Decline of Bank-led Restructuring in Japan: 1980-2010

Takeo Hoshi[†]
Stanford University, Tokyo Foundation, NBER, and ABFER

June 9, 2017

ABSTRACT

Using a dataset on major corporate restructuring cases in Japan that the author built with Satoshi Koibuchi and Ulrike Schaede, this paper examined how the corporate restructuring in Japan changed over time. The data shows that restructuring of distressed firms became less frequent after the 1990s. When a restructuring happens, it involves real adjustments, but the intensity of the adjustments seems to have declined during the lost decade from the early 1990s and the early 2000s. Reduced frequency and intensity of restructuring of distressed firms is consistent with what other research found in the past.

[†] I thank Satoshi Koibuchi and Ulrike Schaede for working with me to construct the dataset of corporate restructuring episodes of Japanese firms. I also thank Blake Ellison, Chihiro Fujimoto, Emi Fukuda, Kanako Hotta, Masafumi Iino, Akifumi Irie, Yutaka Ishida, Tomohiro Ito, Yuichiro Kawai, Yasuko Kohno, Yoshikazu Kuki, Jun Morikawa, Kuniaki Nemoto, Mitsuhiro Nishida, Yukiko Nomura, Masashi Osakada, Mary Shiratori, Christopher Syling, Kunio Takeda, Kunitaka Ueno, and Koki Yoshida for research assistance in various stages of dataset building.

1. Introduction

Corporate governance in Japan used to be characterized by the important role played by "main banks." The main bank was usually the largest lender to and one of the largest shareholders of a company at the same time and sometimes (retired) bankers from the main bank sat on the board of the company. When a customer firm gets into a financial trouble, the main bank often intervened to turn around the company. Such intervention was called a "rescue" operation, but the main bank did not just extend the financial help for the troubled customer. The bank typically sent bankers to lead the restructuring including not only financial restructuring but labor adjustment, asset sales, and reorganization of business lines. The current management was forced out eventually more often than not. In this sense, the bank "rescue" operations were really comprehensive corporate restructuring to "rescue" the troubled company "from" the incumbent management.

Following the financial deregulation during the 1980s that expanded options for corporate financing by large Japanese firms among other things substantially altered the main bank relationship as Hoshi and Kashyap (1999) discuss. As large businesses started to diversify their financing beyond the traditional bank financing, they reduced their dependence on their main banks. The banks then sought to respond by expanded business to smaller borrowers that did not have long relationship with the banks. A consequence of this change was the reduction of banks' involvement in corporate governance of the customers. For large companies, banks' influence was reduced because they did not depend on banks very much anymore in financing. For smaller and new bank customers, the banks often failed to establish the type of close relationship that they used to have with large customers. To compensate for the lack of relationship, many banks expanded lending to those companies that hold valuable land and can put that up as collateral. During the late 1980s, when the land prices in Japan were increasing rapidly, loans collateralized by land seemed have very low risk.

Hoshi and Kashyap (2001, Chapter 5) and Hirota and Miyajima (2001) showed that the bank rescue operations became less frequent and less effective during the 1990s. The decline in the role of banks in turning around troubled companies created a void in the sense that credible alternatives (such as restructuring in bankruptcy court) were underdeveloped in Japan. This void of corporate governance seems to have been a factor that allowed the emergence of zombie firms

discussed by Caballero, Hoshi, and Kashyap (2008) and Peek and Rosengren (2005) among others.

This paper studies the changes of corporate restructurings in Japan during the 30 years from 1980 to 2010, using the original dataset of restructuring episodes of listed firms that has been created by Satoshi Koibuchi, Ulrike Schaede, and the author. The part of the database that covered only odd years from 1981 to 2007 was analyzed in Hoshi, Koibuchi, and Shaede (2011), but this paper uses the extended dataset that covers every year from 1980 to 2010. We have also checked additional sources for better identification of corporate restructuring events. This paper confirms most of the results that are obtained by Hoshi et al. (2011) for the limited dataset and makes additional findings.

The paper is organized as follows. The next section reviews selected papers on Japanese corporate governance, especially those on bank-led restructuring of troubled customers. Section 3 is a brief description of changes in the bank-firm relations in Japan during the financial deregulation of the 1980s. It sets the background for the statistical analysis of the implications of those changes on corporate governance in Japan. Section 4 introduces the dataset that is used for the statistical analyses in this paper. Section 5 reports the results of the statistical analyses, and Section 6 concludes.

