Toyo keizai tokei geppo printed a list of 320 loss firms (i.e., firms with a loss carryforward) that “make banks tremble.” For our purposes, note that the firms exhibited characteristics similar to those in the 1984 list. Of the 320 firms, 10.3 percent vanished immediately, and 20.9 percent had not recovered six years later: 33 firms disappeared (e.g., by liquidation, by merger, or simply by de-listing the stock) within a year, and 67 had remained sufficiently underperforming to qualify for the 1984 list. Of the 33 disappearing firms, 24 had been insolvent.

Of the 320 loss firms, 24.1 percent had recently changed main bank affiliation: i.e., 77 had shifted their main bank during the preceding three years. Among the 87 insolvent firms in the group, 32 (36.8 percent) had changed their main bank, and 24 (27.6 percent) had disappeared. And of the 320 firms, consider the 113 with at least 10 billion yen debt in 1977. The records show no systematic evidence of serious main bank resues

[25] For sample details and a further critique of the main-bank rescue literature, see Miwa (1996: 115-19).

among these firms either: of the 113, 95 increased their debt during the next year, but the main bank increased its share of the debt only at about half of those 95 (52 firms; raising its mean loan share from 17.3 percent to 24.3 percent), and cut its share at the other half (43 firms; lowering its share from 19.9 percent to 15.4 percent).

D. Deregulation and Depression:

1. The connection. -- To explore the possible connection between the alleged deregulation-induced decline of main-bank monitoring in the late 1980s and the depression in the 1990s, consider Table 10.[26] To construct this table, in Panel A we divide the database into quartiles by a firm's 1986-90 **Growth** rate. We then provide selected summary statistics for each quartile. For Panel B, we segment the data by a firm's 1990-94 **Profitability** and collect similar statistics**.** In Table 11, we verify our conclusions with OLS -- we do so by regressing 1990-94 performance (**Profitability** and **Growth**, as the dependent variables) on 1986-90 financial variables (including **Profitability** and **Growth**, as the independent variables).

Recall the conventional explanation for the 1990s depression: due to the earlier deregulation, firms reduced their ties to their main bank; main banks lost the ability to monitor effectively; because of their reduced monitoring, firms played the bubble and expanded aggressively; and when the bubble burst, the most aggressive firms failed. Theoretically coherent perhaps, the story does not fit the facts. Instead, the facts suggest a much more mundane tale: the best firms grew rapidly in the booming 1980s and weathered the troubled 1990s; the worst firms grew only haphazardly even during the 1980s, and floundered badly in the 1990s.

Most basically, the firms that expanded in the late 1980s did not collapse in the early 90s (Tab. 10, Pan. A.2). Despite the many claims to the contrary, the firms that aggressively expanded were not the ones that failed. Instead, the firms that grew in the late 1980s were firms that had faced good projects in the past, and continued to face them in the future: the high-growth firms in the late 1980s were the firms that had grown in the early 80s, and that continued to grow into the 90s (Tab. 10, Pan. A.1; Tab. 11).[27]

These fast-growing firms prospered (Tab. 10, Pan. A.2; Tab. 11). As befits firms facing the best projects, they had been among the most profitable in the early 1980s. They stayed profitable into the 90s.

The fast-growing firms in the late 1980s grew in part by borrowing heavily. Although they maintained lower leverage than the slower growing firms (presumably by

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[26] We take these assumptions as given only for the sake of argument. In fact, because the earlier regulation of lending behavior had not bound, the 1980s deregulation could not have significantly affected bank-borrower ties (Miwa & Ramseyer, 2003b). Given that the "main bank system" had never existed, there was no "main bank monitoring" to decline.

In Miwa & Ramseyer (2003a), we show that board composition did not change during the period at issue. Moreover, as Tab. 10 and note [this + 1] infra of this paper suggest, bank loan patterns did not substantially change.

[27] The notion that any substantial disintermediation occurred is itself largely mythical. From 1979 to 1989, the total bank loans outstanding at all listed firms rose from 531 billion yen to 1,034 billion. Among the largest 30 borrowers, it rose from 222 billion to 576 billion, and among the largest 10 borrowers from 131 billion to 343 billion. The identity of the largest 30 borrowers remained largely unchanged during this period. Toyo (1991); see Miwa & Ramseyer (2003d) for details.

expanding equity; Tab. 10, Pan. A.3), they dramatically increased the amounts they borrowed from banks (Pan. A.4). Only the slowest growing firms cut their bank loans. Predictably, the correlation between 1986-90 **Growth** and **Total Bank Loan Incr** is .08 (significant at the .02 level).

The fast-growing firms also borrowed heavily from their principal lender. Where the slowest growing firms borrowed only 30 percent from their principal lender, the highest growing quartile borrowed 40 (Tab. 10, Pan. A.5). The correlation between 1986-90 **MB Loan Fraction** and **Growth** is .13 (significant at .001), and between 1986-90 **MB Loan Increase** and **Growth** is .26 (significant at .001). Not that firms attributed much permanence to their "main bank ties" (Tab. 10, Pan. A.6). For each quartile in each half decade, the odds that a firm would switch main banks ranged from 15 to 40 percent. The correlation between 1986-90 **MB Change** and **Growth** is not statistically significant.

In Panel B of Table 10, we undertake the reverse exercise: we segment the database by 1990-94 **Profitability** and trace the firms' antecedents. Preliminarily, note that firms were far from universally troubled even during the putative 1990s depression. Indeed, the most profitable half earned only marginally lower profits during the depressed early 90s than they had during the booming late 80s (Pan. B.2; Miwa & Ramseyer, 2003d).

As in Panel A, Panel B suggests that the firms skirting bankruptcy in the early 1990s were not firms that had grown rapidly in the late 1980s. Instead, they were firms that had been marginal all along. They had grown the least in the 80s, and had earned the lowest profits (Tab. 10 Pan. B.1; Tab. 11). Necessarily, they would have had the least chance of tapping the bond market, and the least chance of resisting bank intervention.

