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ABSTRACT

Using a unique dataset on all major corporate restructuring events in Japan between 1981 and 2010, we examine how bank-led rescue operations in Japan have changed over time. The incidence of restructuring by distressed firms has become less frequent after the 1990s. When firms undergo restructuring, they adopt real adjustments in terms of labor, assets and finance, but the intensity of these adjustments has also declined over time. In line with existing research, we interpret these findings as strong indicators of changing corporate governance in Japan, in particular in terms of the decline in corporate monitoring functions of main banks.

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1. Introduction

Corporate governance in Japan used to be characterized by the important role played by main banks. A firm's main bank was usually its largest lender and also one of its largest shareholders. The close relationship between the main bank and the client firm was often cemented by long-standing and historical affiliations. It was not uncommon for (retired) executives from the main bank to assume a position on the firm's board of directors. When a firm fell into financial trouble, it was widely expected that the main bank would intervene and launch a turnaround plan. While such interventions were called "rescue operations", usually the main bank did much more than offer financial help to its troubled client (such as debt forgiveness, interest rate reduction, or new loans). The main bank also dispatched executives to lead a restructuring process, which often also included reorganization measures such as labor force adjustment, asset divestitures, business segment exits, consolidation, and management replacement. In that sense, main bank "rescue operations" were comprehensive corporate restructuring episodes, and they have been shown to be effective in turning firms around (e.g., Aoki and Patrick 1994, Pascale and Rohlen 1983, Morck and Namamura 1999, Hoshi and Kashyap 2001).

Beginning in the 1980s, this system began to change. Financial deregulation expanded corporate financing options for large Japanese firms (e.g., through bond issues at home and abroad) which substantially altered the main bank relationship (Hoshi and Kashyap 1999). As large firms reduced their dependence on their main banks, the banks' governance role was reduced, as they found themselves with less access to corporate information as well as revenues from these clients. The banks responded by broadening their business to new, smaller borrowers, and in the absence of long-standing relationships they demanded collateral, mostly in the form of land. In the 1990s, after the "bubble economy" burst and stock and land values collapsed, bank rescue interventions became less frequent and less effective (Hoshi and Kashyap 2001, Chapter 5; Hirota and Miyajima 2001). In the absence of feasible alternatives to bank turnarounds, such as legal restructuring processes for Chapter 11-type bankruptcy procedures, this decline in the role of banks in corporate restructuring of troubled firms created a void, which has been considered an important factor in the emergence of zombie firms (e.g., Caballero, Hoshi, and Kashyap 2008; Peek and Rosengren 2005).

This paper takes a systematic look at all major episodes of bank-led corporate restructuring in Japan during the 30 years from 1981 to 2010, in order to assess the incidence, efficacy and performance implications of bank rescue operations, as well as the changes that have occurred over time. Our analysis is based on an original dataset of restructuring episodes of listed firms that we created by coding information on each restructuring episode in terms of measures taken, including financial data as well as turnaround measures implemented, such as management turnover, business reorganization, divestitures, and many more. This dataset allows us to (1) assess the role of main banks in leading corporate turnarounds over time; (2) the changing nature of turnaround measures over time; and (3) changes in post-restructuring performance over time, associated with the changing role of banks in this process.[1]

We begin in Section 2 with a brief background and review of selected papers on Japanese corporate governance, with a focus on bank-led restructuring of troubled firms. Section 3 offers a brief description of changes in bank-firm relations due to financial deregulation. This sets the background for the statistical analysis of the changing role of banks in corporate monitoring. Section 4 introduces the dataset, and Section 5 reports the results of the statistical analyses. Section 6 concludes.

2. The Role of Banks in Japanese Corporate Governance

There is a sizable amount of research on corporate governance in Japan, in particular regarding corporate control and management oversight. This research has documented many characteristics that differ from the stylized shareholder-oriented corporate governance of Anglo-Saxon countries. For example, rather than occupying a dominant place in the governance system, shareholders were usually considered as just one of several stakeholders with equal (if not less) standing to other stakeholders such as workers, creditors, suppliers, customers, or even local communities. Many of the important stakeholders in Japan were "insiders" with long-standing relationships with the firm. For example, the board of directors – which in the Anglo-Saxon textbook view is a prime locale for management monitoring – has long been dominated by insiders in Japan.

[1] In a previous paper (Hoshi et al. 2011), we analyzed the years 1981 to 2007 based on odd-years only. This paper uses an extended dataset for all years between 1980 to 2010 that also includes additional methods of identification of restructuring events. We confirm many of our earlier findings, and add new insights on the length and intensity of restructuring episodes.

Banks assumed a prime position among the stakeholders. The primary reason for their elevated role was that until the mid-1990s, Japanese firms were highly leveraged, and most of their external financing was in the form of bank loans.[2] The main bank of each firm became the nexus of information gathering, and other lenders followed the main bank's lending decisions, trusting that in times of crisis the main bank would lead a turnaround effort and assume a larger portion of liabilities. The main bank was incentivized to do so, given that it was typically the largest lender and a significant shareholder. Sheard (1989, 1994) argued that this system of delegated monitoring among main banks was the functional equivalent of the market for corporate control in Japan until the 1990s.

In spite of these differences, Japan's corporate governance often produced results similar to those in the Anglo-Saxon system. For example, executive turnovers in Japan were associated with factors very similar to those in the U.S., including falling stock prices and declining profits. Kaplan (1994) observed that executive turnovers were associated more with stock market indicators than with employment or asset growth in both, Japan and the U.S. In other words, Japan's corporate governance system was often as effective in terms of monitoring management and enforcing executive turnover as in the U.S.

Other studies confirmed the importance of banks in Japan's corporate governance. Hoshi, Kashyap, and Scharfstein (1990) looked at the performance of firms with close bank ties after the onset of financial distress. They found that firms with close ties to a main bank recovered more quickly than other firms, as measured in sales or investments. Kaplan and Minton (1994) showed that banks played an important role in forcing out the incumbent managers of distressed firms, and that falling stock prices or declining profits triggered the dispatch of bank executives into a client's management team. Moreover, firms with bank executives as managers or directors were more likely to experience top executive turnovers. Kang and Shivdasani (1995) confirmed that falling stock prices or accumulating losses led to non-routine CEO turnovers. This link between poor performance and executive turnover was especially strong for firms with close main bank ties, and often the new CEO was an executive from the main bank or a group-affiliated firm. Performance also improved faster in firms with close main bank ties.

[2] See Hoshi and Kashyap (2001, Chapter 4), Hoshi et al. (1990), Sheard (1989), Schaede (2008), and Sekine et al. (2003).

In sum, research suggests that until the 1980s, Japan's corporate governance system, while different in many ways from the Anglo-Saxon approach, worked effectively by putting the main bank in charge of monitoring firms, replacing management of poorly performing firms, guiding effective turnaround restructuring, and improving the performance of troubled firms.