2. Japanese Corporate Governance and the Role of Banks

There has been a large body of research on corporate governance in Japan. The research documented many characteristics of the Japanese corporate governance that are different from the stylized shareholders-oriented corporate governance in Anglo-American countries. Rather than occupying a dominant place in the system of corporate governance, shareholders are usually considered to be just another group of stakeholders and as equally (if not less) important as other stakeholders such as workers, creditors, suppliers, customers, and local communities. Many stakeholders are also "insiders" that have long lasting relationships with the corporation. The board of directors that is supposed to monitor the management for shareholders in the textbook case of corporate governance is also dominated by insiders.

Banks were especially important stakeholder in the Japanese system of corporate governance. This is not surprising because most of financing for all size of firms came from the

banking sector.[1] Especially important was the main bank for each firm. The main bank was the largest lender and one of the largest shareholders at the same time, often had representatives on the board, and intervened when the customer falls into serious financial distress.

Although the Japanese corporate governance was seemingly very different from the typical Anglo-Saxon system, it functioned very similarly in some areas. For example, Kaplan (1994) found that the executive turnovers in Japan were associated with the factors that are very similar to those that affect the turnovers in the U.S. including falling stock prices and declining profits. Although Kaplan (1984) a difference in the relative importance of stock prices and profits between Japan and the U.S. (stock prices are relatively more important for the U.S. executive turnovers), the two countries are similar in that the turnovers are not sensitive to growth of companies (either in employment or assets).

The research published in the 1990s also confirmed the importance of banks in Japan. Kaplan and Minton (1994) showed that banks seem to play an important role in forcing out the incumbent managers of poorly performing firms. They found that the firms that experience falling stock prices or declining profits are more likely to get directors dispatched from their banks and that the firms that receive directors from their banks are more likely to experience top executive turnovers. Hoshi, Kashyap, and Scharfstein (1990) looked at the performance of companies that have close ties to their banks after the onset of financial distresses. They find those companies with close bank ties tend to recover their investments and sales more quickly than the other firms. Kang and Shivdasani (1995) showed these two types of findings are related. Similar to Kaplan (1994) and Kaplan and Minton (1994), they find falling stock prices or losses lead to non-routine CEO turnovers. The link between poor performance and executive turnover is especially strong for companies with close ties to their banks and often the new CEOs come from outside the companies (including the banks). Finally, at the firms with close bank ties, the performances improve following the CEO turnovers.

3. Financial Deregulation and Changes in Bank-Firm Relations

The research briefly described above shows that the system of corporate governance in Japan was apparently different from that in Anglo-American countries but it worked effectively

[1] See Hoshi and Kashyap (2001, Chapter 4).

in monitoring management, replacing management of poorly performing companies, and improving the performance of troubled companies through restructuring. The situation in Japan, especially the importance of banks in corporate governance, started to change during the 1980s. Before the 1980s, the Japanese financial system was heavily regulated by the government. There were various regulatory barriers to limit fund raising in financial markets both in Japan and outside Japan. Thus, even large companies had to rely on bank financing. Financial deregulation that started in the late 1970s gradually opened the door for large firms to issue securities both domestically and internationally. Many large companies responded by reducing their dependence on bank loans gradually. For the banks, this meant the loss of large customers that they had long relationships.

While the banks started to lose their large customers to capital markets, the deposits, the most important source of their funds, kept coming in, as the deregulation that expanded options for the savers progressed much more slowly compared with the deregulation on corporate financing. The banks increased their lending to new firms that they did not have much relationship. Many of them were small and medium size firms and banks often required them to put up collateral. Land was especially an attractive collateral during the land price boom in the late 1980s.

When the speculative boom of the 1980s collapsed in the early 1990s, many new bank customers had trouble paying back the loans. The values of the collaterals also declined at the same time. Banks often felt the responsibility as the main banks to intervene in the troubled customers, but, as Hoshi and Kashyap (2001, Chapter 5) describe through cases, banks started to find turning around those new customers more difficult than helping their old customers with long-term relationships.

