

Determinants of the choice of bankruptcy procedure in Japan[☆]

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Abstract

This paper investigates close bank–firm relations (keiretsu) among troubled Japanese firms by examining the type of bankruptcy. In Japan, creditors control the fate of the bankrupt firm, which may be costly if managers destroy firm value to avoid bankruptcy or, alternatively, if creditors liquidate too often. Recently, researchers have argued that keiretsu banks prop up weak firms that should fail. We find that bankrupt firms affiliated with keiretsu banks are neither subject to excessive liquidation by overly powerful banks nor slower to be liquidated. Keiretsu banks liquidate via the courts often, perhaps to avoid political repercussions and organized crime.

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1. Introduction

The laws governing Chapter 11 bankruptcies in the USA stipulate that management remain in control of the firm's operations while a plan of reorganization is formulated. The system is designed to give management time to restructure operations and restore solvency while protecting the firm from a run on assets by creditors. Ideally, Chapter 11 takes advantage of management's superior knowledge and mitigates bargaining problems and conflicts of interest (Brown, 1989; Giammarino, 1989; Berkovitch and Israel, 1991;

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Gertner and Scharfstein, 1991; Mooradian, 1994; White, 1994; John and Vasudevan, 1995; Berkovitch et al., 1998).¹

Most other countries take an alternative approach to bankruptcy and compel management to give up control of the firm. Until very recently, managers in Japan always lost their jobs and shareholders rarely received any payment in financial restructurings. Major creditors, more than managers, control the bankrupt firm in Japan, and can block court filings for other bankruptcy procedures.²

The potential costs of a pro-creditor system, such as Japan's, can be substantial. If managers and shareholders have no stake in the bankrupt firm, they may seek to delay bankruptcy out of desperation and destroy firm value in the process (Mooradian, 1994; White, 1994). Or, self-interested creditors may force liquidation even when the firm is more valuable as a going concern.

This paper investigates the role of close bank–firm relations in the context of a pro-creditor bankruptcy system. Japanese banks that belong to a keiretsu frequently have ties to distressed firms that could lead to more socially optimal liquidation decisions.³ However, recent studies suggest a dark side to the keiretsu relationship. Firms may have fewer alternative sources of funding (Kang and Stultz, 2000), allowing an abuse of power that forces liquidation to the detriment of other claimholders. Or, as Morck and Nakamura (1999) suggest, keiretsu banks may prop up weak firms in their group to protect their own interests, failing to liquidate a firm that ought to shut down. So the question that arises is: Do close bank–firm relationships make it more or less likely that firms will be liquidated rather than reorganized?

Our empirical investigation suggests that firms affiliated with keiretsu banks are more likely to be liquidated than reorganized, holding constant size. Nonetheless, we find no evidence that the greater likelihood of liquidation among keiretsu firms in this sample owes to excessive liquidation. Keiretsu banks do not appear to push healthy firms into premature liquidation to further their interests at the expense of other financial claimholders, as our findings are unaffected by measures of how much debt keiretsu firms have relative to tangible assets. And, while a higher fraction of keiretsu firms are liquidated, there is a similar average profit level for keiretsu and non-keiretsu firms that are liquidated.

Among the firms that are reorganized, the keiretsu firms have a higher average level of profitability (versus the average level of profitability at which non-keiretsu firms are reorganized), suggesting that the benefits of keiretsu banks are present for firms that are reorganized. Certainly, there is no evidence that keiretsu banks are more likely to prop up poor performers.

¹ Haugen and Senbet (1978) argue that creditors of a distressed firm have an incentive to ensure that liquidations are done optimally, so that it does not matter whether a healthy firm liquidates a portion of its business or a distressed firm in the same line of business is liquidated. Maksimovic and Phillips (1998) find empirical evidence to support this view in their study of US plant closings.