3. Financial Deregulation and Changes in Bank-Firm Relations

However, the situation began to change in the late 1980s. Until the 1980s, Japan's financial system was heavily regulated, in terms of rigid barriers to corporate fund raising in capital markets, both within Japan and abroad. For example, only a select group of Japan's largest firms were allowed to issue bonds, there were no short-term notes, and the stock market, too, was governed by restrictions that limited its usefulness for many firms. Thus, even Japan's largest firms had to rely on bank loans for external financing. This resulted in very high leverage, with an average debt-equity ratio of 6 for listed firms in the 1970s (Schaede 2008, Chapter 6). In the 1980s, the onset of slow, step-wise financial deregulation opened the door for the largest firms to issue securities. As this process continued throughout the 1980s, many large firms reduced their dependence on bank loans. For the banks, this meant the loss of their largest customers, with whom they had long-standing relationships.

At the same time, delayed and slow deregulation to expand options for savers meant that deposits (the banks' largest source of funds) kept flowing in. As Hoshi and Kashyap (1999) show, the critical element in this process was that deregulation to expand investment options for savers progressed much more slowly than those that expanded corporate finance. Banks could have responded by purchasing government bonds, for example, but the late 1980s was also a time when the Japanese government pushed for fiscal consolidation and budget deficit reduction. Banks ended up directing their corporate business activities to lending to new clients. These were often smaller firms, with which they had neither a long relationship nor good ways to assess business conditions. To reduce the new risks, banks focused on lending to small- and medium-sized firms that could pledge collateral. During the "bubble economy" of the late 1980 and fast-rising property values, real estate was considered especially desirable.

When the speculative boom (and land prices) collapsed in the early 1990s, the banks found themselves with a large group of clients unable to fulfil their liabilities. Of course, collateral values had also collapsed. As much as banks might have felt a traditional

responsibility to launch rescue operations for their new clients, many main banks found that the lack of a close relationship made it difficult to help the borrowers. Hoshi and Kashyap (2001, Chapter 5) report case studies of this shift and compare corporate restructuring cases in 1977 and 1992. They identified 40 cases of ongoing corporate restructuring in 1977, compared to 34 cases 1992. In 1977, 43% of episodes (17 cases) were led by the main bank, but only 21% (7 cases) in 1992. Of the bank-led restructuring events, in 1977, in 71% of episodes (12 cases) operating profits turned positive for two consecutive years within five years of the onset of restructuring, while this ratio was only 43% (3 cases) in 1992.

Hirota and Miyajima (2001) also find that the frequency of bank interventions has declined over time. Comparing bank interventions in troubled firms in the 1975-1982 period with the 1990-1996 period, they identified 104 cases of financial distress during the former, and of these, 40% (42 cases) were associated with an intervention by the main bank. During the latter period, there were 99 cases of financial distress, of which only 15% (15 cases) saw the main bank involved. To assess the effectiveness of the bank interventions, the authors analyzed growth rates in operating income and sales. During the 1975-1982 period, the average cumulative growth rate of operating income (minus the industry average, to control for macroeconomic changes) for the first three years after the start of a bank intervention was 1.08%, while it was only 0.42% for the 1990-1996 period. Similarly, the average cumulative growth of sales (minus the industry average) for the first three years after the onset of the intervention fell from 2.36% in 1975-1982, to 0.65% in 1990-1996. Although the differences for income and sales growth were not statistically significant, this study strongly suggests that bank-led restructuring had become not only less frequent but also less effective since the 1980s.

The main banks' involvement in management turnovers seems to have changed as well. For example, Miyajima, Ogawa, and Saito (2016) find that firms with a high main bank dependence (both in terms of borrowings and board seats) used to be more likely to experience non-routine CEO turnovers when their performance deteriorated, but this tendency disappeared after 1990. Izumi and Kwon (2015) suggest that the erstwhile positive effect of a sudden CEO turnover on financial performance disappeared in the 2000s. In examining CEO turnovers in Japan and the U.S. from 2000 to 2007, they find that return on assets and sales growth improved for U.S. firms after a non-routine CEO turnover, but there was no such performance improvement for Japanese firms. Moreover, while U.S. firms significantly reduced both

workforce and assets upon a non-routine CEO turnover in the sample period, this was not the case for Japanese firms.

An important reason for the pivotal role of banks in corporate restructuring, and the subsequent decline in restructurings, was the lack of viable alternatives to a bank-led restructuring until the early 2000s. Japan's traditional bankruptcy laws dated to the 20th century, had European roots, and did not provide for "Chapter 11"-type restructuring processes. The stipulations were draconian and expensive, and in most cases made a bank-led turnaround, however drastic, the preferred route compared to a court-adjudicated restructuring or liquidation. It was only in early 2000s that Japan crafted a new "Civil Rehabilitation Law" (*Minji-saisei-hō*) to design court-based bankruptcy procedures, and revised the "Corporate Reorganization Law" (*Kaisha kōsei hō*) to allow for Chapter 11-type turnarounds (Schaede 2008). Thus, when the traditional bank-led "rescue" operations became less effective in the 1990s, there were few alternatives for firms in financial trouble.

4. Dataset for Corporate Restructurings in Japan: 1981-2010

This paper uses a unique dataset of corporate restructuring episodes of listed firms in Japan for 1981-2010. The accounting data for our statistical analysis were sourced from Nikkei NEEDS Financial Data for all firms listed on at least one stock exchange in Japan at any time during the 30 years from 1981 to 2010. In total, the dataset contains entries of 3,772 unique firms.

Next, we identified episodes of corporate restructuring by searching the four major Japanese-language business newspapers, published by Nihon Keizai Shimbun-sha (*Nihon Keizai Shimbun, Nihon Sangyō Shimbun, Nihon Kin'yū Shimbun,* and *Nihon Ryūtsū Shimbun*) through Nikkei Telecom 21. We searched the newspapers for the word "*saiken"* (再建), which is the most common Japanese word for restructuring. "*Saiken"* can refer to restructuring of any kind: in addition to corporate restructuring, it may mean fiscal consolidation (財政再建) or reconstruction (such as of temples or even body parts). However, it is rare for a newspaper article to describe a case of corporate restructuring without using the word *saiken*. Therefore, while our search term would identify many articles unrelated to corporate restructuring, we were confident that all major corporate restructuring episodes would be identified in this process, as long as at least one of the four newspapers reported the case. Once we had downloaded all articles

containing the word "*saiken,*" we deleted those unrelated to corporate restructuring events of stock-exchange listed firms. We reduced the sample to only listed firms to enable the link with the accounting data.