2. Industry-specific data. -- To show that our conclusions are not the artifact of aggregating data across industries, in Appendix Table A-1 we add analogous information from several industries. Firm performance did, after all, vary from industry to industry, and from period to period. During 1980-85, for instance, 43.6 percent of the fastest growing quartile of firms were in the machinery industry, but only 2.9 percent in the construction industry; during 1986-90, 23.6 percent of the fastest quartile were in machinery, and 4.5 percent in construction. During 1980-85, 15.1 percent of the slowest growing firms were in machinery, and 15.8 percent in construction; during 1986-90, 28.4 percent were in machinery, and 4.5 percent in construction.

Moreover, in explaining post-war Japanese economic growth observers have often focused on the machinery firms, while in addressing the 1990s malaise have focused on construction. For all these reasons, we include quartile data for the machinery firms in Panels E and F, and for construction firms in Panels A and B. To facilitate comparison, we add quartile data on the trade industry in Panels C and D. Largely, the results confirm the conclusions we reach from Table 10.

V. Conclusions:

Relationship banking may indeed matter. With its present theoretical base in information-based "monopoly power," however, it does not matter at exchange-listed firms. It may explain some financing patterns at the small Japanese firms, just as it may explain some small-firm finance in the West. Yet to date, that is not how scholars have

applied it to Japan. Instead, they have applied it through tales of a large-firm based "main bank system."

Unfortunately for the relationship-banking theorist, that "system" does not exist. And at least as applied to Japan through the concept of that "main bank system," relationship banking theory does not explain the 1980s Japanese asset-price increase. It does not explain the 1990s recession, does not appear in any intervention through boards of directors, does not capture any delegation of monitoring duties among banks, and does not reflect any implicit contract to rescue troubled borrowers.

Japanese firms do sometimes appoint retired bankers to their boards -- but most appoint none with a concurrent bank job, half have no bankers at all, few have more than one or two, and those in the financial services industry are far more likely to appoint them than firms anywhere else. Banks may sometimes take turns monitoring common debtors -- but if they do, no trace of it appears in board appointment patterns. Japanese banks may sometimes bail out troubled firms -- but after all, here or there, doing so sometimes lets a bank cut its losses ex post. And Japanese banks in the 1980s may well have spent fewer resources monitoring those borrowers that turned to the bond market -- yet those were not the firms that failed.

At root, the theory of the Japanese "main bank system" is a theory without a phenomenon. At root, the only charitable interpretation of the system is that it does not exist, and probably never did. Consider it an urban legend, a fable: a tale we collectively repeat because we collectively wish it were true. And we wish it were true because of the way it illustrates the economics of information, and its implications for relationship banking theory and modern banking theory more generally.

Does relationship banking matter? Perhaps -- perhaps it explains a variety of financing patterns among Japanese small firms in isolated areas, just as it may explain a variety of patterns among small regional firms in the West. Fundamentally, however, with its focus on the "monopoly power" a relational bank acquires over a firm through its investment in firm-specific information, relationship banking theory is a theory of small-firm finance in non-competitive financial markets. In their attempt to apply the theory to Japan, scholars have focused on the large, exchange-listed firms and their mythical "main bank" relationships. So applied, relationship banking theory emphatically does not matter.

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Table 1: Selected Summary Statistics

	n	min	mean	max.
A. Financial Variables:				
ROI				
1980-85	862	0	13.71	66.7
1986-90	943	-15.3	21.76	78.6
1990-94	1055	-45	-10.76	14.7
Profitability				
1980-85	1163	-0.07	0.07	0.99
1986-90	1210	-0.34	0.05	0.45
1990-94	1223	-0.13	0.04	0.37
Positive Profits				
1980-85	1163	0	0.98	1
1986-90	1210	0	0.96	1
1990-94	1223	0	0.96	1
Growth				
1980-85	1111	-282.9	26.79	89.6
1986-90	1154	-59.01	67.78	1200
1990-94	1213	-72.90	21.83	569
Total Assets				
1980-85	1163	1250	163,000	7,520,000
1986-90	1210	2060	247,000	10,900,000
1990-94	1223	3180	327,000	11,700,000
Tangible Assets/TA				
1980-85	1163	0.00	0.23	0.85
1986-90	1210	0.00	0.24	0.92
1990-94	1223	0.00	0.26	0.92
Leverage				
1980-85	1163	0.09	0.71	1.83
1986-90	1210	0.09	0.65	2.16
1990-94	1223	0.09	0.61	2.21
Total Bank Loans				
1980-85	988	16	56,300	3,370,000
1986-90	1030	7	77,400	4,530,000
1990-94	1045	0	93,200	4,820,000
MB Loan Fraction				
1980-85	988	0.09	0.29	1
1986-90	1030	0.06	0.33	1
1990-94	1044	0	0.33	1
MB Change				
1980-85	1015	0	0.29	1
1986-90	1015	0	0.21	1
1990-94	1016	0	0.28	1
B. Board Composition Variables:				
Past Bankers				
1980	1007	0	1.02	12
1985	1029	0	1.06	19
1990	1134	0	1.06	20
1995	1197	0	1.09	17
Concurrent Bankers				
1980	1007	0	0.25	5
1985	1029	0	0.22	6
1990	1134	0	0.21	5
1995	1197	0	0.21	5

Table 1: Selected Summary Statistics (Continued)

	n	min	mean	max
B. Board Composition Variables (Continued):				
Past Main-Bankers				
1980	1007	0	0.56	10
1985	1029	0	0.62	15
1990	1134	0	0.60	18
1995	1197	0	0.60	17
Concurrent Main-Bankers				
1980	1007	0	0.08	3
1985	1029	0	0.06	6
1990	1134	0	0.05	4
1995	1197	0	0.05	3
Board Size				
1980	1007	7	18.24	53
1985	1029	6	19.49	54
1990	1134	6	21.16	59
1995	1197	7	21.26	60

Sources: Nikkei QUICK joho, K.K., NEEDS (Tokyo, Nikkei QUICK joho, as updated); Nikkei QUICK joho, K.K., QUICK (Tokyo, Nikkei QUICK joho, as updated); Nihon shoken keizai kenkyu jo, ed., Kabushiki toshi shueki ritsu [Rates of Return on Common Stocks] (Tokyo: Nihon shoken keizai kenkyu jo, updated); Toyo keizai, ed., Kigyo keiretsu soran [Firm Keiretsu Overview] (Tokyo: Toyo keizai, as updated).