² The United States is unique in the extent to which bankruptcy law favors management. Comparative overviews highlight how the bankruptcy systems of major industrialized countries are more creditor-friendly and conducive to liquidation (Franks and Torous, 1993; White, 1994; Rajan and Zingales, 1995). Japanese bankruptcy laws were revised in 2000 to be more pro-debtor, although still less than in the USA.

³ See (Prowse, 1990; Hoshi et al., 1990; Aoki and Patrick, 1994) on the nature of the keiretsu relationship.

This paper also examines the role that keiretsu bank affiliation plays in the choice between court-supervised liquidation and privately managed liquidation. We find few significant differences between keiretsu banks and other banks in this regard. We surmise that size (the number of employees about to lose their jobs) and the impact of criminals in the Osaka area motivate keiretsu banks to use the courts in liquidation as frequently as other banks. There is a tendency for more profitable keiretsu firms to be liquidated via the courts, again failing to support the idea of keiretsu banks as substitutes for the courts in the event of liquidation. In addition, we consider whether the courts help solve problems related to the complexity of the keiretsu relationship or if they offer a safe haven to distressed firms' managers, but we find no evidence of either scenario.

The remainder of the paper proceeds as follows. Section 1 presents a brief overview of Japanese bankruptcy. Section 2 motivates the variables used to explain the choice of bankruptcy procedure, lays out hypotheses regarding the impact of keiretsu affiliation, and explains the data sources. Section 3 presents the results of the empirical estimations, and Section 4 concludes.

2. Overview of Japanese bankruptcy procedures

This paper studies a sample of Japanese firms that went bankrupt between June 1988 and May 1997. By "bankrupt," we mean that either there was a court-approved filing for one of Japan's formal bankruptcy procedures, accompanied by a stay on debt payment and collection, or there was a public notice of "suspension of bank transactions," triggered by default on a promissory note. Formal bankruptcy procedures involve either reorganization or liquidation of the firm; the suspension of bank transactions only results in liquidation.

The sample does not include firms that were reorganized without the help of the courts. These private reorganizations are excluded from our study because our data source does not include them. We expect that such firms would be larger and more likely to belong to a keiretsu group than the firms examined here. Sheard (1994) presents data that indicate the larger firms are less likely to use the courts and are more likely to be keiretsu firms.⁴ The lack of data on this type of financial distress means that our results are likely to be affected by sample selection bias. That is, we may observe few keiretsu reorganizations in our sample because keiretsu firms are less likely to reorganize via the court system. A binomial test for the difference in the frequency of keiretsu firms between Sheard's sample of out of court reorganizations (8 of 15) and our sample of court-supervised reorganizations (19 of 47) indicates a significant difference between the two. This suggests that larger keiretsu firms are unlikely to appear in our sample and our interpretation of the results must take this bias into account.

Next, we discuss the procedures for liquidating or reorganizing in Japan.

⁴ In his appendix covering 1960–1993, Sheard (1994) presents summaries of 42 distressed firms. He does not explicitly state that these are a census of large failures, but does imply that they comprise all *listed* firms in distress. Of the 42 cases, 37 were out of court reorganizations. These include 16 cases from our sample's time period, of which 9 belonged to a keiretsu and only one (a keiretsu firm) filed with the courts.

2.1. Reorganization

During our sample period, the principal bankruptcy proceedings in Japan aimed at reorganization of the firm were *Kaisha Kosei* (Corporate Reorganization) and *Wagi* (Composition).⁵ Our sample is not large enough to examine the two types of filings separately (most are *Wagi* cases), but both reorganization procedures are substantially more pro-creditor than the U.S. Chapter 11 procedure. Each, however, is more pro-debtor than the liquidation procedures discussed next.

A major contrast to the U.S. Chapter 11 is that the bankruptcy court does extensive screening before allowing a firm to file. The judge examines documents and interviews the debtor and major creditors to ensure that the firm has a reasonable prospect of continuation. If he believes it does not, the judge can reject the case and the firm would likely be forced into liquidation. Evidence from Takagi (1997) suggests that the number of rejected filers is not trivial. Once a case has begun, the judge may dismiss it later if subsequent financial reports suggest liquidation is optimal.