Hoshi and Kashyap (2001, Table 5.2) compare the corporate restructuring cases in 1977 and 1992. They identify 40 cases of ongoing corporate restructuring in 1977 and 34 cases in 1992. Of those, 17 cases (43%) in 1977 were led by the main bank while 7 cases (21%) in 1992 were bank-led. Of those restructurings led by the main banks, 12 cases (71%) in 1977 saw the operating profits turn positive for two consecutive years within 5 years while the number of such successful restructuring dropped to 3 (43%) in 1992.

Hirota and Miyajima (2001) also reached a similar conclusion by comparing bank interventions in troubled firms in 1975-1982 period and in 1990-1996 period. During 1975-1982

period, they find 104 cases of financial distress, of which 42 cases (40.4%) experienced intervention by the main banks. During 1990=1996 period, there were 99 cases of financial distress, of which only 15 cases (15.2%) saw main banks' interventions. Thus, the frequency of bank-led restructurings fell over time. To examine the effectiveness of the bank interventions, Hirota and Miyajima (2001) looked at the growth rates of 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 of a bank intervention was 1.08%, while the growth rate 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 fell from 2.36% in 1975-1982 to 0.65% in 1990-1996. Although the differences for profit rates and sales growth are not statistically significant at conventional significance levels, the result suggests that the bank-led restructuring became less frequent and less effective after the financial deregulation in the 1980s.

Similar findings are made by Hoshi, Koibuchi, and Schaede (2011), which used a preliminary version of the dataset used in this paper. Going through newspaper articles for odd years between 1981 and 2007, they identified 1,756 incidences (firm-year combination) of corporate restructuring. They find the proportion of financially distressed firms that are being restructured declined in the 1990s. They also find the tendency for the firms with closer ties to the main banks to be more likely to be restructured in financial distress that existed in the 1980s disappeared in the 1990s. Finally, the tendency for firms under restructuring to be more aggressive in reducing assets and debts than other distressed firms was observed in the 1980s but it also disappeared in the 1990s.

Main banks' involvement in CEO turnovers seem to have changed in the 1990s as well. For example, Miyajima, Ogawa, and Saito (2016) find that the firms with high dependence on the main banks (both in their borrowings and as a source of directors) used to be more likely to experience non-routine CEO turnovers when their performance deteriorated but such tendency disappeared after 1990. Izumi and Kwon (2015) suggest that corporate performance after CEO turnovers also changed in the 2000s. By examining CEO turnovers in Japan and the U.S. from 2000 to 2007, they find that the ROA (return on assets) and sales growth improve for the U.S. firms after non-routine CEO turnovers while such performance improvement after the turnovers is absent for the Japanese firms. They also find that the U.S. firms significantly reduce the

number of employees and shrink assets after the turnovers, the Japanese firms do not during this sample period.

4. Dataset for Corporate Restructurings in Japan: 1980-2010

This paper uses an updated and complete version of the dataset of corporate restructuring episodes of listed firms in Japan constructed by Satoshi Koibuchi, Ulrike Schaede and the author. To identify major episodes of corporate restructuring, we started by searching four major newspapers published by Nihon Keizai Shimbun-sha (*Nihon Keizai Shimbun, Nihon Sangyô Shimbun, Nihon Kin'yû Shimbun,* and *Nihon Ryûtsû Shimbun*) for the word *saiken* (再建), which is a standard word to refer to (corporate) restructuring. We used Nikkei Telecon 21, which is an online service offered by Nihon Keizai Shimbun-sha. *Saiken* is used to describe some things other than corporate restructuring, including fiscal consolidation (財政再建) and reconstruction (of structures or body parts), but it is rare that corporate restructuring case is described in a newspaper article without using the word *saiken* anywhere. Thus, our procedure would find many articles that have nothing to do with corporate restructuring, but almost all the major corporate restructuring episodes will be identified through this procedure as long as at least one of the four newspapers reports those. Next, we look through all the articles with research assistants to pick up only those articles that indeed discuss corporate restructuring cases of companies listed on a stock exchange in Japan. We restrict the sample to the cases for listed firms so that we can link the dataset with financial data.

The next step is to code the information contained in the articles on major corporate restructurings. We try to extract the information on many aspects of corporate restructuring including if the main bank or other company led the restructuring process, if a bankruptcy court was used, if it included financial restructuring (such as debt forgiveness and interest concession), if the management changed, if a restructuring plan was announced, if it included restructuring of business lines, if it included layoffs and other labor adjustments, if the salaries and/or bonuses were cut, and so on.