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Table 2: Bankers and Retired Bankers on Corporate Boards

	Main Bank				Any Bank			
	1980	1985	1990	1995	1980	1985	1990	1995
. Mean number of directors per bank holding --								
Conc bank appts	.078	.059	.052	.048	.254	.216	.211	.210
Past bank appts	.562	.619	.598	.599	1.021	1.060	1.060	1.087
. Percentage of firms with no directors holding --								
Conc bank appts	.927	.949	.956	.954	.820	.846	.854	.851
Past bank appts	.617	.591	.618	.623	.459	.466	.470	.467

Sources: See Table 1.

Table 3: Increases in Bankers and Retired Bankers, by Profitability Quartiles

A. **Number of Firms Showing Decrease, No Change, or Increase in Number of Concurrent Bankers on Board, Together with Mean Number of Concurrent Bankers and Fraction of firms with No Concurrent Bankers at Beginning of Period, by Profitability Quartiles**:

	Decr.	No Change	Incr	Fraction of Firms w/ no Con. Bkrs	Mean no. Con. Bankers
1. *1980-85* --				*(1980)*	*(1980)*
Very Low	24	228	13	.824	.281
Low	21	220	16	.767	.315
High	11	229	15	.821	.237
Very High	13	163	5	.871	.149
2. *1985-90* --				*(1985)*	*(1985)*
Very Low	17	259	14	.862	.214
Low	11	245	15	.804	.280
High	13	238	17	.858	.187
Very High	10	183	8	.866	.169
3. *1990-95* --				*(1990)*	*(1990)*
Very Low	16	256	27	.843	.231
Low	16	268	15	.833	.227
High	15	257	17	.869	.194
Very High	13	221	13	.879	.186

B. **Same Information, for Past Bankers**

1. *1980-85* --				*(1980)*	*(1980)*
Very Low	50	153	62	.386	1.184
Low	46	161	50	.427	1.100
High	40	186	29	.469	.962
Very High	23	141	17	.609	.644
2. *1985-90* --				*(1985)*	*(1985)*
Very Low	48	186	56	.369	1.459
Low	62	165	44	.443	1.096
High	47	172	49	.496	.896
Very High	19	145	37	.602	.652
3. *1990-95* --				*(1990)*	*(1990)*
Very Low	55	184	60	.395	1.369
Low	39	205	55	.448	.973
High	44	199	46	.526	1.017
Very High	34	163	50	.522	.842

Notes: Firms are partitioned by quartiles on the basis of Profitability. The sizes are uneven because not all firms with accounting data also have board composition data.

Sources: See Table 1.

Table 4: Determinants of Net Increase in Banker Appointments to Corporate Boards -- OLS Estimates

	80-85			86-90			90-94		
I. Using **Past Banker Increase** as Dependent Variable:									
A. *Same period independent variables*									
ROI	-.006			-.001			-.001		
	(1.89)			(0.22)			(0.31)		
Positive Prof		.002			.076			.110	
		(0.01)			(0.44)			(0.84)	
Profitability			-.253			1.120			-.395
			(0.64)			(1.33)			(0.45)
Board Size	-.006	-.004	-.003	-.010	-.009	-.009	.008	.009	.009
	(0.92)	(0.55)	(0.54)	(1.71)	(1.73)	(1.69)	(0.97)	(1.06)	(1.10)
Total Asts (106)	.046	.026	.027	.035	.027	.025	-.186	-.191	-.191
	(0.71)	(0.43)	(0.44)	(0.81)	(0.66)	(0.61)	(1.36)	(1.39)	(1.39)
Leverage	.313	.391	.356	-.216	-.096	-.001	-.440	-.497	-.537
	(1.21)	(1.61)	(1.48)	(0.89)	(0.43)	(0.00)	(1.72)	(1.95)	(2.04)
Tang At/TA	-.619	-.496	-.491	.272	.275	.234	-.073	-.019	-.014
	(2.30)	(2.03)	(1.99)	(0.87)	(0.97)	(0.83)	(0.16)	(0.04)	(0.03)
Tot Bk Loan Incr	.008	.003	.003	-.000	-.000	.000	-.000	-.000	-.000
	(2.65)	(0.83)	(0.78)	(0.27)	(0.43)	(0.33)	(0.90)	(1.26)	(1.27)
Main Bank Ln Frac	.362	.494	.494	-.155	-.068	-.059	-.180	-.060	-.076
	(1.70)	(2.39)	(2.41)	(0.97)	(0.45)	(0.38)	(0.96)	(0.29)	(0.37)
Industry dummies									
Construction	.028	.074	.069	.214	.319	.323	-.018	-.019	-.013
	(0.20)	(0.53)	(0.50)	(20.5)	(2.36)	(2.38)	(0.12)	(0.13)	(0.09)
Trade	-.257	-.216	-.220	-.132	-.080	-.069	-.025	-.071	-.076
	(2.04)	(1.99)	(2.01)	(1.02)	(0.68)	(0.59)	(0.21)	(0.61)	(0.37)
Serv & Fin	.222	.118	.119	.036	.060	.074	-.295	-.101	-.113
	(1.28)	(0.54)	(0.51)	(0.21)	(0.35)	(0.4)	(0.91)	(0.28)	(0.32)
Transportation	.185	.150	.147	-.054	-.021	-.015	.040	-.003	-.001
	(1.07)	(0.93)	(0.91)	(0.37)	(0.15)	(0.11)	(0.19)	(0.02)	(0.00)
Light Ind	-.101	-.072	-.078	-.021	-.001	.015	-.165	-.139	-.149
	(1.18)	(0.91)	(0.96)	(0.19)	(0.01)	(0.14)	(1.73)	(1.47)	(1.55)
Chemicals	-.212	-.196	-.197	.074	.094	.093	-.157	-.170	-.174
	(1.95)	(1.98)	(1.99)	(0.50)	(0.72)	(0.71)	(1.35)	(1.48)	(1.51)
Machinery	-.127	-.121	-.124	-.042	-.051	-.034	-.106	-.075	-.087
	(1.39)	(1.43)	(1.46)	(0.43)	(0.54)	(0.35)	(1.09)	(0.79)	(0.91)
R2	.04	.03	.03	.02	.02	.02	.03	.03	.03
n	762	860	860	796	888	888	886	941	941
B. *Prior period independent variables**									
ROI				-.006			.002		
				(1.68)			(0.46)		
Positive Prof					.048			.116	
					(0.12)			(0.86)	
Profitability						-.885			.073
						(1.15)			(0.09)