In some cases, the court replaces management with an appointed trustee. When the existing management does maintain control, there is no superpriority financing and secured creditors may freely foreclose on their security (Eisenberg and Tagashira, 1994). Thus, if the manager can keep his job, he may find that his firm has shrunk and lacks the financing to expand.

A third feature of Japanese reorganization procedures is the high cost of filing. The distressed firm must pay the estimated costs of the reorganization procedure in advance, and ante up more funds as the case proceeds, if necessary.

Not surprisingly, the effects of this system are less time spent in bankruptcy and lower direct costs, compared to U.S. reorganizations (see (Eisenberg and Tagashira, 1994) for Japan; (Lopucki, 1983; Weiss, 1990; Franks and Torous, 1993; Hotchkiss, 1995) for U.S. Chapter 11 cases). Recovery rates found in the two countries by these researchers are similar.

2.2. Liquidation

The main court-supervised liquidation procedure in Japan is *Hasan* (Bankruptcy), which may be filed for by either the firm or a creditor.⁶ As in the reorganization proceedings, an advance payment of costs is required and there is extensive pre-application screening by

⁵ For a more detailed description of the legal bankruptcy procedures, see the volumes of Tozai Tosan Jitsumu Kenkyukai (1988, 1989, 1990). Good English language sources are (Matsuo, 1985a, 1985b) for *Kaisha Kosei* and *Hasan*, (Eisenberg and Tagashira, 1994) for *Wagi*. A third reorganization procedure, known as *Kaisha Seiri* (Corporate Arrangement), is much less commonly used, and is not present in our data set. In April 2000 a new form of reorganization, *Minji Saisei Ho*, was introduced and essentially replaced *Wagi*.

⁶ There exists another liquidation procedure, known as *Tokubetsu Seisan* (Special Liquidation), but it is used very rarely due to cumbersome procedural requirements. When it is used, it is mainly by large companies for the purposes of writing down losses of subsidiaries (Tozai Tosan Jitsumu Kenkyukai, 1989, pp. 266–268).

the judge (the filer must demonstrate insolvency or bank suspension of payments).⁷ *Hasan* parallels Chapter 7 in the USA, in that an appointed trustee shuts down the firm, sells the assets, and turns the proceeds over to the creditors. Secured creditors are free to claim their security.

Recovery rates for these firms in Japan are higher than their counterparts in the USA: nearly 10 percent in Japan (Ito, 1991), compared to 4 percent for U.S. Chapter 7 filers (White, 1983). The difference may reflect the fact that U.S. firms with any chance of reorganizing will use Chapter 11.

An alternative to a *Hasan* filing, which is virtually unheard of in the USA for all but the very smallest firms, is a privately managed liquidation. These are common even among large bankruptcies in Japan and are easily identified by examining Japanese credit rating agency documents. The rating agencies categorize firms as having a “Suspension of Bank Transactions” if there is a notice at the local clearing-house that the firm’s promissory notes have not been honored twice in a six-month period. These defaults trigger a mandatory sanction by member banks, which must suspend all current account transactions and loans with the firm for a period of two years (Ramseyer, 1991; Haley, 1991). The decision of the bank forces the firm to cease operations, and the resolution of creditor claims occurs outside of the bankruptcy court (Takagi, 1984, 1988).

The suspension of bank transactions magnifies the considerable power that creditors have in the Japanese bankruptcy system. When more than one promissory note comes due that the firm’s bank account cannot cover, the bank can force liquidation of the firm by refusing to honor the notes. In the next section, we consider the theories and variables that affect whether a firm reorganizes or liquidates and, if the latter, which type of liquidation procedure will be chosen.

