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The Contribution of Bank Lending to the Long-Term Stagnation in Japan

Joe Peek

Gatton Endowed Chair in International Banking and Financial Economics

437C Gatton Business & Economics Building

University of Kentucky

Lexington, KY 40506-0034

Ph: 859-257-7342

Fax: 859-257-9688

Email: [jpeek0@uky.edu](mailto:jpeek0@uky.edu)

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While it is well established that bank lending to severely impaired (zombie) Japanese firms during the 1990s was detrimental to the Japanese economy, bank lending to troubled, but economically viable, firms may have had beneficial effects. The objective of this study is to investigate the consequences of increased bank lending to distressed Japanese firms in order to determine the extent to which those increased loans were used by the firms to finance the operational restructuring required to return the firms to health, rather than being used to insulate the firms from market forces in order to avoid the painful, but needed, restructuring.

Certainly, bank lending to some severely distressed (zombie) firms did allow those firms to survive for an extended period of time, even though they were not economically viable firms. While such lending has been shown to have contributed to the recent prolonged stagnation of the Japanese economy (for example, Caballero et al. 2006), bank lending to distressed firms has the potential to help as well as hinder needed restructuring by those firms. Presumably, an important factor in the ability of firms to survive and return to health will be their ability and willingness to restructure their operations. Insofar as increased bank credit provides a necessary cushion to distressed firms that allows them the opportunity to overcome temporary liquidity problems and restructure their operations, one might expect firms receiving increased bank loans to be more likely to undertake the required restructuring necessary to improve their operations and return them to financial health. However, while increased bank credit may enhance the ability of the firm to undertake restructuring, this increased funding also may ease the immediate pressure on management to take actions to ensure the firm's longer-term survival, lessening the incentive

(and thus the willingness) of the firm to undertake the painful steps required to accomplish a major restructuring before it is too late for the firm's survival.

In determining the role played by bank lending in inducing or retarding progress by the firm in achieving an economic recovery, it is necessary to control for the relative health of the firm, insofar as it is possible that some firms have passed a point of no return by the time that they receive increased bank loans, so that it is not possible for the new loans to enable the distressed firm to recover. Among the conditions that are likely to be important factors in the ability of a distressed firm to recover are the severity of the problems faced by the firm (and the firm's industry), the firm's characteristics, the characteristics of the firm's main bank, and the extent of support provided by the firm's banks in terms of increased loans.

It is important to distinguish between a firm having temporary liquidity problems and being insolvent. Were the problems facing the firm temporary or more permanent? That is, was the firm's primary business still economically viable? Certainly, in some instances nonviable firms were kept alive for an extended period of time through support from its lenders, in part due to the perverse incentives banks had to evergreen loans (for example, Peek and Rosengren 2005). However, for other distressed firms that were economically viable, perhaps through substantial restructuring, the provision of support from their banks or other stakeholders contributed to the ability of those firms to return to sound financial health. Still other distressed firms were able to recover without substantial aid from their banks.

Substantial evidence exists that banks contributed to the long-term stagnation of the Japanese economy by aiding zombie firms. However, given the severe banking problems in Japan and the widespread blame placed on the lending behavior of the banking sector for prolonging the economic malaise in Japan during the 1990s and early 2000s, it is useful to better

understand the extent to which bank lending behavior *could* have helped shorten the length of the period of economic stagnation by aiding distressed, but economically viable, firms. Then the important question becomes the extent to which banks actually *did* contribute to the recovery of those firms, and the extent to which many of those distressed firms could have, and did, recover without a major increase in loans from their banks.