Table 4: Determinants of Net Increase in Bankers -- OLS (Cont'd)

	80-85		86-90		90-94	
II. Using **Concurrent Banker Increase** as Dependent Variable:						
A. *Same period independent variables**						
ROI	.004		.002		.002	
	(2.06)		(1.19)		(1.08)	
Positive Prof	-.349		.110		-.143	
	(2.19)		(1.44)		(2.04)	
Profitability	-.226		.703		-1.202	
	(0.77)		(1.65)		(2.12)	
B. *Prior period independent variables**						
ROI	-.002		.000			
	(1.52)		(0.07)			
Positive Prof	.289		-.074			
	(1.24)		(1.39)			
Profitability	.461		-.956			
	(1.07)		(1.96)			
III. Using **Total Banker Increase** as Dependent Variable:						
A. *Same period independent variables**						
ROI	-.003		.001		.001	
	(0.82)		(0.39)		(0.12)	
Positive Prof	-.347		.186		-.034	
	(1.25)		(1.02)		(0.26)	
Profitability	-.479		1.823		-1.597	
	(1.05)		(1.88)		(1.64)	
B. *Prior period independent variables**						
ROI	.004		.002			
	(0.91)		(0.48)			
Positive Prof	.337		.042			
	(0.83)		(0.30)			
Profitability	-.424		-.883			
	(0.72)		(0.93)			

Notes: * Other variables used in Panel I.A. are used in these regressions as well, but the results are not reported.

In each case, we give the oefficients, followed by the absolute value of t-statistics (calculated using OLS with robust standard errors) in the parentheses below.

The regressions include a constant term, not reported here.

Sources: See Table 1.

Table 5: Determinants of Total Stock of Bankers on Corporate Boards -- OLS

	Independent var's from 80-85		Independent var's from 86-90		Independent var's from 90-94	
I. Using **Past Banker** as Dependent Variable:						
	1980	1985	1985	1990	1990	1995
A. *And **Positive Prof** as an independent variable:*						
Positive Prof	-.160	-.174	-.318	-.218	-.192	-.025
	(0.40)	(0.38)	(1.29)	(0.89)	(0.67)	(0.12)
Board Size	.032	.026	.013	-.005	-.003	.006
	(4.00)	(3.02)	(1.27)	(0.31)	(0.26)	(0.76)
Total Assets (106)	-.437	-.394	.011	.207	.138	-.056
	(4.31)	(3.76)	(0.08)	(0.74)	(0.71)	(0.79)
Leverage	1.624	1.884	1.898	1.902	1.929	1.494
	(6.14)	(6.34)	(5.61)	(5.16)	(4.92)	(3.67)
Tang At/TA	.263	-.235	-1.050	-.928	-1.121	-1.206
	(0.81)	(0.67)	(1.89)	(1.51)	(1.89)	(2.41)
Main Bank Ln Frac	-.291	.026	-.290	.403	-.247	-.307
	(1.39)	(0.11)	(1.19)	(1.68)	(1.01)	(1.30)
Industry dummies						
Construction	.101	.199	-.076	.247	.162	.103
	(0.63)	(1.05)	(0.36)	(1.11)	(0.72)	(0.43)
Trade	.187	.009	-.060	-.184	-.188	-.249
	(1.17)	(0.06)	(0.35)	(1.04)	(1.12)	(1.46)
Serv & Fin	.246	.409	1.617	1.942	1.694	1.694
	(0.94)	(1.92)	(2.73)	(2.82)	(2.80)	(3.12)
Transportation	.042	.212	.324	.282	.286	.305
	(0.25)	(0.83)	(1.17)	(1.13)	(1.15)	(1.15)
Light Ind	.308	.248	.273	.295	.223	.102
	(2.31)	(1.84)	(2.01)	(1.99)	(1.52)	(0.64)
Chemicals	.460	.289	.315	.411	.408	.243
	(3.28)	(2.14)	(2.31)	(2.45)	(2.46)	(1.49)
Machinery	.505	.395	.312	.261	.128	.063
	(4.49)	(3.37)	(2.51)	(1.93)	(0.97)	(0.42)
R2	.09	.08	.11	.12	.11	.10
n	926	925	971	971	1015	1015
B. *And **ROI** as an independent variable:**						
ROI	-.008	-.012	-.006	-.008	-.008	-.009
	(1.98)	(2.51)	(1.37)	(1.57)	(1.06)	(1.28)
C. *And **Profitability** as an independent variable:**						
Profitability	-.242	-.519	-2.549	-1.670	-3.361	-3.490
	(0.36)	(0.83)	(2.04)	(1.30)	(2.34)	(2.29)

Table 5: Determinants of Stock of Bankers -- OLS (Cont'd)