3. Explanatory variables, hypotheses, and data sources

Legal bankruptcy procedures may ameliorate bargaining inefficiencies among multiple creditors because of provisions such as the automatic stay of creditor claims or voting rules (Brown, 1989; Berkovitch and Israel, 1991; Gertner and Scharfstein, 1991; Mooradian, 1994). But reliance on the bankruptcy court will increase the direct costs of legal and accounting fees, and the indirect costs of procedural delays and errors in firm and asset valuation (Wruck, 1990; Gilson et al., 2000; Helwege, 1999). Given the ease with which privately managed bankruptcy occurs in Japan, we expect court-supervised procedures to be used more often when bargaining concerns are sufficiently grave to offset these additional costs.

Another instance when the court system is more likely to be used is when the system allows the most powerful creditors to gain at the expense of other creditors (i.e., if it is too pro-creditor). As keiretsu firms ought to have had more success at internalizing the agency costs of capital structure than other firms, the bargaining concerns are less likely to push

⁷ The temporary suspension of payments because of a legal dispute is not viewed as a cause of bankruptcy, nor is an insolvency that the debtor can prove is temporary (Matsuo, 1985a).

them to use the courts and they are less likely to be inclined to take advantage of other firms with ties to the distressed corporation.

The choice of bankruptcy procedure may also be related to incentives for maximizing total firm proceeds in liquidation. Bhattacharya and Singh (1999) show that creditors and shareholders have different incentives in the choice of auction procedure when liquidating the firm, and if one or the other party has the power to pick the auction procedure to its own advantage, the outcome will not be efficient. Courts can help to mitigate this potential source of inefficiency, but keiretsu relationships may substitute for courts in this instance.

Below, we describe several variables that independently influence bankruptcy choice, and identify the measures we use to represent them in our analysis.

3.1. Explanatory variables

Firm operating performance (operating profits/assets). The greater the going concern value, the greater the merits of a reorganization procedure. Operating profits are a superior measure of going concern value than ordinary profits as they are independent of interest expenses and uninfluenced by the firm's capital structure.

Size (yen value of liabilities). A relatively large firm can take advantage of the economies of scale in the legal expenses and accounting fees associated with bankruptcy court procedures in Japan. The fixed costs are greatest for the reorganization procedures. At the same time, the collective action problems that may hinder private workouts should increase with size, as larger firms usually have a more diverse group of creditors and a variety of assets to be bargained over (Helwege, 1999).

Debt/liabilities. A higher fraction of liabilities that are debt suggests lower costs to restructuring the firms obligations. Debt (i.e., loans, bonds, and discounted bills) is often considered easier to restructure than other liabilities, such as trade credit, because the lenders are professional investors and have expertise in workouts; moreover, trade creditors are often a dispersed creditor class (Welch, 1997; Chatterjee et al., 1996; Franks and Torous, 1989). This measure is likely to be highly correlated with the degree to which outstanding liabilities are bank debt, which may be related to the use of out-of-court restructuring (Gilson et al., 1990; James, 1996; Asquith et al., 1994; Helwege, 1999).

Asset tangibility (tangible assets/assets, tangible assets/debt). Tangible assets are thought to reduce the costs of liquidation to creditors for two reasons: first, they are easy to use as secured debt and therefore reduce uncertainty as to who owns which assets; and second, they are typically assets that can be readily sold and redeployed by another firm (Scott, 1977; Williamson, 1988; Harris and Raviv, 1990, 1991). Because real estate developers are very likely to secure their debt with the properties they are developing, and these are counted in inventory, tangible assets include inventory for real estate firms as well as plant, property, and equipment.

Employees. Job tenure is longer in Japan, and job separation is likely to be costlier (Aoki, 1988). We include the natural log of the number of employees to control for the effect that the size of the work force may have on the choice of bankruptcy procedure.