It is possible that the newspapers failed to report all major restructuring cases. It is also possible that the newspapers reported on restructuring cases without using the word *saiken* anywhere, though we expect this unlikely. To mitigate the potential omissions of major restructuring cases, we looked through two more publications to see if we can find additional

cases of corporate restructuring. One is *Kigyo Keiretsu Sôran* published by Toyo Keizai Shimpo-sha. The main purpose of the publication is to publish information relevant to understand corporate groupings of large firms. The publication reports bank borrowings from each of major financial institutions, shareholdings by the top ten or twenty shareholders, and the information on directors dispatched from other companies or the government for each listed firm. What we use here is a brief description of the current condition of the company that typically mentions that the company is under restructuring if it is. Since the publication of *Kigyo Keiretsu Sôran* was stopped after the 2000 issue, we rely on *Kaisha Shikihô* also published by Tokyo Keizai Shimpo-sha, which also includes a brief description of the current condition of each company, for more recent data.[2]

Checking against *Kigyo Keiretsu Sôran* and *Kaisha Shikihô* was also useful in filling gaps in the spells of corporate restructuring. In several cases, we found that Nikkei newspapers report *saiken* of a company in one year, have no articles on its *saiken* in the following year, and mention *saiken* of the company in the third year. In some of these cases, we were able to tell that the company was under restructuring for all the three years by looking at *Kigyo Keiretsu Sôran* or *Kaisha Shikihô*.

Even after checking with *Kigyo Keiretsu Sôran* and *Kaisha Shikihô*, we are left with many cases of *saiken* episodes for the same company separated by a year or two in between. For each company that our dataset shows that it experienced multiple episodes of corporate restructurings during the 30 years, we checked the articles about the company in Nikkei newspapers for the relevant years and the company's website to see if those are really distinct episodes or just two (or more) parts of a single episode.

Following these steps, we have identified 950 distinct episodes of corporate restructuring for 517 firms. Of those, 929 cases were identified by going through the newspaper articles that contain the word *saiken*. The other 21 cases were added using information from *Kigyo Keiretsu Sôran* and *Kaisha Shikihô*. Many of the 517 companies experienced more than one episodes of corporate restructuring between 1980 and 2010. Table 1 shows the distribution of the companies by the number of restructuring episodes. More than 10% of the 517 companies experienced

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

three or more spells of corporate restructuring in the 30 years. Five of them experienced five distinct episodes.

Many restructuring events last only for a couple of years, but some continues longer. Table 2 shows the distribution of episodes by duration. We should note that the episodes are truncated in the sense that some companies disappeared (through liquidation, by being acquired by other companies, by being delisted, and so on) while they were under restructuring or they were being restructured as of 2010, the last year of our sample. The table shows that the majority of restructurings end in two years, but about 10% of the cases continue more than 9 years. For two cases, the restructuring continued for 20 years or more.

For statistical analysis below, we combined the dataset for corporate restructuring episodes with Nikkei NEEDS Financial Data for all the companies that were listed in at least one stock exchange in Japan at least sometime in the 30 years from 1980 to 2010. In total, the dataset contains 3,772 companies. As reported above, 517 of those experienced at least one episodes of corporate restructuring.

5. Statistical Analysis: Changes in Corporate Restructuring during the Thirty Years

This section uses the dataset for corporate restructuring in Japan from 1980 to 2010 to understand the changes in Japanese corporate governance during this the thirty years. We are especially interested in how the role of banks changed in dealing with financially troubled firms.

Figure 1 shows the proportion of distressed firms that are under corporate restructuring. Here a distressed firm is defined to be one that has experienced negative operating income for two consecutive years. The figure shows a declining trend especially after the 1990s. The pattern is consistent with the declining frequency of corporate restructuring documented by Hoshi and Kashyap (2001) and Hirota and Miyajima (2001).

Figure 2 shows a similar graph using a different definition of distressed firms. Here the firms with interest coverage ratio below one for two consecutive years are considered to be experiencing distress. Again, a declining trend over time is observed, but it is not as clear as in Figure 1, because there is a pronounced dip around 1991. This probably reflects a sharp increase in the interest rate around 1990 that has temporarily depressed the interest coverage ratio of many firms including those that are fundamentally healthy.