The next step was to code relevant information contained in these news articles, based on a long list of measures typically undertaken during a turnaround event. These included: whether the main bank was the lead intervening player (as opposed to another firm, or a legal procedure); whether a bankruptcy court was used; what measures of financial restructuring were employed (e.g., debt forgiveness, interest concession); whether management was replaced; how many outside executives were dispatched; whether and how many different restructuring plans were announced; whether the firm exited business or divested subsidiaries or other assets; whether a corporate reorganization occurred; whether the firm undertook layoffs and other labor adjustments; and whether salaries and/or bonuses were cut.

It is possible that Japan's four leading business newspapers failed to report all restructuring cases, and likewise it is possible, though improbable, that the newspapers reported a case without using the word "*saiken."* To ensure completeness of our sample, we ran an additional search for restructuring cases by manually looking through 30 years of two annual publications on listed firms in Japan. The first was *Kigyō Keiretsu Sōran,* published by Tōyō Keizai, with the purpose to display information regarding corporate groupings and financial connections among listed Japanese firms. For each listed firm, this annual publication reports bank borrowings from the major financial institutions, the largest shareholders, information on outside directors, and a brief description of the condition of the firm in that year, which would include a major event such as corporate restructuring. The publication of *Kigyō Keiretsu Sōran* was stopped with the 2000 issue (with information as of the end of June 1999), and for the years 2000-2010 we used *Kaisha Shikihō,* also published by Tōyō Keizai, which contains a similar brief description of the condition of each listed firm for the given year.[3]

In addition to ensuring the completeness of our dataset, the two publications also helped filling gaps in our coding regarding the duration of a certain corporate restructuring episode. In several cases, we found that the newspapers would report "*saiken"* of a firm in one year, have no articles on this "*saiken"* in the following year, but then report "*saiken"* again in the third year.

[3] The English version of *Kaisha Shikihō* is published under the title *Japan Company Handbook*.

In looking at *Kigyō Keiretsu Sōran* and *Kaisha Shikihō,* we were often able to tell whether the firm was under restructuring continuously over those three years, or whether these were separate events.

Even after correcting for this information on duration, we were still left with many discontinuous entries of "*saiken"*; i.e., "*saiken*" events for one firm would be separated by a year or two in between. For each firm in our dataset with multiple entries of corporate restructuring events over the 30 years, we investigated the actual case by looking at news articles about the firm during the relevant years and searching its company history and website for more detailed information, to ascertain whether the firm underwent one extended period of restructuring, or encountered separate episodes, perhaps caused by different shocks.

Altogether, these steps yielded a total of 950 distinct episodes of corporate restructuring for 517 firms. Of the total, 929 cases were identified in the newspaper search, and 21 were found only in the two additional publications, *Kigyō Keiretsu Sōran* and *Kaisha Shikihō*. Table 1 shows the distribution of firms by number of restructuring episodes. Of the 517 firms, 62% (319 firms) underwent more than one instance of corporate restructuring, and 17% (88 firms) experienced three or more episodes over the 30 years under investigation. Five firms reported as much as five distinct restructuring episodes.

Table 2 shows the distribution of the 950 episodes by duration. Note that the average duration statistics are truncated because some firms disappeared while in restructuring, either due to liquidation, delisting, or acquisition, or because they were still in reorganization as of 2010, the last year of our sample.[4] That said, Table 2 shows that 53% of episodes were finalized in less than two years, and about 10% of the cases continued for more than eight years. In ten cases, the restructuring episodes lasted for 17 years or longer; one case reported a duration of 24 years.[5]

Overall, we are confident that our dataset includes almost all corporate restructuring events in Japan between 1981 and 2010, and it allows us to draw a picture of changes in corporate governance, in particular in regards to the role played by banks in addressing financially troubled firms. To parse out changes over time, we divide the 30 years under investigation into four sub-periods. The first sub-period (1981 to 1991) includes the buildup to

[4] In our dataset, 42 companies were under restructuring as of 2010, while 138 companies disappeared from the sample while in restructuring.

[5] A sustained restructuring episode over many years suggests that the restructuring was not effective. Many of these cases are suspected to be futile attempts to rescue zombie firms.

and actual "bubble economy" of the late 1980s; the second sub-period (1992 to 1997) covers the first half of the so-called "lost decade" up to the onset of the banking crisis in 1997; the third sub-period (1998 to 2003) demarcates the banking crisis and its aftermath[6]; and the final period (2004 to 2010) includes two possibly contravening events, namely Japan's recovery from the banking crisis and the global financial crisis of 2007-2009.

5. Statistical Analysis: Changes in Corporate Restructuring over Time

Figure 1 shows the proportion of distressed firms that underwent corporate restructuring. Here, we define "distress" as a situation where the firm has reported negative operating income for two consecutive years. Consistent with previous findings by Hoshi and Kashyap (2001) and Hirota and Miyajima (2001), our data show a declining trend, beginning in the early 1990s. The finding is similar when we change the definition of "distress" to firms reporting an interest coverage ratio (ICR) below one for two consecutive years. While not as pronounced as in Figure 1, Figure 2 also shows an overall decline, and also a clear dip and a reversal in 1991. This dip probably reflects the sharp increase in interest rates in 1990, which marked the end of the "bubble economy" and may have temporarily depressed the interest coverage ratio of many firms that were otherwise healthy.

One may wonder whether the declining trend in the proportion of distressed firms that underwent restructuring is really driven by the numerator (number of firms that actually undergo restructuring), or rather by the denominator (number of distressed firms).[7] The overall number of distressed firms may have increased as the Japanese economy began to stagnate in the 1990s, and even if the number of restructuring cases among distressed firms had been steady, this situation would appear as a declining trend in Figures 1 and 2. To explore this, Figure 3 graphs the number of distressed firms (with two consecutive years of negative profits) as compared to the number of distressed firms undergoing restructuring, in two separate lines and scales. Clearly there was a change in the mid-1990s: whereas the number of distressed firms indeed increased and then remained at a higher level, the number of distressed firms undergoing restructuring

[6] We separate out this period, because a large amount of non-performing loans remained in the banking sector until 2003, when Japan's banking regulators finally forced major banks to write off those loans. Hamada, Kashyap and Weinstein (2011), Schaede (2008) and others have suggested that the Japanese economy changed drastically after the banking crisis of 1997-1998.

[7] We thank Yoshiaki Ogura (Discussant) for encouraging us to look into this.

increased at the same time, but then started to fall. Thus, Figure 3 suggests that the declining trends observed in Figures 1 and 2 were mostly due to a change in the numerator; i.e., the level of corporate restructuring activity among firms in trouble declined over time.