Osaka headquarters. A class of professionals in Japan that are associated with organized crime may interfere with private liquidations by disrupting creditors' meetings or impeding

the disposition of collateral (Ikeda, 1987; Takagi, 1988). They are predominantly located in Osaka, and in response, Osaka-area judges are more likely to expedite bankruptcy filings as an escape from organized crime. Thus, firms headquartered in the Osaka region should more often file for *Hasan*.

Recession indicator. An interesting issue is whether the state of the economy has an effect on the type of bankruptcy observed in our sample. Japan in the 1990s is remarkably similar to the USA during the Great Depression, in that few years are ever typical of a robust recovery year.⁸ The recession years in Japan include February 1991–October 1993 and March 1997–April 1999. As our sample ends in May 1997, we have few observations from the second recession.

Another view of this situation is to consider the state of the stock market: the Tokyo Stock Exchange reports that the Topix index peaked at nearly 2900 in late 1989, fell almost without interruption to less than 1000 through late 1992 and has since never risen to even half its peak value. Indeed, the lowest value since 1989 (808) was recorded in November 2002. We have only a few firms before the peak, so most of the sample failed during a bear market.

We should also consider a time trend, in the event that attitudes toward distress change as time passes. For example, the failure of Sogo in 2000 is unique in that it is the first major bankruptcy filing of a firm that “should” have gotten support from its bank. Many interpret it as an indication of the changing relationship between banks and their borrowers.⁹

3.2. Keiretsu bank affiliation and related hypotheses

A number of major banks in Japan have managerial ties to and equity stakes in the firms to which they lend. The banks with these ties are usually part of those corporate groupings in Japan known as keiretsu. A body of empirical evidence suggests that the existence of a strong relationship with a keiretsu bank may reduce the agency costs of debt and the costs of financial distress (Prowse, 1990; Hwang and Kim, 1998; Hoshi et al., 1990).

More specifically, some scholars have proposed that the keiretsu bank in Japan screens financially distressed firms for suitability for reorganization (Suzuki and Wright, 1985; Aoki, 1994; Sheard, 1994). The keiretsu banks usually have more information about their clients through their board connections, shareholdings, and bank accounts. The screening role is consistent with theoretical models of the informed bank and the financially distressed firm (e.g., Rajan, 1992). Equity has an interest in delaying liquidation in order to preserve the call option on the assets of the firms; in contrast, debtors would rather seize assets or liquidate the firm as soon as the firm is in default. Investors, such as keiretsu banks, that hold both equity and debt have both of these contradictory impulses and as such are

⁸ The Japanese have begun to refer to the 1990s as “the lost ten years.”

⁹ We should keep in mind that Sogo filed for bankruptcy under the new reorganization law (*Minji Saisei Ho*), which is more favorable to debtors than *Kaisha Kosei* or *Wagi* (the reorganization procedures available to firms who defaulted during our sample’s time period). It is possible that the managers of Sogo were more eager to file for bankruptcy than they would have been had their troubles occurred under the old bankruptcy regime, and that their filing reflects the pro-debtor code more than changes in attitudes about the main bank system.

more inclined to balance the two desires (Admati and Pfleiderer, 1995; Berlin et al., 1996; Bhattacharya and Singh, 1999).¹⁰

Jensen (1989) has suggested that the Japanese keiretsu system—like the LBO association in the United States—“privatizes” bankruptcy by making the workout process relatively efficient and inexpensive. Moreover, Jensen argues that courts are inefficient and should be avoided to maximize value. As our sample excludes private reorganizations, this suggests the following.