	1980	1985	1985	1990	1990	1995
II. Using **Concurrent Banker** as Dependent Variable:						
A. *And **Positive Prof** as an independent variable:**						
Positive Prof	.206	-.134	.074	.203	.184	.043
	(2.05)	(0.64)	(1.05)	(3.61)	(4.33)	(0.66)
B. *And **ROI** as an independent variable:**						
ROI	-.003	.001	.001	.002	.001	.003
	(1.53)	(0.30)	(0.43)	(1.00)	(0.42)	(1.33)
C. *And **Profitability** as an independent variable:**						
Profitability	.366	.127	.487	1.133	.940	.256
	(0.95)	(0.24)	(0.91)	(2.27)	(1.51)	(0.50)
III. Using **Total Banker** as Dependent Variable:						
A. *And **Positive Prof** as an independent variable:**						
Positive Prof	.046	-.308	-.244	-.014	.042	.018
	(0.11)	(0.63)	(0.94)	(0.06)	(0.19)	(0.08)
B. *And **ROI** as an independent variable:**						
ROI	-.011	-.011	-.006	-.006	-.007	-.006
	(2.39)	(2.21)	(1.09)	(1.03)	(0.83)	(0.77)
C. *And **Profitability** as an independent variable:**						
Profitability	.124	-.393	-2.063	-.537	-2.421	-3.234
	(0.18)	(0.58)	(1.42)	(0.37)	(1.46)	(1.99)

Notes: * Other variables used in Panel I.A. are used in these regressions as well, but the results are not reported.

In each case, we give the oefficients, followed by the absolute value of t-statistics (calculated using OLS with robust standard errors) in the parentheses below.

The regressions include a constant term, not reported here.

In the first column, we regress the stock of banker-directors at the firm in 1980, on the 1980-85 independent (financial) variables. In the second column, we regress the stock of 1985 banker-directors on the same independent variables.

Sources: See Table 1.

Table 6: Shipbuilding Firms in the 1980s Recession

	NKK	Sumitomo Heavy Ind	Mitsui Shipb'g	Hitachi Shipb'g .
Loss years	1987	1986, 1987	1986, 1987	1986, 1987
87 board size	40	18	23	20
87 dir's from 86	32	15	20	6
87 dirs to 88	27	13	19	13
86 dirs to 88	23	13	16	4
86-88 turnover	43 %	28 %	30 %	80 %
86-88 net banker incr	0	+1	0	+3
Survival	yes	yes	yes	yes

	Sasebo Heavy Ind	Mitsubishi Heavy Ind	Kawasaki Heavy Ind	Ishikawajima Harima HI .
Loss years	1987, 1988	None	1986, 1987	1987
87 board size	18	40	29	32
87 dir's from 86	5	31	24	24
87 dirs to 88	2	27	28	24
86 dirs to 88	2	19	23	20
86-88 turnover (%)	89 %	53 %	21 %	38 %
86-88 net banker incr	+3	0	-1	-1
Survival	yes	yes	yes	yes

Notes: Those fiscal years from 1986-88 for which the firms posted pre-tax losses, followed by the board size in 1987, the number of directors in 1987 who had also served on the board in 1986, the number of 1987 directors who continued to serve in 1988, the number of 1986 directors who continued to 1988, the percentage of the board that turned over from 1986 to 1988, and the net increase in the number of retired or concurrent bankers on the board from 1986 to 1988.

Sources: Securities filings, for appropriate years and firms.

Table 7: Reliance on Main Bank, by Outstanding Debt and Profitability

A. **Main Bank Loan Fraction**, 1980-1985 (Mean Values):

	Profitability			
	Very low	Low	High	Very high
Outstanding Debt				
Very low	.493 (12)	.412 (20)	.436 (46)	.492 (47)
Low	.330 (46)	.274 (40)	.326 (46)	.361 (34)
High	.271 (54)	.250 (60)	.267 (40)	.231 (21)
Very high	.215 (74)	.193 (59)	.205 (48)	.292 (11)

B. **Main Bank Loan Fraction**, 1986-1990 (Mean Values):

	Profitability			
	Very low	Low	High	Very high
Outstanding Debt				
Very low	.588 (22)	.561 (42)	.503 (54)	.494 (58)
Low	.331 (44)	.285 (49)	.338 (55)	.354 (37)
High	.301 (63)	.267 (66)	.268 (48)	.276 (22)
Very high	.252 (78)	.214 (63)	.181 (43)	.286 (23)

C. **Main Bank Loan Fraction**, 1990-1994 (Mean Values):

	Profitability			
	Very low	Low	High	Very high
Outstanding Debt				
Very low	.565 (24)	.449 (31)	.546 (52)	.515 (41)
Low	.392 (43)	.351 (38)	.301 (46)	.328 (37)
High	.294 (58)	.267 (53)	.288 (41)	.272 (23)
Very high	.277 (67)	.235 (76)	.242 (39)	.271 (17)

Notes: The data are partitioned into quartiles, by **Profitability** (by columns) and by **Total Bank Loans** (by rows). In each case, we give the **Main Bank Loan Fraction** for that cell, followed by the number of firms in that cell, in parentheses. Quartiles are uneven because we exclde firms that changed their main bank affiliation during the period.

Sources: See Table 1.

Table 8: Main Bank Stability and Loans to Distressed Firms

	1980-85	1986-90	1990-94
A. Main Bank Switch Rates (Mean Values):			
1. *Bottom quartile firms, by* ***Profitability***	.281	.229	.266
2. *Top three quartile firms, by* ***Profitability***	.303	.201	.283
B. **MB Loan Fraction Increase** (Mean Values):			
1. *Bottom quartile firms, by* ***Profitability***	.021	.033	-.023
2. *Top three quartile firms, by* ***Profitability***	.030	.034	-.012
C. Correlation Coefficients between **MB Loan Frac Incr** and **Tot Bank Loan Incr:**			
1. *Firms with a* ***Total Loan*** *increase*:			
a. *Bottom quartile firms, by* ***Profitability***	-.323***	.040	-.375***
b. *Top three quartile firms, by* ***Profitability***	-.239***	-.283***	-.316***
2. *Firms with a* ***Total Loan*** *decrease*:			
a. *Bottom quartile firms, by* ***Profitability***	-.443***	-.567***	-.179
b. *Top three quartile firms, by* ***Profitability***	-.490***	-.485***	-.151**

Notes: *** Statistically significant at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

Panel A gives the fraction of firms that switched their main bank affiliation during the period, for each period.