Although the incidence of distressed firms actually undergoing restructuring declined over time, the magnitude of adjustments made by firms that were restructured remained large. Figure 4 compares how distressed firms with, and without, undergoing restructuring adjusted their workforce, capital (depreciable assets), and bank loans. Each panel shows the average growth rates, divided over the four sub-periods explained above. We see that distressed firms under restructuring took more drastic measures in terms of reducing the workforce, depreciable assets, and bank loans, compared with distressed firms that did not explicitly undergo restructuring. The fact that firms under restructuring did not see an increase in bank loans may be surprising, insofar as additional lending is considered a part of a "rescue operation". However, a reduction in debt burden may be a more effective way to successfully turn a troubled firm around for the long run. What we find here suggests that this happened more often than not.

Figure 4 shows that the difference between the two groups of distressed firms did not shrink; if anything, it increased over time. Thus, although the proportion of distressed firms actually undergoing restructuring declined, on average the degree of actual measures taken in terms of reducing the workforce, production capacity and liabilities continued to be stronger in cases where an explicit restructuring was launched. Put differently, when a distressed firm underwent restructuring, it adopted more drastic turnaround measures.

5.1. Determinants of Corporate Restructuring

To better understand the declining incidence of corporate restructuring over time, we first estimate a linear probability model of determinants of corporate restructuring events. The explanatory variables considered here are: (1) the ratio of bank debt to total assets; (2) whether the firm was in distress (a 0-1 variable that takes the value 1 if operating income for the previous two years was negative, and 0 otherwise); (3) firm size, measured by the natural logarithm of total assets; (4) main bank dependence, measured as the proportion of bank loans provided by the firm's largest lender; and (5) whether the firm was under restructuring in the previous year. Also included in some specifications are factor variables to represent year fixed effects, industry fixed effects, and year-industry fixed effects.

Table 3 reports the estimation results for the basic specifications that constrain the coefficients to be constant over time. Model (1) includes only the three first variables (in addition to the constant term): bank debt to total asset ratio, distress dummy, and asset size. All of these influence the probability of being restructured positively: large distressed firms with high dependence on bank loans are more likely to undergo restructuring. Model (2) shows that firms under restructuring are highly likely to continue being restructured in the following year. The results for the other variables do not change qualitatively, although the coefficient estimates become smaller. The results do not change when we include dummy variables to control for year, industry, and year-industry effects (models (3) and (4)). The only coefficient estimate that changes significantly is the one on bank debt to total assets, which gets larger but still not as big as in the simple model (1). Model (5) includes the main bank dependence. This variable was constructed for previous research projects by Caballero et al. (2008), and it covers fewer industries and ends in 2002. Thus, the number of observations for this specification drops by roughly half, and the observations for the fourth sub-period are excluded. For the years 1981-2002, the estimated coefficients on the bank debt to total assets ratio and firm size are larger, but the overall result does not change qualitatively. A higher main bank dependence increases the probability that the firm is restructuring. This finding underscores the importance of main banks in corporate restructuring in Japan.

The specifications reported in Table 4 consider the possibility that the coefficients on some variables may have changed over time, by employing the four sub-periods. Model (6) allows the coefficient on the distress dummy to take different values for the four sub-periods, and the results suggest that the impact of being distressed on the probability of being restructured declined for the periods after 1992, compared to the first sub-period. For the sub-period 1992-1997, the coefficient estimate is not significantly different from zero at conventional statistical significance levels. Models (7) and (8) also allow the coefficient on bank debt to total assets to change over time. For this ratio, the impact on the probability of being restructured does not obviously change over time. Finally, models (9) and (10) allow the coefficient on main bank dependence to change over time. In this case, the decline of the coefficient on the distressed dummy becomes more pronounced, although as noted, the observations used in (9) and (10) differ from those in models (6) and (7). The importance of the main bank dependence also seems

to have declined over time. After 1992, the coefficient on the main bank dependence is no longer statistically significant.

Overall, the results in Tables 3 and 4 show that distressed firms that rely on banks (especially their main bank) were more likely to undergo restructuring, but this relation has changed over time. After 1992, distress (defined as two consecutive years of negative operating income) was no longer associated with corporate restructuring as much as it was before, nor was high main bank dependence. These findings are consistent with the notion of declining corporate restructuring activities, especially those led by banks.

5.2. Adjustments under Restructuring

As indicated in Figure 4, while the incidence of restructuring (i.e., the ratio of distressed firms announcing a full-fledged turnaround) has declined over time, the intensity (i.e., the extent of measures taken) appears to have remained higher for those firms that do. To parse this out further, Tables 5 and 6 report regression analysis results regarding changes in the magnitude of adjustments in labor, capital, and bank borrowing in firms undergoing restructuring over time. The first two columns in Table 5 examine workforce adjustment. Distressed firms with and without restructuring have lower employment growth compared with healthy firms. Column 1 shows that employment growth for distressed firms in general is reduced by about 4%, and by additional 3% for firms under restructuring. Column 2 includes the interaction term between distress and restructuring, and shows that distressed firms under restructuring reduce the growth rate of employment further by 6.5%, as compared with distressed firms that do not undergo restructuring.

Columns (3) and (4) in Table 5 report similar results for the growth of depreciable assets. Distressed firms tend to reduce depreciable assets growth by about 5% to 5.5%, and distressed firms under restructuring reduce the growth rate by about 4%. The interaction term, again, shows that distressed firms undergoing restructuring slow down capital growth by an additional 6.8%, compared with other distressed firms.

Columns (5) and (6) show estimation results for bank loan growth. Again, we find that both, distress and restructuring, tend to reduce the growth rate of bank borrowings, and distressed firms undergoing restructuring experience even less bank loan growth than other distressed firms. However, the coefficient estimates are mostly insignificant. As we will see

below, this seems to reflect a change over time in the movement of bank loan growth during restructuring.

Parallel with our previous analysis, in Table 6 we allow the effects of restructuring on the growth rate of labor, capital, and bank loans to change over time, by interacting the *saiken* dummy with 4 sub-periods. Columns (1) and (2) look at employment growth. The coefficient estimate on the *saiken* dummy is slightly larger in the 1998-2003 period, and smaller in the 2004-2010 period. This suggests that workforce adjustment in firms undergoing corporate restructuring was temporarily intensified after the banking crisis. For capital growth (columns (3) and (4)), the coefficient on restructuring is smaller for the 1992-1997 period.

For the bank loan growth regressions (reported in the last two columns), the coefficient on the *saiken* dummy reveals an interesting pattern. For 1981-1991 and 2004-2010 periods, the coefficient is negative, suggesting that bank loan growth slowed down under restructuring. In contrast, for 1992-1997 and 1998-2003 periods, the coefficient is positive, even though small and statistically insignificant. It appears that banks (including main banks) became more tentative about financial restructuring through a reduction of bank loans during the "lost decade" of the 1990s. This may also reflect some outright rollovers of non-performing loans to zombie firms during this period.