## I. Background

Banking relationships in Japan are far more important than in the United States. While the U.S. is characterized as a market-centered economy, Japan is considered to be a bank-centered economy. Japanese firms rely more on bank debt than firms in the United States, although bond financing in Japan has become increasingly important over the past decade (Hoshi and Kashyap 1999). But the differences go deeper than simply the relative importance of relationship versus arm's length financing in the two countries. The relationships between banks and firms in Japan are much stronger, being characterized by main bank relationships, as well as, in many instances, additional ties arising from the lending bank being in the same keiretsu group as the firm. Furthermore, Japanese capitalism differs from the style prevalent in the United States, especially when it comes to the allocation of credit. That Japanese banks have duties other than to maximize profits is made clear by the banking laws that require new investors and current owners with more than 20 percent ownership in a bank to obtain regulatory approval, including satisfying a condition that large shareholders "fully understand a bank's social responsibilities" (*The Economist* 2002). Thus, many bank lending decisions are guided by the perceived national duty of banks to support troubled firms, rather than being a result of the

careful credit risk analysis that would dominate the decision were a profit maximization motive the primary consideration.

Keiretsu group affiliations also play an important role in corporate governance in Japan. Horizontal (bank-centered) keiretsu groups are composed of firms in many different industries that are usually affiliated with the group's key lender and have substantial cross-shareholdings with each other and with the group's primary bank. Firms exchange information and have "Presidents Clubs" where the top firm managers meet to discuss relevant issues. In addition, firms within a given keiretsu often have extensive business relationships, may exchange managers, and may have risk-sharing, or insurance, relationships that help member firms deal with adverse shocks. Furthermore, the cross-shareholding provides protection against hostile takeovers, insulating managers from market discipline.<sup>1</sup>

These main bank and keiretsu affiliations have received a great deal of attention in descriptions of the Japanese economy and have played a key role in many explanations of Japanese economic performance, both during the Japanese "miracle" characterized by rapid growth following World War II and during the "lost decade" of the 1990s. During the 1980s and early 1990s, most studies of Japanese corporate affiliations found significant benefits. More recently, however, studies have been more critical of Japanese corporate affiliations, viewing such affiliations as a problem that has contributed to a decade of subpar economic growth, rather than as an alternative market model (Morck and Nakamura 1999; Kang and Stultz 2000; Peek and Rosengren 2005). If the primary role of corporate affiliations is to insulate management from market forces by enabling firms to avoid the discipline that can be provided by external creditors and investors, this limiting of outside corporate governance would manifest itself in a misallocation of credit. Strong corporate affiliations would allow weak firms to sustain their

operations relatively unchanged, rather than being forced by external creditors and shareholders to make the tough restructuring choices necessary to recover.

#### A. Historical Roles of Main Banks and Keiretsus

The firm-main bank relationship in Japan is solidified in a number of ways. The main bank takes primary responsibility for monitoring the firm and can serve as a form of corporate governance (Kaplan and Minton 1994). The main bank is particularly important during times of distress, when it can require changes in the affiliated firm's management and alter its board of directors (Kang and Shivdasani 1995; Morck and Nakamura 1999). This oversight provided by the bank can reduce typical information asymmetries, resulting in firms having greater access to external credit, which, in turn, affects firms' investment decisions (Hoshi et al. 1991). However, there is a dark side to this close lending relationship: If the bank rather than the borrower becomes troubled, the ability of the firm to finance investment may be impeded (Gibson 1995; Kang and Stultz 2000; Klein et al. 2002).

Studies based on data from the pre-bubble period have tended to find that Japanese bank-firm affiliations provided significant benefits. These studies emphasized the unique features of Japanese bank affiliations that reduced agency costs (Hoshi et al. 1990, 1993). Banks with intertwined business relationships, shareholding relationships, board of directors relationships, and financing relationships with their loan customers should have substantially more information about those firms than do external monitors. Thus, a firm's main bank would play a key role as the delegated monitor for the group of lenders to the firm and other stakeholders in the firm. While a firm's main bank might not play an active role in influencing the management of a firm during good times, when a firm's health deteriorated substantially, the main bank would be

expected to step in and provide guidance and support to the firm, and lead any necessary “rescue” or reorganization of the firm (see, for example, Sheard 1989; Aoki 1990). For example, Kang and Shivdasani (1995) find that nonroutine turnover of top executives in response to poor earnings is greater for firms with strong ties to a main bank, and Morck and Nakamura (1999) find that bankers often are appointed to a troubled firm’s board of directors, presumably to supervise bailouts and/or restructurings. Interestingly, Morck and Nakamura (1999) find that firms not in keiretsu groups are more likely to experience downsizing than those firms that are members of a bank group, suggesting that main banks tend to insulate their keiretsu firms from market forces.