Although the frequency of distress firms being restructured seemed to have declined over time, the magnitude of adjustments made by those firms that are restructured does not seem to have changed. Figure 3 compares how distressed firms adjusted their workforce, capital (depreciable assets), and bank loans depending on whether they are under restructuring or not. Each panel shows the average growth rates over 4 sub-periods. The first sub-period is 1981 to 1991, which includes the period of "bubble economy" in the late 1980s. The second sub-period is 1992 to 1997 and covers the first half of the so-called "lost decade" up to the start of the banking crisis in 1997-1998. The third sub-period is 1998 to 2003, which is the period of the banking crisis and its aftermath. The large amount of non-performing loans remained in the banking sector until 2003, when Japan's banking regulators finally forced major banks to deal with those loans. Several observers including Hamada, Kashyap and Weinstein (2011) suggest the possibility that the Japanese economy changed drastically before and after the banking crisis. Thus, we split the lost decade into two parts. The last period is 2003 to 2010, which includes both Japan's recovery from its banking crisis and the global financial crisis of 2007-2009.

Looking at Figure 3, we find that distressed firms under restructuring reduce the number of workers more, shrink the depreciable assets more, and reduce rather than increase the bank loans compared with distressed firms that are not under restructuring. The difference between the firms under restructuring and those not under restructuring did not get smaller and if anything increased over time. These suggest that although the frequency may have declined, restructuring of workforce, production capacity and liability indeed continues to happen when a corporation actually goes through restructuring.

5.1. Determinants of Corporate Restructuring

To better understand the change in the frequency of corporate restructuring over time, we first estimate a linear probability model of determinants of corporate restructuring events. The potential determinants that are considered here are (1) bank debt to total assets ratio, (2) whether the firm is in distress or not (0-1 variable that takes 1 if the operating incomes for the previous two years were negative and 0 otherwise), (3) size of the firm measured by natural logarithm of total assets, (4) dependence on the main bank, 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 which assumed the coefficients constant over time. The specification (1) just includes three 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 go through restructuring. The specification (2) shows that a firm under restructuring is highly likely to continue being restructured in the following year. The result for the other variables does not change qualitatively although the the coefficient estimates become smaller. The result does not change when the dummy variables to control for year, industry, and year-industry effects. The only coefficient estimate that changes significantly is the one on the bank debt to total asset ratio. It is now bigger although it is not as big as in the simplest specification (1). The specification (5) includes the main bank dependence, which is defined to be the proportion of bank loans coming from the firm's largest lender. The variable was taken from another project of mine that covered fewer industries and the sample period ended in 2002. Thus, the number of observations for this specification drops to a little more than a half of that in other specifications. The estimated coefficients on the bank debt to total assets ratio and the firm size variable are larger, but the overall result does not change qualitatively. The main bank dependence influences the probability that the firm is restructured positively, suggesting the importance of main banks in corporate restructuring at least when we look at the entire period.

The specifications reported in Table 4 consider the possibility that the coefficients on some variables may have changed over time. The specification (6) allows the coefficient on the distress dummy to take different values for the four sub-periods that were introduced above (1981-1991, 1992-1997, 1998-2003, and 2004-2010). The result suggests 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. The specification (7) and (8) allow the coefficient on the bank debt to total assets to change also over time. For the bank debt to total assets, its impact on the probability of being restructured does not obviously change over time. The specification (9) and (10) allows the coefficient on the main bank dependence to change over time. In this case, the decline of the coefficient on the distressed dummy becomes more pronounced, although we need to note that the observations used in (9)

and (10) do not match those in (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 not statistically significant anymore.

Overall, the results in Tables 3 and 4 show that distressed firms that rely on banks (especially the main banks) are more likely to be under restructuring but the relation changed over time. The distress (defined as two consecutive years of negative operating income) is not associated with corporate restructuring after 1992 than it was before. High main bank dependence does not imply high probability of being restructured anymore after 1992. These are consistent with the idea of declining corporate restructuring activities, especially those led by banks.