5.3. Corporate Performance after Restructuring

Perhaps the most important question is whether corporate restructuring yields results in turning around troubled firms and improving their economic viability. Tables 7 through 9 examine the impact of corporate restructuring on post-*saiken* performance.

Table 7 reports results of performance measures regressions that are similar in structure to those reported in Tables 5 and 6. Here, the dependent variables are corporate performance estimates for the following three years as measured in: (1) growth rate of total sales; (2) average ratio of ordinary profits to total assets; and (3) average ratio of net profits to total assets. These performance variables are regressed on the three-year lagged dependent variables as well as the dummy variable for distress (two consecutive years of negative operating income) and the dummy variable indicating restructuring. In the second specification for each performance variable, the coefficient on the restructuring dummy is allowed to change over time.

In the specifications in Table 7, which includes all firms, the coefficient on the restructuring dummy is negative, suggesting that restructuring overall is associated with lower performance. This does not necessarily imply that restructuring leads to worse performance: In cases where restructuring took more than one year, which is often the case in our database, a firm under restructuring in one year was likely to be still under restructuring during at least some portion of the following three years, and not yet have fully recovered.[8] The distressed firm dummy, on the other hand, exhibits positive results on average over the following three years, as suggested by the positive coefficient estimates (at least for sales growth and ordinary profits). In Table 8, showing results for distressed firms only (i.e., only including observations with negative operating income for the immediate past two consecutive years), the coefficient estimates on the restructuring dummy are still negative, although some estimates are not statistically different from zero.

Table 9 reports an attempt to distinguish between completion of a restructuring episode from other restructuring years by including an additional dummy variable, "*saikenend"*, that takes the value 1 for the final year of a restructuring episode, and 0 otherwise. The second specification for each performance variable allows the coefficient on this dummy variable to change over time. The coefficient estimates on this variable are positive and large enough to more than offset the negative impact of the restructuring dummy in some specifications for some sub-periods. This may suggest that restructuring tends to increase performance after it is fully completed.

6. Conclusions

Using a unique dataset on corporate restructuring instances of listed Japanese firms from 1981 to 2010, this paper examined the changing role of banks in leading corporate restructuring in Japan over time. We find that distressed firms underwent restructuring less frequently after the early 1990s. In general, a high dependence on bank loans increased the probability of undergoing restructuring for firms in distress, although main bank dependence became a less important determinant of such episodes.

[8] As reported in Table 2, in 47% of the episodes of corporate restructuring, the process lasted more than two years.

When a firm underwent an explicit restructuring process, this involved real adjustments in labor, capital, and bank borrowings. However, the intensity of these measures declined, and there were some interesting changes in the tendency for bank borrowing, often considered a hallmark feature of bank-led restructuring. Whereas in the 1981-1991 period, firms undergoing restructuring reduced bank borrowings more than other distressed firms, this adjustment slowed down thereafter, and disappeared during the 1992-2003 period, only to re-emerge after 2004. This may suggest that this very important mechanism of financial restructuring ceased to function temporarily during the lost decade, as bank-led restructuring declined, but that it reemerged when new alternatives to bank-led restructuring, such as court-based restructuring, became available. Reduced frequency and intensity of restructuring of distressed firms is consistent with what other research has found in the past.

Finally, there is no conclusive result regarding the relation between restructuring and subsequent performance of the restructured firms. We find evidence that the completion of a restructuring event improves several performance variables, yet a further examination is left for future research.

Our study cannot speak to the efficiency consequences of these changes for Japan's overall economy. As alternative processes of bankruptcy procedures were introduced only in the early 2000s, it is possible that a turn away from bank-led intervention and toward court procedures is a positive development. That said, given that bank-led intervention had a positive effect on post-restructuring performance of the firm, it appears that at least during the 1990s, the decline of bank-led restructuring may have further added to Japan's economic stagnation and slow recovery.

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Table 1. Number of Firms with at least one Episode of Corporate Restructuring

# of distinct episodes	1	2	3	4	5
# of firms	198	231	67	16	5

Table 2. Duration of Corporate Restructuring Episodes

Duration of episode (years)	1	2	3	4	5	6	7	8	9	10
# of episodes	367	138	117	73	58	47	31	25	19	15

Duration of episode (years)	11	12	13	14	15	16	17	19	20	24
# of episodes	11	13	9	7	5	5	4	4	1	1

Table 3. Linear probability model of determinants of corporate restructuring: Basic specifications

Specification	(1)	(2)	(3)	(4)	(5)
Bank Debt / Total Assets	0.1397	0.0492	0.0670	0.0658	0.0916
	(0.0141)	(0.0049)	(0.0055)	(0.0055)	(0.0086)
Negative Operating Income for 2 Years	0.1689	0.0341	0.0347	0.0333	0.0323
	(0.0145)	(0.0059)	(0.0059)	(0.0059)	(0.0085)
Log(Total Assets)	0.0160	0.0064	0.0066	0.0065	0.0094
	(0.0019)	(0.0006)	(0.0006)	(0.0006)	(0.0011)
Under Restructuring in the Previous Year		0.7145	0.7147	0.7156	0.7165
		(0.0112)	(0.0112)	(0.0112)	(0.0131)
Main Bank Dependence					0.0325
					(0.0087)
Year Dummies	No	No	Yes	Yes	Yes
Industry Dummies	No	No	Yes	Yes	Yes
Year-Industry Dummies	No	No	No	Yes	No
Number of Observations	49,682	49,682	49,682	49,682	27,741

Notes: The dependent variable is *saiken*, which takes the value 1 if the firm was under restructuring during the year, and 0 otherwise. Each column reports the coefficient estimates and standard errors (in parentheses) for a linear probability regression model. The estimated standard errors are robust to correlations within each firm. The sample period is from 1981 to 2010. Observations where bank debt to total assets ratios exceeded 1 were excluded. The model includes a constant term, but the coefficient estimate is not reported here. "Year Dummies," "Industry Dummies," and "Year-Industry Dummies" rows show if the specification includes these dummies (Yes or No). The coefficient estimates for those dummy variables are not reported.