In addition to managerial guidance, one might expect that a firm would benefit from the cushion provided by its main bank or members of its keiretsu, insofar as they were willing to provide backup financing or other forms of aid should the firm become financially troubled. In fact, Hoshi et al. (1990) find that firms with strong main bank ties perform better than those without such ties after the onset of financial distress, and the performance is improved further if the firm also is a keiretsu member with close ties to its suppliers and customers as well as its main bank.

A possible explanation for the value of group membership is that the private information derived from the close affiliations between the firm and its main bank and keiretsu group members would tend to provide an earlier signal of problems and enable the main bank to intervene earlier to help the firm deal with any deterioration in its financial health. Certainly, the relatively low numbers of listed Japanese firms that go bankrupt is consistent with the hypothesis that main banks play an important role in the early recognition of problems and the main bank’s ability to rescue a troubled firm from bankruptcy. Alternatively, the relatively low bankruptcy

rate may simply be a result of the main bank wanting to preserve its reputation or due to a sense of loyalty among group members, even if that means bailing out a nonviable firm rather than aiding only those group firms that are viable in the longer term but are suffering from a temporary adverse shock or liquidity problem.

In contrast, other studies argue that the benefits of close firm-main bank ties may be limited. For example, while Weinstein and Yafeh (1998) find that a close relationship with a firm's main bank increases the availability of credit, this does not lead to higher profitability or growth for the firm, perhaps because the bank discourages the firm from investing in high risk, high expected return projects, or because the bank is able to "hold up" the firm and extract all the rents. Miwa and Ramseyer (2005) go even further, arguing that, based on pre-bubble period data, main banks do not, in fact, rescue distressed borrowers. Closer main bank ties do not increase the probability of increases in main bank loans or of a distressed firm's survival.

#### B. Post-Bubble Evidence

Much of the evidence from the 1990s has been interpreted in a way that is not necessarily complimentary of main bank and keiretsu affiliations benefiting firms, at least in the longer run, and certainly not benefiting the macroeconomy more generally. Rather, while possibly aiding individual distressed firms in the short run, the close affiliations of Japanese banks with their borrowers have been viewed by many as contributing to a decade (or more) of subpar economic growth. In particular, if the primary role of bank (and keiretsu) affiliations is to insulate management from market forces by enabling firms to avoid the discipline that can be provided by external creditors and investors, this limiting of outside corporate governance would manifest

itself as a misallocation of credit that could delay needed restructuring of individual firms and the reallocation of valuable resources to their best uses.

Focusing on the immediate post-bubble period (1990-93), Kang and Stultz (2000) find that the stock return performance of firms that were more dependent on bank loans just prior to the bursting of the stock price and land price bubbles was worse than for firms that were less dependent on bank loans. They also find that keiretsu membership, defined to include both horizontal (bank-centered) and vertical keiretsus, is related to a worse stock return performance. This evidence suggests that, at least during the initial phase of the banking problems and prolonged malaise of the Japanese economy, those firms most closely tied to banks were adversely impacted by that relationship. While those firms that relied relatively more on bank loans had relatively better stock return performance during the good times of the bubble period, once the bubbles burst, those same firms contracted investment more and suffered worse stock return performance relative to those firms that relied less on bank loans. Thus, in contrast to the findings of Hoshi et al. (1990), for example, once the banking sector began suffering widespread problems in the early 1990s, banks were unable to insulate their borrowers from financial stress.