5.2. Adjustments under Restructuring

The regression analysis reported in Tables 5 and 6 examines the size of adjustments in labor, capital, and bank borrowing that distressed firms in restructuring make and if those changed over time. The first two columns in Table 5 examines the adjustment of workforce. Both distressed firms and firms under restructuring tend to reduce employment growth compared with the other firms. The employment growth for distressed firms is slower by about 4% and that for firms under restructuring is slower by about 3%. The second column, which includes the interaction term between distress and restructuring, shows that distressed firms under restructuring reduce the growth rate of employment further by 6.5% compared with distressed firms that are not under restructuring.

The third and fourth columns of Table 5 report similar results for the growth of depreciable assets. Distressed firms tend to reduce the growth rate of depreciable assets by about 5% to 5.5% and firms under restructuring reduce the growth rate by about 4%. Distressed firms under restructuring slow down the capital growth by another 6.8% compared with the distressed firms that are not under restructuring.

The last two columns show the estimation results of a similar model for bank loan growth. Both distress and restructuring events tend to reduce the growth rate of bank borrowings and distressed firms under restructuring slow down the bank loan growth more than distressed firms that are not under restructuring. The coefficient estimates, however, are often not significant in this case. This may be because reduction of bank liabilities is important for turning around the companies in some cases but providing new loans is more important in other cases.

The regressions in Table 6 allow the effects of restructuring on the labor growth, capital growth, and bank loan growth to change over time by interacting *saiken* dummy with 4 sub-periods. The first two columns look at employment growth. The coefficient estimate on *saiken* dummy is slightly larger in the 1998-2003 period and smaller in 2004-2010 period. This may suggest that the labor adjustment under corporate restructuring was temporarily intensified during several years immediately after the banking crisis. For capital growth, the coefficient on *saiken* gets a little smaller for 1992-1997 period (third and fourth columns).

For the bank loan growth regressions (last two columns), the coefficient on *saiken* dummy shows an interesting pattern. For 1981-1991 and 2004-2010, the coefficient is negative, suggesting the bank loan growth tended to slow down under restructuring. For 1992-1997 and 1998-2003, the coefficient is positive but small and statistically insignificant. This may suggest that the lost decade saw the financial restructuring to reduce indebtedness of distressed firms became tentative.

5.3. Corporate Performance after Restructuring

An important question is whether corporate restructuring succeeds in turning around troubled corporations and improves their performance. Tables 7 through 9 examine the impacts of corporate restructuring on ensuing performance of the corporations.

First, Table 7 estimates the regressions that are basically the same as those in Tables 5 and 6. The dependent variables are the corporate performance measured for the following three years: growth rate of total sales, average ratio of ordinary profits to total assets, and average ratio of net profits to total assets. These performance variables are regressed on the three-year lagged dependent variables (which shows the performance from two years ago to this year), the dummy variable for distress (two consecutive years of negative operating income), and the dummy variable that shows if the firm is under restructuring this year. In the second specification for each performance variable, the coefficient on the restructuring dummy is allowed to change over time.

In all the specifications in Table 7, the coefficient on the restructuring dummy is estimated to be negative, suggesting the restructuring lowers the corporate performance. The causality here may be reverse in that the firms that are likely to show poor performance tend to be restructured. The distressed firms in general, to which a similar story of reverse causality seems to apply, do not perform poorly on average, as the positive coefficient estimates (at least

for the sales growth and ordinary profit rate regressions) suggest. This is confirmed in Table 8, which uses only those observations with the distress dummy equal to 1 (i.e., negative operating income for two consecutive years). The coefficient estimates on the restructuring dummy is still negative, although some estimates are not statistically different from zero.

Another reason why we find negative impacts on the restructuring dummy may be because restructuring does not immediately improve the performance in many cases. Indeed, a restructuring case often lasts for a few years or more in the dataset. Thus, in the specifications in Table 9, a dummy variable, *saikenend*, that takes 1 for the final year of a restructuring spell and 0 otherwise is added. 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.

6. Conclusions

Using a dataset on major corporate restructuring cases in Japan from 1980 to 2010, this paper examined how the corporate restructuring in Japan, which often involved banks, changed over time. The data shows that restructuring of distressed firms became less frequent after the 1990s. High dependence on bank loans in general increases the probability that a corporation is restructured when it gets into trouble even after the 1990s, the dependence on the main bank became a less important determinant of restructuring events.