Table 4. Determinants of corporate restructuring: Changes over time

Specification	(6)	(7)	(8)	(9)	(10)
Bank Debt / Total Assets: 1981-1991	0.0670	0.0743	0.0699	0.0936	0.0989
	(0.0055)	(0.0080)	(0.0091)	(0.0087)	(0.0115)
Bank Debt / Total Assets: 1992-1997		0.0595	0.0663		0.0870
		(0.0093)	(0.0105)		(0.0139)
Bank Debt / Total Assets: 1998-2003		0.0796	0.0812		0.0930
		(0.0102)	(0.0110)		(0.0146)
Bank Debt / Total Assets: 2004-2010		0.0444	0.0361		
		(0.0077)	(0.0080)		
Negative Op. Income for 2 Years: 1981-1991	0.0673	0.0667	0.0612	0.0746	0.0740
	(0.0142)	(0.0141)	(0.0141)	(0.0168)	(0.0167)
Negative Op. Income for 2 Years: 1992-1997	0.0165	0.0175	0.0176	0.0037	0.0047
	(0.0121)	(0.0121)	(0.0123)	(0.0134)	(0.0136)
Negative Op. Income for 2 Years: 1998-2003	0.0307	0.0296	0.0290	0.0247	0.0248
	(0.0107)	(0.0107)	(0.0106)	(0.0138)	(0.0140)
Negative Op. Income for 2 Years: 2004-2010	0.0243	0.0245	0.0241		
	(0.0096)	(0.0096)	(0.0096)		
Log(Total Assets)	0.0066	0.0066	0.0065	0.0096	0.0096
	(0.0006)	(0.0006)	(0.0006)	(0.0011)	(0.0011)
Under Restructuring in the Previous Year	0.7139	0.7137	0.7148	0.7152	0.7152
	(0.0113)	(0.0113)	(0.0112)	(0.0131)	(0.0131)
Main Bank Dependence: 1981-1991				0.0491	0.0508
				(0.0127)	(0.0130)
Main Bank Dependence: 1992-1997				0.0257	0.0248
				(0.0143)	(0.0146)
Main Bank Dependence: 1998-2003				0.0209	0.0209
				(0.0143)	(0.0146)
Year Dummies	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes
Year-Industry Dummies	No	No	Yes	No	No
Number of Observations	49,682	49,682	49,682	27,741	27,741

Notes: The dependent variable is *saiken*, which takes the value 1 if the firm was under restructuring during the year, and 0 otherwise. Each column reports the coefficient estimates and standard errors (in parentheses) for a linear probability regression model. The estimated standard errors are robust to correlations within each firm. The sample period is from 1981 to 2010. Observations where bank debt to total assets ratios exceeded 1 were excluded. The model also includes a constant term, but the coefficient estimate is not reported here. "Year Dummies," "Industry Dummies," and "Year-Industry Dummies" rows show if the specification includes these dummies (Yes or No). The coefficient estimates for those dummy variables are not reported.

Table 5. Adjustments of labor, capital, and bank loans under restructuring

Dependent Variable →	Employ-ment Growth	Employ-ment Growth	Capital Growth	Capital Growth	Bank Loan Growth	Bank Loan Growth
Lagged Dependent Variable	0.2784 (0.0110)	0.2785 (0.0110)	0.1228 (0.0073)	0.1228 (0.0073)	0.1289 (0.0068)	0.1288 (0.0068)
Negative Operating Income for 2 Years	-0.0390 (0.0031)	-0.0405 (0.0035)	-0.0505 (0.0039)	-0.0568 (0.0041)	-0.0159 (0.0054)	-0.0095 (0.0060)
Under Restructuring	-0.0306 (0.0022)	-0.0316 (0.0023)	-0.0375 (0.0036)	-0.0418 (0.0038)	-0.0063 (0.0050)	-0.0020 (0.0052)
Distress*Restructuring		-0.0647 (0.0065)		-0.0675 (0.0096)		-0.0431 (0.0110)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year-Industry Dummies	No	No	No	No	No	No
Number of Observations	38,607	38,607	38,607	38,607	38,607	38,607

Notes: Employment growth is measured as the growth rate of number of employees for the firm. Capital growth is measured as the growth rate of depreciable assets for the firm. Bank loan growth is measured as the growth rate of total bank borrowings by the firm. Observations where any of the dependent variables or the lagged dependent variables is below -50% or above 100% are excluded. (Distress*Restructuring) is the interaction term of the distress dummy (negative operating income for two consecutive years) and the restructuring (*saiken*) dummy. Each column reports the coefficient estimates and standard errors (in parentheses) for a regression model. The estimated standard errors are robust to correlations within each firm. The sample period is from 1981 to 2010. Observations where bank debt to total assets ratios exceeded 1 were excluded. The model also includes a constant term, but the coefficient estimate is not reported here. "Year Dummies," "Industry Dummies," and "Year-Industry Dummies" rows show if the specification includes these dummies (Yes or No). The coefficient estimates for those dummy variables are not reported.

Table 6. Adjustments under restructuring: Changes over time

Dependent Variable →	Employ-ment Growth	Employ-ment Growth	Capital Growth	Capital Growth	Bank Loan Growth	Bank Loan Growth
Lagged Dependent Variable	0.2783	0.2725	0.1227	0.1100	0.1285	0.1200
	(0.0110)	(0.0110)	(0.0073)	(0.0072)	(0.0068)	(0.0068)
Negative Operating Income for 2 Years	-0.0388	-0.0383	-0.0507	-0.0489	-0.0165	-0.0169
	(0.0031)	(0.0032)	(0.0039)	(0.0040)	(0.0054)	(0.0055)
Under Restructuring: 1981-1991	-0.0285	-0.0269	-0.0510	-0.0440	-0.0152	-0.0159
	(0.0029)	(0.0030)	(0.0069)	(0.0071)	(0.0084)	(0.0088)
Under Restructuring: 1992-1997	-0.0299	-0.0283	-0.0211	-0.0161	0.0189	0.0188
	(0.0044)	(0.0043)	(0.0073)	(0.0074)	(0.0120)	(0.0120)
Under Restructuring: 1998-2003	-0.0424	-0.0403	-0.0331	-0.0311	0.0017	0.0016
	(0.0045)	(0.0046)	(0.0054)	(0.0056)	(0.0085)	(0.0088)
Under Restructuring: 2004-2010	-0.0103	-0.0094	-0.0377	-0.0398	-0.0439	-0.0401
	(0.0056)	(0.0057)	(0.0088)	(0.0090)	(0.0119)	(0.0112)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year-Industry Dummies	No	Yes	No	Yes	No	Yes
Number of Observations	38,607	38,607	38,607	38,607	38,607	38,607

Notes: Employment growth is measured as the growth rate of number of employees for the firm. Capital growth is measured as the growth rate of depreciable assets for the firm. Bank loan growth is measured as the growth rate of total bank borrowings by the firm. All observations where any of the dependent variables or the lagged dependent variables is below -50% or above 100% are excluded. (Distress*Restructuring) is the interaction term of the distress dummy (negative operating income for two consecutive years) and the restructuring (*saiken*) dummy. Each column reports the coefficient estimates and standard errors (in parentheses) for a regression model. The estimated standard errors are robust to correlations within each firm. The sample period is from 1981 to 2010. The observations that have bank debt to total assets ratios larger than 1 are dropped. The model also includes a constant term, but the coefficient estimate is not reported here. "Year Dummies," "Industry Dummies," and "Year-Industry Dummies" rows show if the specification includes these dummies (Yes or No). The coefficient estimates for those dummy variables are not reported.