Considering the subsequent period from 1993-99, Guo (2007) finds evidence consistent with that of Kang and Stultz (2000). While during the 1978-92 period, distressed firms with a greater reliance on main bank loans had higher sales growth, and that performance was not affected by the main bank's health, during the subsequent 1993-99 period, a greater reliance on main bank loans was associated with slower sales growth, and that sales growth rate was lower the weaker was the main bank's health. Similarly, for the 1993-99 period, a greater reliance on main bank loans and weaker main bank health also was associated with the firm having a lower return on assets. In addition, during this latter period, the duration of distress was longer for

firms with a greater reliance on main bank loans. Consistent with the findings by Kang and Stultz (2000), this suggests that once bank health had deteriorated, being tied closely to a main bank was not beneficial to a firm. That is, main banks were no longer able, or willing, to aid distressed firms sufficiently for those firms to outperform similar firms that relied less on main bank loans. In contrast, Guo (2007) finds that keiretsu affiliations are beneficial to firms, even in the latter period, perhaps because other group firms pick up some of the burden of helping distressed group firms that main banks are unable or unwilling to shoulder.

However, the fact that the performance of firms with close ties to their main bank suffered is somewhat puzzling, insofar as it appears that many firms increased their reliance on bank loans during the latter half of the 1990s, even as the bond market had been deregulated (for example, Peek and Rosengren 2005; Arikawa and Miyajima 2006). This would suggest that many of the firms obtaining increased bank loans must have been among the weakest Japanese firms, so that the main bank assistance was either not sufficient or not used appropriately to enable the firms to recover from their financial distress. In fact, using data for the 1998 fiscal year, Hori and Osano (2002) find that firms with weaker prospects and a greater likelihood of suffering financial distress rely more on main bank loans. Similarly, Arikawa and Miyajima (2006) found that firms with low growth opportunities increased their reliance on bank loans in the 1990s.

Why would banks have increased loans to some of the weakest firms? Peek and Rosengren (2005) argue that banks did so in response to the perverse incentives they faced due to the way in which bank regulation and supervision was handled in Japan. Troubled Japanese banks had an incentive to allocate additional loans to their severely impaired borrowers in order to avoid the realization of losses on their own balance sheets. As a bank's reported capital ratio

approached the regulatory minimum, banks were more likely to increase loans to the weakest firms. Furthermore, this behavior was more pronounced for firms with strong bank and keiretsu ties. Caballero et al. (2006) investigate the implications of bank lending to these “zombie” firms for the Japanese macroeconomy. They argue that this evergreening of loans to zombie firms distorted competition and impaired needed restructuring of distressed firms, lowering productivity and increasing excess capacity in the economy. This evidence is consistent with the finding by Arikawa and Miyajima (2006) that the main bank system impeded needed creative destruction during the prolonged malaise of the 1990s when the Japanese banking sector was in crisis, insofar as greater reliance on main bank loans tended to delay the restructuring of poorly performing firms.

### C. Restructuring

Did main bank and keiretsu affiliations aid or hinder corporate restructuring in Japan in the 1990s? Much of the literature cited above would be pessimistic about such corporate affiliations promoting needed restructuring in Japan during this period. Rather, the arguments would tend to favor main banks insulating distressed firms from the market forces that might otherwise have forced firms to make major operational changes, or even to declare bankruptcy. However, all distressed firms would not have been expected to have been impacted equally. Thus, an important question concerns which firm and main bank characteristics were most likely to have postponed, or even prevented, the operational changes that would have improved a distressed firm’s performance.

Considering 92 publicly traded Japanese manufacturing firms during the pre-bubble period (1986-90), Kang and Shivdasani (1997) find that troubled Japanese firms downsize assets less frequently, reduce employees through layoffs to a lesser degree, and are more likely to

expand operations than is the case for similar U.S. firms. Furthermore, they find that the responses by the Japanese firms are related to the extent of ownership by the firm's main bank and by large blockholders. Firms with greater equity ownership by their main bank are more likely to shrink operations, institute employee layoffs, and remove outside directors from the firm's board. Similarly, greater ownership of the firm by blockholders is associated with a higher probability of downsizing of operations and changes in firm management, and a lower probability of acquisitions by the firm. Thus, at least in the pre-bubble period, it appears that main banks and large blockholders serve an important role in corporate governance for troubled firms by increasing the probability of a restructuring of operations, and, furthermore, it appears that the associated downsizing improves subsequent firm performance.