When a restructuring happens, it involves real adjustments in labor, capital, and bank borrowings. There is some evidence that the intensity of adjustments in corporate restructuring also changed over time. This is clearest for the adjustment of bank borrowings. In the 1981-1991 period, the firms under restructuring brought down the amount of bank borrowings more than other distressed firms. The adjustment of bank loans, however, slowed down and did not happen on average during the 1992-2003 period. The adjustment seems to have reappeared after 2004. Reduced frequency and intensity of restructuring of distressed firms is consistent with what other research found in the past.

We have not found a conclusive result for the relation between restructuring and subsequent performance of the restructured firms. There is an evidence that suggests completion

of restructuring improves some performance variables, but more examinations that pay attention to exact timing of the events seem necessary.

References

Aoki, Masahiko, Gregory Jackson, and Hideaki Miyajima (2007). *Corporate Governance in Japan: Institutional Change and Organizational Diversity.* Oxford, UK; Oxford University Press.

Caballero, Ricardo, Takeo Hoshi, and Anil K Kashyap (2008). "Zombie Lending and Depressed Restructuring in Japan," *American Economic Review*, 98 (5), 1943-1977.

Hirota, Shin-ichi, and Hideaki Miyajima (2001). "Mein Banku Kainyu-gata Gabanansu ha Henka Shitaka? (Has Main Bank-led Governance Changed?)" *Gendai Fainansu*, 10, 35-61.

Hoshi, Takeo, and Anil K Kashyap (1999). "The Japanese Banking Crisis: Where did it come from and how will it end?" *NBER Macroeconomics Annual 1999*, pp.129-201.

Hoshi, Takeo and Anil K Kashyap (2001). *Corporate Finance and Governance in Japan: The Road to the Future*. Cambridge, MA; MIT Press.

Hoshi, Takeo, Anil Kashyap, and David Scharfstein (1990). "The Role of Banks in Reducing the Costs of Financial Distress in Japan," *Journal of Financial Economics*, 27, 67-88.

Hoshi, Takeo, Satoshi Koibuchi, and Ulrike Schaede (2011). "Corporate Restructuring in Japan during the Lost Decade" in Koichi Hamada, Anil Kashyap, and David Weinstein (Eds.) Japan's Bubble, Deflation and Long-term Stagnation, Cambridge, MA: MIT Press, pp.343-373.

Izumi, Atsuko, and Hyeog Ug Kwon (2015). "Shacho Kotai to Kigyo Pafomansu: Nichi-Bei Hikaku Bunseki (Change in Corporate Performance after Forcing Out CEOs: Comparison between the United States and Japan)," RIETI Discussion Paper 15-J-032.

Kang, Jun-Koo, and Anil Shivdasani (1995). "Firm Performance, Corporate Governance, and Top Executive Turnover in Japan," *Journal of Financial Economics*, 38, 29-58.

Kaplan, Steven N. (1994). "Top Executive Rewards and Firm Performance: A Comparison of Japan and the United States," *Journal of Political Economy*, 102, 510-546.

Kaplan, Steven N., and Bernadette A. Minton (1994). "Appointments of Outsiders to Japanese Boards: Determinants and Implications for Managers," *Journal of Financial Economics*, 36, 225-258.

Miyajima, Hideaki, Ryo Ogawa, and Takuji Saito (2016). "Changes in Corporate Governance and President Turnover: The Evidence from Japan"

Peek, Joe, and Eric S. Rosengren (2005). "Unnatural Selection: Perverse Incentives and the Misallocation of Credit in Japan," *American Economic Review*, 95, 1144-1166.

Table 1. Number of firms with at least one episode of corporate restructuring

# of distinct episodes	1	2	3	4	5
# of companies	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. 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 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. 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 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. 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 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 (0.0110)	0.2725 (0.0110)	0.1227 (0.0073)	0.1100 (0.0072)	0.1285 (0.0068)	0.1200 (0.0068)
Negative Operating Income for 2 Years	-0.0388 (0.0031)	-0.0383 (0.0032)	-0.0507 (0.0039)	-0.0489 (0.0040)	-0.0165 (0.0054)	-0.0169 (0.0055)
Under Restructuring: 1981-1991	-0.0285 (0.0029)	-0.0269 (0.0030)	-0.0510 (0.0069)	-0.0440 (0.0071)	-0.0152 (0.0084)	-0.0159 (0.0088)
Under Restructuring: 1992-1997	-0.0299 (0.0044)	-0.0283 (0.0043)	-0.0211 (0.0073)	-0.0161 (0.0074)	0.0189 (0.0120)	0.0188 (0.0120)
Under Restructuring: 1998-2003	-0.0424 (0.0045)	-0.0403 (0.0046)	-0.0331 (0.0054)	-0.0311 (0.0056)	0.0017 (0.0085)	0.0016 (0.0088)
Under Restructuring: 2004-2010	-0.0103 (0.0056)	-0.0094 (0.0057)	-0.0377 (0.0088)	-0.0398 (0.0090)	-0.0439 (0.0119)	-0.0401 (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 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. *Saikenend* is a dummy variable that takes 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 (negative operating income for two consecutive years) that are under restructuring