Hypothesis 1. *Bankrupt firms affiliated with a keiretsu bank are more likely to be liquidated than other bankrupt firms, conditional upon observing a bankruptcy court proceeding.*

Hypothesis 1 is also consistent with a very different view of the keiretsu bank: the idea that these banks provide insurance against financial distress. If keiretsu banks largely prop up troubled group firms, regardless of their long-term prospects (Morck and Nakamura, 1999), then we would also find support for Hypothesis 1. This is because the keiretsu either injects capital or reduces interest payments in a poorly run firm well in advance of what researchers would describe as financial distress. Under this scenario, a researcher who observed a keiretsu firm in a bankruptcy sample only observes it because the firm is so far gone that even an inefficient keiretsu group would give up on the firm and liquidate it. When these firms finally appear in a data set of bankruptcies, they are likely to be liquidations of nearly worthless firms. Thus, we can examine the net worth of bankrupt keiretsu firms to determine if these are firms in both financial and economic distress.

We may find instead that a completely opposite scenario is revealed: that keiretsu banks are efficient and have an interest in making timely decisions about the financially distressed firm. After all, with both a debt and equity stake in the firm, they should have substantial incentives to maximize firm value. If so, when keiretsu firms go bankrupt (regardless of the type of bankruptcy observed in this sample), they have higher net worth than other firms. This suggests the following hypothesis.

Hypothesis 2. *Bankrupt firms affiliated with a keiretsu bank should have higher measures of net worth than other bankrupt firms.*

Both Hypotheses 1 and 2 are consistent with yet another pessimistic view of the keiretsu bank—the view that the keiretsu bank is a senior creditor with unusually strong bargaining power. As noted by Wruck (1990), creditors may find it in their interest to liquidate the firm with ongoing concern value in excess of liquidation value, given uncertainty

¹⁰ We do not have data on the extent to which the main bank owns shares in our sample, and we assume that if the main bank is part of a keiretsu that there are cross-holdings. We do know that for 20 of the firms in our sample the keiretsu bank is the largest shareholder, but we do not know anything about other shareholders in the firm. Sheard (1989) states that the main bank is typically a principal shareholder in the firm in Japan—in 1980, 72 percent of the firms listed on the TSE had a main bank that was among the top five shareholders of the firm. We expect, however, that troubles in the banking sector in the late 1980s and throughout the 1990s would provide an incentive for banks to reduce their shareholdings to shore up their capital positions, particularly with the full implementation of the Basel Accord requirements in 1993.

over the outcome of the firm's operations. Keiretsu banks may exercise their power to block reorganization and force liquidation to the detriment of other financial claimholders. Weinstein and Yafeh (1998) and Pinkowitz and Williamson (2001) argue that keiretsu banks take advantage of their borrowers.

To help distinguish between competing views of the keiretsu bank, we create an interaction variable that is the product of the keiretsu bank affiliation variable and the secured debt variable. The benefits from liquidation should accrue disproportionately to the senior creditor when the debt is secured. These benefits may dominate the countervailing incentives caused by the keiretsu bank's holding of equity. If keiretsu banks are more likely to force liquidation to advance their own interests as senior creditors at the expense of other financial claimholders, we should expect the following hypothesis to be true.

Hypothesis 3. *The likelihood of liquidation versus reorganization is more sensitive to a measure of secured debt when the bankrupt firm is affiliated with a keiretsu bank.*

So far we have considered the effect of keiretsu bank affiliation on the decision to reorganize or to liquidate, keeping in mind the lower expected probability of observing a keiretsu reorganization in our sample. However, keiretsu bank affiliation may be associated with the privatization of bankruptcy within the array of liquidation outcomes as well. Bhattacharya and Singh (1999) argue that liquidations may be suboptimal if creditors choose an auction procedure without regard to the payoffs to equityholders. While the courts could mitigate this problem by forcing the appropriate method of liquidation, the assistance of the courts may not be required in the case of keiretsu banks, which should act in the interest of both creditors and shareholders. Private liquidations will also be more attractive to a keiretsu bank if the bank has an advantage in ascertaining the value of the bankrupt firm or has some expertise in selling certain assets (Aghion et al., 1992; Hart, 1995). Sheard (1994) has proposed that keiretsu banks are capable of managing private versions of Chapter 7 as well as Chapter 11. This in turn suggests the following testable hypothesis.