Panel C gives the applicable correlation coefficient for each period.

Panel C gives the correlation coefficient between (i) the increase in fraction of total outstanding bank debt that has been lent by the main bank and (ii) the increase in the total bank debt, for each period. Panel Cexcludes firms that changed their main bank during a given period.

Sources: See Table 1.

Table 9: Main Bank Loans to Firms with Three or More Consecutive Loss Years as of 1984

	n	1972	1978	1981	1983	1984	1987	1990	1996
A. Mean Amounts (in Million Yen) Borrowed from All sources:									
Mean of all firms	134	16182	32055	37876	41870	39775	40153	38972	48608
Outstanding Debt									
>100 bill. yen	15	88730	191977	250569	271031	255853	266234	229873	273926
10-100 bill.	40	14396	24914	24952	27497	26552	27088	25705	29946
5-10 bill.	25	3528	6592	6224	7189	7202	10841	19069	35020
<5 bill.	54	2096	3658	3021	2745	2562	3199	7008	10362
B. Mean Amounts (in Million Yen) Borrowed from Main Bank:									
Mean of all firms	134	3219	5823	6874	7056	6692	7351	8021	9955
Outstanding Debt									
>100 bill. yen	15	12539	29394	39084	38514	36063	41613	43458	56535
10-100 bill.	40	4440	5837	5906	5855	5561	6632	6092	6161
5-10 bill.	25	1049	1563	1543	2015	2147	2235	2755	4952
<5 bill.	54	508	967	891	979	943	1056	1523	2457
C. Mean Percentage Borrowed from Main Bank:									
Mean of all firms	134	19.9	18.2	18.1	16.9	16.8	18.3	20.6	20.5
Outstanding Debt									
>100 bill. yen	15	14.1	15.3	15.6	14.2	14.1	15.6	18.9	20.6
10-100 bill.	40	30.8	23.4	23.7	21.3	20.9	24.5	23.7	20.6
5-10 bill.	25	29.7	23.7	24.8	28.0	29.8	21.5	14.4	14.1
<5 billion	54	24.2	26.4	29.5	35.7	36.8	33.0	21.7	23.7

Notes: The firms are the 134 non-financial exchange-listed firms listed in Shukan toyo keizai, Aug. 11, 1984, as having 3 or more consecutive loss years (after interest, but before extraordinary gains and losses). The "mean percentage borrowed" is the percentage of the total debt in each tier borrowed from the main bank. Debt categories are based on amounts outstanding as of March 1984.

Sources: See Table 1.

Table 10: Growth and Profitability Quartiles

A. By 1986-90 Growth Quartiles (All Firms):

	1. Growth			2. Profitability		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	19.493	11.463	10.848	.058	.036	.033
Low	25.203	39.043	17.017	.066	.052	.042
High	30.096	63.656	18.827	.072.	.053	.042
Very High	33.346	157.153	30.379	.084	.071	.052

	3. Leverage			4. Total Bank Loan Incr		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	.763	.708	.673	.595	-.032	.372
Low	.704	.642	.613	.585	.221	4.497
High	.672	.625	.596	.215	.625	.961
Very High	.689	.604	.554	.855	3.471	11.938

	5. MB Loan Fraction			6. MB Change		
	1980-85	1986-9	1990-94	1980-85	1986-90	1990-94
Very Low	.277	.290	.294	.246	.169	.220
Low	.290	.306	.319	.292	.198	.233
High	.296	.330	.327	.353	.264	.349
Very High	.319	.381	.383	.292	.206	.330

B. By 1990-94 Profitability Quartiles (All Firms):

	1. Growth			2. Profitability		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	27.956	54.474	3.481	.053	.025	.009
Low	22.620	59.021	15.960	.060	.041	.033
High	28.061	65.077	24.989	.070	.054	.048
Very High	29.069	94.780	42.896	.101	.093	.086

	3. Leverage			4. Total Bank Loan Incr		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	.739	.686	.675	.248	1.871	10.431
Low	.735	.677	.647	.563	1.019	.914
High	.705	.646	.615	.688	.195	2.766
Very High	.639	.577	.509	.739	.158	.444

	5. MB Loan Fraction			6. MB Change		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	.292	.322	.312	.278	.215	.266
Low	.274	.301	.298	.303	.179	.252
High	.285	.323	.337	.304	.224	.300
Very High	.331	.366	.382	.282	.218	.302

Notes: In Panel A, the data are partitioned by 1986-90 **Growth** and by the other variables given; in Panel B. they are partitioned by 1990-94 **Profitability** and the other variables given.

Sources: See table 1.