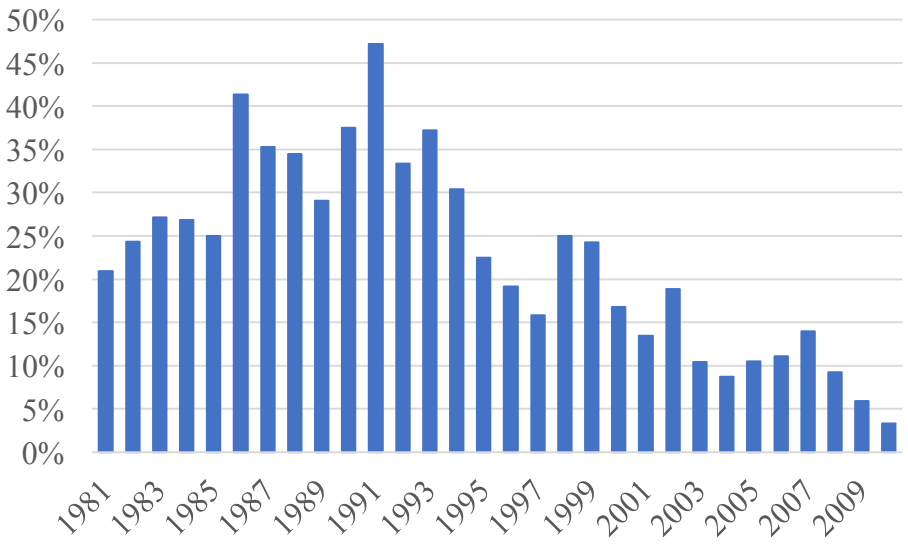

Figure 2. Proportion of distressed firms (interest coverage ratio less than one for two consecutive years) that are under restructuring

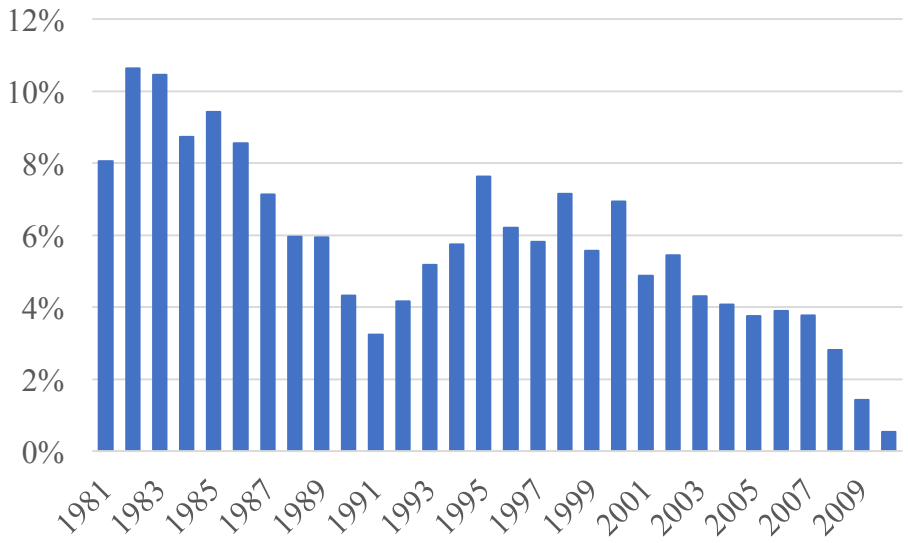

Figure 3. Adjustments of labor, capital, bank loans of distressed companies (two consecutive years of negative operating profits)