Table 7. Post-restructuring performance

Dependent Variable →	Sales Growth	Sales Growth	Ordinary Profits	Ordinary Profits	Net Profits	Net Profits
Lagged Dependent Variable	0.2050	0.2047	0.5998	0.6001	0.4202	0.4200
	(0.0094)	(0.0094)	(0.0119)	(0.0119)	(0.0187)	(0.0187)
Negative Operating Income for 2 Years	0.0070	0.0068	0.0077	0.0077	-0.0053	-0.0054
	(0.0039)	(0.0039)	(0.0018)	(0.0018)	(0.0022)	(0.0022)
Under Restructuring	-0.0224		-0.0092		-0.0118	
	(0.0033)		(0.0013)		(0.0018)	
Under Restructuring: 1981-1991		-0.0066		-0.0064		-0.0061
		(0.0055)		(0.0024)		(0.0026)
Under Restructuring: 1992-1997		-0.0252		-0.0120		-0.0162
		(0.0060)		(0.0021)		(0.0032)
Under Restructuring: 1998-2003		-0.0387		-0.0112		-0.0175
		(0.0057)		(0.0017)		(0.0033)
Under Restructuring: 2004-2007		-0.0271		-0.0078		-0.0072
		(0.0077)		(0.0028)		(0.0054)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	64,439	64,439	64,439	64,439	64,439	64,439

Notes: Dependent variable is a performance for the next three years. Sales Growth is growth rate of total sales over the next three years. Ordinary Profits is the average ratio of ordinary profits to total assets over the next three years. Net Profits is the average ratio of net profits to total assets over the next three years. Lagged Dependent Variable is the dependent variable of three years ago. All observations where any of the dependent variables or the lagged dependent variables is below -50% or above 100% are excluded. Each column reports the coefficient estimates and standard errors (in parentheses) for a regression model. The estimated standard errors are robust to correlations within each firm. The sample period is effectively from 1981 to 2007, because 2007 is the latest year that we can calculate performance for the following three years. The model also includes a constant term, but the coefficient estimate is not reported here. "Year Dummies" and "Industry Dummies" rows show if the specification includes those dummies (Yes or No). The coefficient estimates for those dummy variables are not reported.

Table 8. Post-restructuring performance: Distressed firms (observations) only

Dependent Variable →	Sales Growth	Sales Growth	Ordinary Profits	Ordinary Profits	Net Profits	Net Profits
Lagged Dependent Variable	0.1897	0.1887	0.3371	0.3389	0.1778	0.1782
	(0.0094)	(0.0424)	(0.0679)	(0.0679)	(0.0595)	(0.0596)
Under Restructuring	-0.0165		-0.0102		-0.0196	
	(0.0099)		(0.0049)		(0.0078)	
Under Restructuring: 1981-1991		-0.0088		-0.0056		-0.0181
		(0.0167)		(0.0092)		(0.0106)
Under Restructuring: 1992-1997		-0.0102		-0.0061		-0.0108
		(0.0165)		(0.0056)		(0.0100)
Under Restructuring: 1998-2003		-0.0190		-0.0185		-0.0250
		(0.0144)		(0.0053)		(0.0100)
Under Restructuring: 2004-2007		-0.0497		-0.0128		-0.0322
		(0.0274)		(0.0136)		(0.0265)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	2,443	2,443	2,443	2,443	2,443	2,443

Notes: Dependent variable is a performance for the next three years. Sales Growth is growth rate of total sales over the next three years. Ordinary Profits is the average ratio of ordinary profits to total assets over the next three years. Net Profits is the average ratio of net profits to total assets over the next three years. Lagged Dependent Variable is the dependent variable of three years ago. All observations where any of the dependent variables or the lagged dependent variables is below -50% or above 100% are excluded. The estimations in this table includes only those observations with negative operating incomes for the previous two years. Each column reports the coefficient estimates and standard errors (in parentheses) for a regression model. The estimated standard errors are robust to correlations within each firm. The sample period is effectively from 1981 to 2007, because 2007 is the latest year that we can calculate performance for the following three years. The model also includes a constant term, but the coefficient estimate is not reported here. "Year Dummies" and "Industry Dummies" rows show if the specification includes those dummies (Yes or No). The coefficient estimates for those dummy variables are not reported.

Table 9. Post-restructuring performance: Distressed firms (observations) only and with *saikenend* dummy

Dependent Variable →	Sales Growth	Sales Growth	Ordinary Profits	Ordinary Profits	Net Profits	Net Profits
Lagged Dependent Variable	0.1872 (0.0425)	0.1872 (0.0427)	0.3364 (0.0681)	0.3357 (0.0679)	0.1770 (0.0594)	0.1766 (0.0590)
Under Restructuring	-0.0227 (0.0115)	-0.0230 (0.0115)	-0.0124 (0.0055)	-0.0123 (0.0055)	-0.0228 (0.0093)	-0.0227 (0.0093)
saikenend	0.0277 (0.0142)		0.0103 (0.0061)		0.0144 (0.0110)	
saikenend: 1981-1991		0.0122 (0.0181)		0.0214 (0.0078)		0.0148 (0.0109)
saikenend: 1992-1997		0.0537 (0.0190)		0.0168 (0.0082)		0.0448 (0.0130)
saikenend: 1998-2003		0.0095 (0.0239)		-0.0106 (0.0096)		-0.0159 (0.0184)
saikenend: 2004-2007		0.0615 (0.0571)		0.0223 (0.0248)		0.0186 (0.0315)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	2,443	2,443	2,443	2,443	2,443	2,443

Notes: Dependent variable is a performance for the next three years. Sales Growth is growth rate of total sales over the following three years. Ordinary Profits is the average ratio of ordinary profits to total assets over the following three years. Net Profits is the average ratio of net profits to total assets over the following three years. Lagged Dependent Variable is the dependent variable of three years ago. *Saikenend* is a dummy variable that takes the value 1 in the last year of a restructuring episode, and 0 otherwise. All observations where any of the dependent variables or the lagged dependent variables is below -50% or above 100% are excluded. The estimations in this table includes only those observations with negative operating incomes for the previous two years. Each column reports the coefficient estimates and standard errors (in parentheses) for a regression model. The estimated standard errors are robust to correlations within each firm. The sample period is effectively from 1981 to 2007, because 2007 is the latest year that we can calculate performance for the following three years. The model also includes a constant term, but the coefficient estimate is not reported here. "Year Dummies" and "Industry Dummies" rows show if the specification includes those dummies (Yes or No). The coefficient estimates for those dummy variables are not reported.