Table 11:
Impact of 1986-90 Performance on 1990-94 Performance

	(1)	(2)	(3)
		Dependent variable	
	Profitability	Profitability	Growth .
Growth ($x10^4$)	.507 (2.79)		.037 (1.38)
Profitability		.587 (12.41)	
Total Assets ($x10^7$)	.012 (0.84)	-.009 (1.31)	-3.21 (0.16)
Tangible Assets/TA	.026 (3.61)	-.007 (1.23)	18.951 (2.60)
Total Bank Loan ($x10^7$)	-.096 (1.99)	.013 (0.74)	-133 (1.94)
MBLoan Fraction	.007 (1.10)	-.001 (0.28)	-2.961 (0.62)
MB Change	-.001 (0.38)	.001 (0.61)	-1.523 (0.78)
Industry dummies:			
Construction	.006 (1.37)	.012 (4.61)	26.541 (7.72)
Trade	-.009 (2.05)	-.005 (2.12)	2.835 (0.80)
Service & fin	-.006 (0.79)	.002 (0.39)	9.269 (1.46)
Transportation	-.006 (1.27)	.002 (0.64)	9.496 (2.30)
Light industry	-.009 (2.02)	-.003 (1.14)	-4.688 (1.54)
Chemicals	-.004 (0.83)	-.003 (1.02)	-2.676 (0.90)
Machinery	-.011 (2.53)	-.003 (1.06)	-2.387 (0.88)
R2	.06	.53	.14
n	946	976	942

Notes: The dependent variables (**Profitability** and **Growth**) are from 1990-94, while all independent variables are from 1986-90. In each case, we give the coefficients, followed by the absolute value of t-statistics (calculated using OLS with robust standard errors) in the parentheses below. The regressions include a constant term, not reported here.

Sources: See Table 1.

Appendix Table A-1:
Growth and Profitability Quartiles, by Industry

A. By 1986-90 Growth Quartiles (Construction Firms Only):

	1. Growth			2. Profitability		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	17.519	18.077	36.270	.032	.022	.042
Low	9.454	38.715	38.270	.049	.044	.051
High	18.544	65.183	40.761	.049	.040	.049
Very High	19.096	148.913	40.790	.046	.052	.058

	3. Leverage			4. Total Bank Loan Incr		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	.823	.806	.794	.632	-.107	.430
Low	.775	.753	.743	.205	-.079	.624
High	.767	.760	.743	.504	.621	.887
Very High	.817	.771	.718	.772	.042	.731

	5. MB Loan Fraction			6. MB Change		
	1980-85	1986-9	1990-94	1980-85	1986-90	1990-94
Very Low	.295	.280	.270	.307	.385	.154
Low	.274	.271	.257	.333	.167	.125
High	.273	.293	.282	.161	.129	.194
Very High	.277	.267	.280	.370	.148	.296

B. By 1990-94 Profitability Quartiles (Construction Firms Only):

	1. Growth			2. Profitability		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	15.085	50.393	34.939	.032	.022	.021
Low	9.474	59.167	37.746	.035	.026	.033
High	18.961	74.882	36.371	.043	.038	.048
Very High	19.867	113.666	47.851	.066	.071	.081

	3. Leverage			4. Total Bank Loan Incr		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	.805	.773	.776	.220	.210	1.238
Low	.863	.857	.855	.207	.122	.952
High	.795	.785	.762	.855	.459	.657
Very High	.708	.660	.602	.402	-.372	.568

	5. MB Loan Fraction			6. MB Change		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	.232	.231	.252	.444	.222	.111
Low	.245	.248	.222	.258	.226	.194
High	.305	.289	.300	.211	.105	.237
Very High	.282	.318	.297	.348	.174	.174

Appendix Table A-1 (Continued)

C. By 1986-90 Growth Quartiles (Trade Firms Only):

	1. Growth			2. Profitability		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	22.792	15.770	11.427	.045	.031	.027
Low	22.224	40.742	14.463	.053	.043	.036
High	33.191	63.437	19.640	.060	.044	.035
Very High	43.988	165.286	32.337	.089	.069	.052

	3. Leverage			4. Total Bank Loan Incr		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	.803	.749	.728	4.505	-.140	.801
Low	.809	.725	.680	.232	-.098	14.098
High	.728	.672	.641	.647	.247	1.168
Very High	.722	.618	.566	.413	13.840	1.799

	5. MB Loan Fraction			6. MB Change		
	1980-85	1986-9	1990-94	1980-85	1986-90	1990-94
Very Low	.264	.296	.261	.440	.200	.269
Low	.233	.295	.353	.156	.219	.219
High	.321	.367	.306	.258	.355	.452
Very High	.282	.364	.368	.188	.156	.406

D. By 1990-94 Profitability Quartiles (Trade Firms Only):

	1. Growth			2. Profitability		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	22.294	75.943	-2.964	.035	.023	.012
Low	34.018	59.405	20.739	.069	.044	.032
High	36.860	65.632	29.561	.075	.058	.048
Very High	42.088	147.825	64.924	.103	.101	.093

	3. Leverage			4. Total Bank Loan Incr		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	.831	.796	.777	.377	7.281	1.732
Low	.741	.648	.633	4.438	-.250	.907
High	.742	.652	.599	.726	-.026	15.477
Very High	.666	.581	.508	.081	-.541	.068

	5. MB Loan Fraction			6. MB Change		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	.269	.310	.293	.204	.224	.280
Low	.321	.365	.307	.259	.111	.407
High	.249	.297	.346	.281	.344	.406
Very High	.270	.412	.391	.294	.235	.294

Appendix Table A-1 (Continued)

E. By 1986-90 Growth Quartiles (Machinery Firms Only):

	1. Growth			2. Profitability		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	29.131	12.004	7.589	.062	.022	.025
Low	38.627	39.202	13.191	.076	.045	.034
High	38.779	63.150	11.026	.082	.052	.036
Very High	41.436	143.262	22.931	.114	.084	.055

	3. Leverage			4. Total Bank Loan Incr		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	.691	.629	.613	.123	-.093	.771
Low	.629	.574	.560	.237	.659	.985
High	.592	.552	.546	.039	1.607	1.021
Very High	.582	.500	.447	.177	1.418	45.079

	5. MB Loan Fraction			6. MB Change		
	1980-85	1986-9	1990-94	1980-85	1986-90	1990-94
Very Low	.302	.320	.314	.156	.130	.299
Low	.341	.356	.342	.303	.167	.258
High	.360	.357	.384	.281	.188	.344
Very High	.386	.435	.401	.196	.174	.435