These results are in sharp contrast to those from studies investigating the restructuring of Japanese firms in the post-bubble period. For example, Arikawa and Miyajima (2006), Inoue et al. (2007) and Koibuchi (2007) each find that main bank relationships retarded rather than encouraged the restructuring of distressed Japanese firms in the 1990s. Koibuchi (2007) argues that the traditional main-bank-led corporate restructuring broke down in the 1990s due to the burden of nonperforming loans on the banks. Changes in the restructuring process and the creation of the Industrial Revitalization Corporation of Japan that reduced the disproportionate burdens on main banks relative to other lenders to a distressed firm, rather than voluntary responses by lenders, were required to enhance the attractiveness of financial restructuring by the firm's lenders. Inoue et al. (2007) similarly argue that banks and affiliated firms procrastinated in implementing or imposing needed restructuring on distressed firms. Instead, it was out-of-court restructurings that were led by external sponsors or bank supervisors that were most effective and beneficial, in the sense of increasing the market value of the distressed firms. The

weakness of the ability of main banks to push through needed restructuring at their distressed borrowers emanated from the weak supervisory pressures on the banks themselves.

Rather than focusing on the role of main banks and affiliated firms in impeding the financial restructuring of distressed firms in the post-bubble period, Arikawa and Miyajima (2006) investigate the operational restructuring of distressed firms by estimating on the employment adjustment function. While more leverage is associated with a greater shrinkage in employment, the composition of that debt mattered. In particular, a higher ratio of main bank debt to total assets delayed restructuring, again suggesting that the main bank system impeded the needed restructuring in Japan during the prolonged malaise following the bursting of the stock price and land price bubbles when the banking sector was in crisis.

## II. Research Plan

The first step will be to identify distressed Japanese firms. This set of firms will then be partitioned into those that received increased bank loans and those that did not. These two subsets of firms will then be partitioned further into those that did recover and those that did not. Controlling for firm characteristics (including keiretsu membership and measures of firm financial health), main bank exposure to the firm (both loans and equity), main bank health, and general macroeconomic activity, regression analysis will then be employed to investigate the contribution of increased bank loans to increasing, or decreasing, the probability of a firm returning to sound health. Similarly, regression analysis will be used to investigate the contribution of increased bank loans to increasing, or decreasing, the probability of a firm identified as needing to restructure actually undertaking restructuring activities.

#### A. Identifying troubled firms (financial distress)

The first step will be to identify troubled firms. While there are a number of possible measures of financial distress, a first pass will be to use measures of the interest coverage ratio associated with Hoshi et al. (1990). Alternative measures such as negative operating income or the quick ratio (= current assets – inventories/ current liabilities) will be considered. Initially, a firm will be deemed to have fallen into distress in the second consecutive “bad” year following a “good” year, where a good year is defined as having a coverage ratio  $> 1$  ( or operating income  $> 0$ , or quick ratio  $> 1$ ), and a bad year is defined as having a coverage ratio  $< 1$  (or operating income  $< 0$ , or quick ratio  $< 1$ ).

It also will be useful to distinguish between distressed firms in distressed industries and distressed firms in industries that are not in particular distress. Thus, measures of relative as well as absolute distress will be required. For example, it is likely that banks may respond differently to a distressed firm that is performing at or above the median for its distressed industry than to a distressed firm that is performing well below the median of its (non-distressed) industry.

#### B. Identifying firms in need of restructuring

As a starting point, a reasonable proxy can be based on operating profits being at least 50 percent lower than those for the 1988-90 period, as used by Kang and Shivdasani (1997). Of course, other variations will be considered.

#### C. Identifying restructuring activity

Various measures of restructuring activity will be considered, including measures of declines in physical capital (asset sales) and declines in employees.

#### D. Defining recovered firms

Identifying recovered firms is just the other side of identifying distressed firms. Both accounting measures and measures of stock price performance can be used. However, it must be noted that the thresholds for entering and leaving “distressed” status may not be the same. An initial operating assumption will be that a firm exits distress when it has had two consecutive “good” years.