Figure 1. Proportion of distressed firms that underwent restructuring; Definition of distress: Negative operating income for two consecutive years

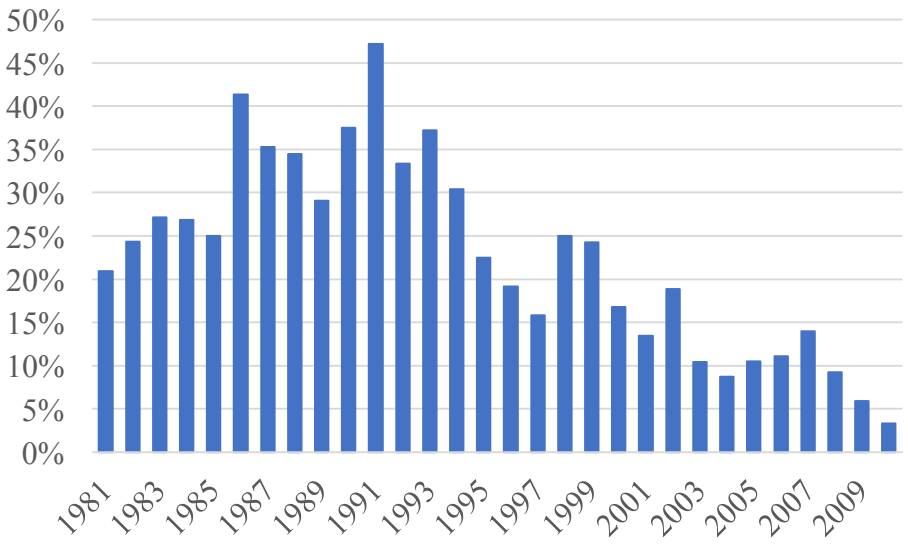

Figure 2. Proportion of distressed firms that underwent restructuring; Definition of distress: Interest coverage ratio below one for two consecutive years

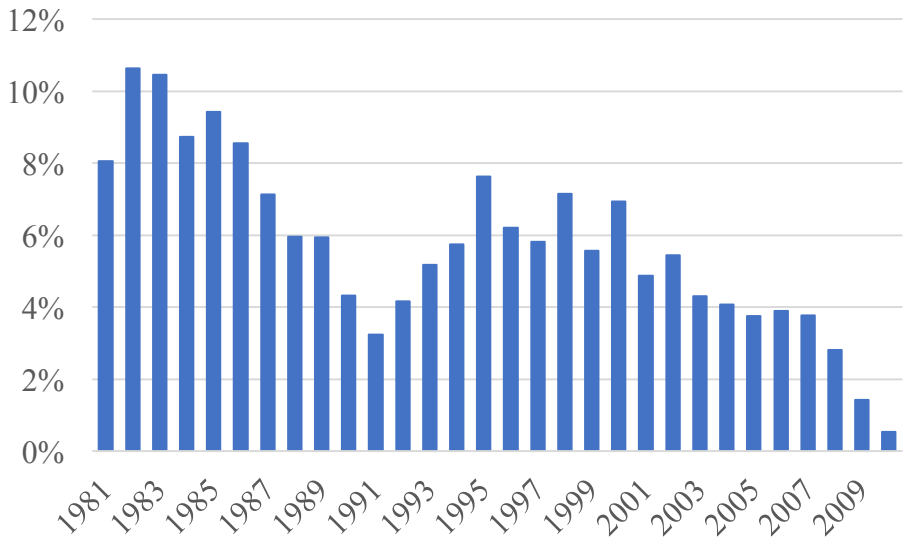

Figure 3. Number of distressed firms under restructuring (RHS), compared to distressed firms with no restructuring (LHS);
Definition of distress: Negative operating income for two consecutive years

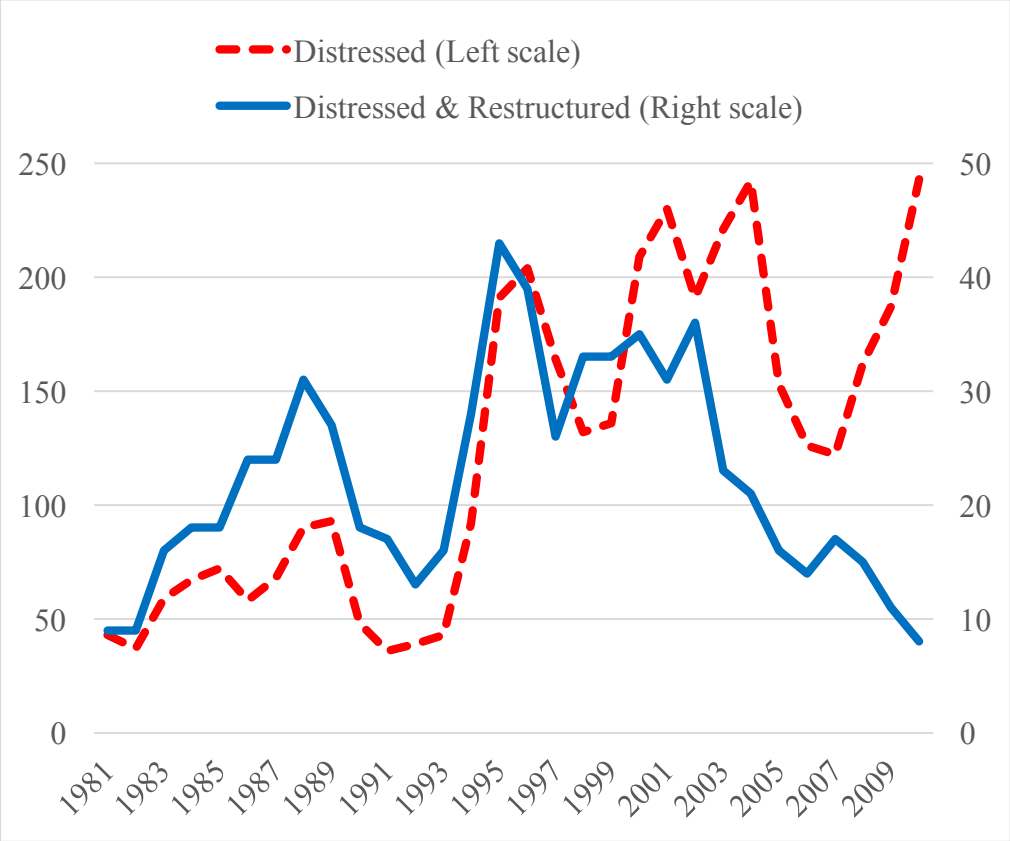

Figure 4. Adjustments of Labor, Capital, Bank Loans of Distressed Firms (two consecutive years of negative operating profits)