F. By 1990-94 Profitability Quartiles (Machinery Firms Only):

	1. Growth			2. Profitability		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	37.122	44.007	-.360	.068	.023	.006
Low	34.221	57.245	10.334	.072	.040	.033
High	35.944	52.465	20.090	.078	.052	.048
Very High	36.788	101.067	32.778	.118	.094	.080

	3. Leverage			4. Total Bank Loan Incr		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	.644	.597	.598	.173	1.083	22.498
Low	.648	.593	.576	.154	.886	1.720
High	.616	.564	.561	.192	.521	1.443
Very High	.567	.501	.420	.022	.115	.460

	5. MB Loan Fraction			6. MB Change		
	1980-85	1986-90	1990-94	1980-85	1986-90	1990-94
Very Low	.341	.366	.340	.221	.168	.316
Low	.313	.312	.312	.273	.178	.288
High	.339	.382	.374	.280	.140	.320
Very High	.390	.410	.452	.163	.163	.372

Sources: See Table 1.

Appendix Table A-2: Determinants of Total Stock of Bankers on Corporate Boards -- Poisson Estimates

	Independent var's from 80-85		Independent var's from 86-90		Independent var's from 90-94	
I. Using **Past Banker** as Dependent Variable:	1980	1985	1985	1990	1990	1995
A. *And **Positive Prof** as an independent variable:*						
Positive Prof	-.156	-.128	-.225	-.175	-.100 -	-.002
	(0.47)	(0.37)	(1.39)	(1.05)	(0.57)	(0.01)
Board Size	.036	.030	.015	.002	.002	.007
	(4.86)	(3.69)	(1.90)	(0.21)	(0.29)	(1.17)
Total Assets ($x10^6$)	-.644	-.580	-.054	.061	.037	-.083
	(4.33)	(3.63)	(0.69)	(0.21)	(0.51)	(1.45)
Leverage	1.814	2.101	1.765	1.694	1.708	1.261
	(5.97)	(6.47)	(6.21)	(5.82)	(5.42)	(3.74)
Tang At/TA	.198	-.286	-.778	-.588	-.748	-.927
	(0.57)	(0.78)	(1.88)	(1.42)	(1.83)	(2.36)
Main Bank Ln Frac	-.413	-.018	-.418	-.517	-.283	-.329
	(1.43)	(0.06)	(1.52)	(2.02)	(1.13)	(1.37)
Industry dummies						
Construction	.094	.151	-.023	.249	.173	.071
	(0.52)	(0.81)	(0.12)	(1.31)	(0.91)	(0.36)
Trade	.230	.022	-.052	-.168	-.163	-.241
	(1.26)	(0.12)	(0.27)	(0.87)	(0.90)	(1.33)
Serv & Fin	.269	.407	1.042	1.120	.998	.992
	(0.92)	(1.96)	(4.40)	(4.76)	(4.32)	(4.23)
Transportation	.082	.238	.322	.286	.284	.256
	(0.41)	(0.93)	(1.25)	(1.23)	(1.27)	(1.13)
Light Ind	.353	.270	.278	.292	.230	.096
	(2.29)	(1.79)	(1.86)	(1.85)	(1.47)	(0.61)
Chemicals	.462	.296	.320	.395	.401	.228
	(3.22)	(2.09)	(2.24)	(2.44)	(2.53)	(1.47)
Machinery	.552	.430	.328	.276	.158	.069
	(4.19)	(3.26)	(2.39)	(1.88)	(1.11)	(0.47)
Pseudo R^2	.05	.05	.07	.08	.07	.06
n	926	925	971	971	1015	1015
B. *And **ROI** as an independent variable:**						
ROI	-.008	-.013	-.005	-.006	-.007	-.008
	(1.82)	(2.29)	(1.30)	(1.51)	(1.17)	(1.36)
C. *And **Profitability** as an independent variable:**						
Profitability	-.330	-.651	-2.091	-1.370	-3.388	-3.487
	(0.32)	(0.64)	(1.52)	(1.03)	(2.25)	(2.24)

Appendix Table A-2: Determinants of Stock of Bankers -- Poisson (Cont'd)

	1980	1985	1985	1990	1990	1995
II. Using **Concurrent Banker** as Dependent Variable:						
A. *And **Positive Prof** as an independent variable:**						
Positive Prof	1.345	-.568	.368	1.407	1.709	.295
	(1.31)	(0.93)	(0.85)	(2.38)	(2.50)	(0.71)
B. *And **ROI** as an independent variable:**						
ROI	-.011	.004	.004	.010	.003	.015
	(1.28)	(0.48)	(0.53)	(1.20)	(0.30)	(1.33)
C. *And **Profitability** as an independent variable:**						
Profitability	1.150	.702	2.247	4.970	4.823	1.782
	(1.54)	(0.37)	(0.94)	(3.00)	(2.03)	(0.61)
III. Using **Total Banker** as Dependent Variable:						
A. *And **Positive Prof** as an independent variable:**						
Positive Prof	.033	-.195	-.150	-.021	.048	.030
	(0.10)	(0.66)	(0.98)	(0.13)	(0.29)	(0.19)
B. *And **ROI** as an independent variable:**						
ROI	-.009	-.010	.004	-.003	-.005	-.004
	(2.11)	(1.98)	(0.96)	(0.88)	(0.95)	(0.83)
C. *And **Profitability** as an independent variable:**						
Profitability	.168	-.336	-1.293	.189	-1.940	-2.718
	(0.27)	(0.44)	(1.01)	(0.16)	(1.35)	(1.88)

Notes: * Other variables used in Panel I.A. are used in these regressions as well, but the results are not reported.

In each case, we give the coefficients, followed by the absolute value of z-statistics in the parentheses below. The estimates are Poisson, calculated with robust standard errors.

The regressions include a constant term, not reported here.

In the first column, we regress the stock of banker-directors at the firm in 1980, on the 1980-85 independent (financial) variables. In the second column, we regress the stock of 1985 banker-directors on the same independent variables.

Sources: See Table 1.