### III. Data

Firm balance sheet and income data will be from the Pacific-Basin Capital Market Databases (PACAP), which includes all first- and second-section firms that are traded on the Tokyo stock exchange. The data are annual and based on the fiscal year-end reports by the firms. The data for loans outstanding to individual firms from each lender are obtained from the Nikkei Needs Bank Loan database. The data are annual, with loan reporting based on the firm’s fiscal year. Combining these two databases, individual Japanese firms can be linked to their individual lenders. A firm’s main bank will be identified as the bank with the largest volume of loans outstanding to the firm in the prior year. Horizontal (bank-centered) keiretsu membership is obtained from Industrial Groupings in Japan: The Anatomy of the Keiretsu.

### IV. Identifying Distressed Firms

Tables 1, 2, and 3 provide some preliminary evidence on the numbers of Japanese firms becoming distressed over the 1977-2004 period. For Table 1, the definition of distressed firm is based on the interest coverage ratio. To enter distressed status, a firm must have an interest

coverage ratio greater than one followed by two consecutive years in which its interest coverage ratio is less than one. The firm is deemed to become distressed in that second consecutive year with a coverage ratio less than one. Column 1 shows the number of firms entering distress in each year. The table also shows the number of Repeaters (Column 2), defined as any firm that enters distress status after having already been distressed during our sample period. In order to qualify as a repeater, a firm must first recover from its earlier episode of distress, where recovery is defined as experiencing two consecutive years with an interest coverage ratio greater than one. The remaining columns show the percent of the firms entering distress (Column 1) that received an increase in loans in the prior year ( $t-1$ ), the year the firm became distressed ( $t$ ), and the two subsequent years ( $t+1$  and  $t+2$ ).

The table shows several waves of firms becoming distressed. The number of firms entering distress rises temporarily in the early 1980s, the mid-1980s, the early 1990s, the late 1990s, and again in 2002. Column 2 shows that Japan experienced a steady stream of repeat offenders throughout the 1990s and early 2000s. Furthermore, the percentage of the firms that obtain increased loans during the period surrounding the year in which they enter distress is quite notable. Interestingly, that percentage appears to subside somewhat in the 2000s.

Table 2 repeats the information in table 1 using an alternative definition of distress. Here, the definition of distress is based on having negative operating income. For a firm to become distressed in period  $t$ , it would have to have positive operating income in period  $t-2$  followed by negative operating income in both period  $t-1$  and period  $t$ . Following the criteria underlying Table 1, a firm is deemed to have recovered (and thus qualified to become a potential repeater) when it experiences two consecutive years of positive operating income.

Compared to Table 1, this definition of distress produces about one-half as many observations of a firm becoming distressed. However, the early 1990s, the late 1990s and 2002 still stand out as having an unusually high number of firms becoming distressed, and those same periods also show upticks in repeaters. The remaining columns show a similar pattern of newly distressed firms receiving increased loans, with the share subsiding in the 2000s.

Table 3 repeats the information for a third definition of a firm becoming distressed based on the quick ratio, defined as  $(\text{current assets} - \text{inventories}) / (\text{current liabilities})$ . A firm is deemed to have become distressed in period  $t$  if it has a quick ratio greater than one in period  $t-2$  followed by quick ratios greater than 1 in both period  $t-1$  and period  $t$ . A firm is considered to be recovered from its distress, and thus available to become a potential repeater, when it experiences two consecutive years with a quick ratio greater than one.

Compared to the earlier tables, using the quick ratio criteria produces a number of distressed firms that is intermediate between the other two criteria. The timing of the temporary surges in firms becoming distressed is similar to that in Table 1, although the mid-1980s bulge is not apparent, a bulge in the mid-1990s occurs in place of that in the late 1990s in Table 1, and the uptick in firms becoming distressed is more persistent in the early 2000s instead of being focused only in 2002. In addition, the fall off in the percentage of distressed firms receiving increased loans during the period surrounding their becoming distressed during the 2000s is not as apparent.

**Table 1: Distressed firms using Interest Coverage Ratio**

Year	Number becoming distressed	Repeats	% with increased loans (t-1)	% with increased loans (t)	% with increased loans (t+1)	% with increased loans (t+2)
1977	55	0	75	53	44	40
1978	53	0	66	38	53	70
1979	21	0	62	48	52	71
1980	28	0	71	86	61	43
1981	102	2	88	73	52	39
1982	85	7	85	62	41	44
1983	87	9	80	57	51	56
1984	37	5	62	49	35	54
1985	21	4	57	71	38	43
1986	77	12	69	56	38	34
1987	61	14	52	49	46	26
1988	13	4	77	54	31	46
1989	21	4	76	48	71	57
1990	39	9	54	64	59	62
1991	63	24	59	70	62	29
1992	92	48	68	61	50	38
1993	149	67	60	50	41	42
1994	82	39	51	48	48	40
1995	42	20	45	55	45	55
1996	33	18	58	55	61	52
1997	30	15	43	70	57	37
1998	90	35	58	69	43	34
1999	108	58	56	42	37	44
2000	35	18	23	46	34	23
2001	39	12	49	51	31	18
2002	101	43	53	41	28	32
2003	40	19	32	28	20	40
2004	30	10	57	60	43	53
Total	1634	496				

**Table 2: Distressed firms using Operating Income**

Year	Number becoming distressed	Repeats	% with increased loans (t-1)	% with increased loans (t)	% with increased loans (t+1)	% with increased loans (t+2)
1977	17	0	59	47	18	24
1978	20	0	60	20	25	40
1979	14	0	79	50	64	50
1980	6	0	33	83	50	33
1981	16	0	88	38	25	38
1982	22	3	82	64	23	32
1983	23	2	74	61	52	30
1984	15	3	67	67	33	40
1985	10	1	60	70	30	40
1986	29	8	62	55	38	48
1987	35	2	69	46	37	40
1988	5	1	20	40	40	60
1989	7	4	43	57	71	71
1990	11	3	55	27	64	73
1991	9	1	56	56	67	11
1992	28	6	64	57	46	29
1993	87	26	62	37	37	43
1994	71	10	54	51	49	51
1995	30	7	40	53	47	50
1996	20	9	60	55	40	20
1997	29	10	59	79	55	34
1998	62	17	53	66	44	35
1999	75	24	52	41	35	33
2000	33	14	24	42	36	33
2001	39	8	41	38	26	21
2002	80	21	46	36	31	35
2003	31	5	26	16	19	48
2004	26	3	58	46	50	58
Total	850	188				

**Table 3: Distressed firms using Quick Ratio**

Year	Number becoming distressed	Repeats	% with increased loans (t-1)	% with increased loans (t)	% with increased loans (t+1)	% with increased loans (t+2)
1977	41	0	22	56	39	44
1978	29	0	55	48	55	62
1979	43	0	35	56	60	63
1980	58	0	33	69	55	41
1981	31	0	58	71	58	29
1982	21	0	62	76	62	67
1983	34	2	56	32	41	32
1984	31	3	71	58	58	42
1985	22	4	50	68	59	50
1986	20	4	80	65	35	40
1987	9	2	11	56	22	22
1988	22	4	64	59	45	55
1989	24	4	58	58	62	38
1990	27	5	63	78	59	48
1991	61	11	66	67	59	43
1992	68	6	68	59	44	32
1993	60	13	70	43	43	38
1994	30	5	57	53	50	40
1995	48	14	69	52	50	46
1996	47	12	64	34	51	55
1997	55	14	69	62	45	29
1998	39	12	69	56	23	38
1999	31	4	77	55	26	35
2000	50	18	58	42	48	42
2001	96	23	56	47	35	27
2002	68	21	63	57	35	40
2003	38	7	58	42	24	29
2004	32	8	59	47	25	47
Total	1135	196				

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## Endnotes

<sup>1</sup> A number of studies provide detailed discussions of the characteristics of keiretsu groups and the roles that keiretsu firm relationships play; see, for example, Aoki 1990; Weinstein and Yafeh 1998; Dewenter 2003.