Hypothesis 4. *Bankrupt firms affiliated with a keiretsu bank that are liquidated are more likely to be liquidated privately (i.e., less likely to file for *Hasan*) than other bankrupt firms that are liquidated.*

3.3. Data sources

Information from the financial statements prior to bankruptcy of twenty firms is reported in the final part of the annual *Standard Financial Ratios of Japan's Medium and Small-sized Companies* (in Japanese), published by Tokyo Shoko Research (TSR) (Tokyo Shoko, 1988–1992). *Standard Financial Ratios* also reports the type of bankruptcy as well as a short verbal summary of each bankruptcy. These annual publications cover a 12-month period beginning in June and ending in May. In general, TSR chooses bankruptcies that are among the largest reported bankruptcies, despite the name of the report (which implies that TSR only considers medium and small-sized firm bankruptcies). The annuals for 1989–1997 were used to construct the sample, resulting in an initial sample of 180 bankruptcies,

which occurred between June 1988 and May 1997 (20 each year for nine 12-month periods). Two firms were dropped from the sample because of incomplete data and six because they were *Tokubetsu Seisan* filings (see footnote 6). The final sample size is 172 firms, which are (unsurprisingly) evenly distributed across the years. Further information about the banking relationships of sample firms, and their reasons for bankruptcy was obtained from TSR directly.

Standard Financial Ratios also reports industry averages alongside the financial ratios of each bankrupt company. To create industry-adjusted variables we subtract the industry average from our firm's value for that variable. We identify bank affiliation from a list obtained from TSR of each company's transaction banks prior to bankruptcy. As these lists of transaction banks are sorted by the order of loans outstanding to the firm and/or shares held, we identify a firm as having an affiliation with a keiretsu bank if the keiretsu bank is first on this list (i.e., it is the main bank).¹¹

Because TSR chooses twenty bankrupt firms to include on its list each year, we must consider whether this sample constitutes a random sample of distressed firms. A major issue is the size of the firms and whether there are sample biases based on size. We compare the size of our firms with four other lists of bankrupt firms published by TSR. Each of these lists offers too little data to do a complete study, but they do provide information on size, type of bankruptcy, and the firm's main bank. The most detailed list includes all firms that went bankrupt in 1991 that had at least 700 million yen in liabilities. These are the 1000 largest bankruptcies that year (actually, 1003 because of ties) and they represent about 10% of the bankruptcies in 1991.¹² Our other three sources of comparison are annual lists for the years 1988–90 of all bankruptcies involving at least 3 billion yen in liabilities. Note that the number of bankruptcies rose dramatically in 1991, causing these lists to swell from about 75 a year in 1988–90 to 332 in 1991. In the years after 1991, bankruptcies continue to occur at a high level and more often involve large firms.

Comparing the firms in our sample that went bankrupt in 1991 to those on the longer 1991 list, we find that our sample of 18 firms includes rather large companies. Only 2 of the 18 do not have the minimum level of 3 billion yen, and our smallest bankruptcy involved liabilities of 1.2 billion yen. The fraction of our sample that was among the largest bankruptcies in 1988–90 is somewhat smaller, with 29 out of our 55 firms making the list of the very largest bankruptcies. The smallest bankruptcy in our sample in any year is a firm that owed 352 million yen when it defaulted in 1990, and only six other firms in the sample had liabilities of less than one billion yen.

Another concern is whether large firms are more likely to belong to a keiretsu or to use a certain type of bankruptcy. We can analyze this potential bias in some detail with the 1991 list of all bankruptcies over 700 million yen (the 1000 largest bankruptcies). Table 1 shows summary statistics on the types of bankruptcy for our entire sample, for the 18 firms in our sample that went bankrupt in 1991, for all bankruptcies in 1991 that had liabilities of at least 5 billion yen, and for all the firms on the list of the top 1000 bankruptcies in 1991

¹¹ In this paper, a bank is defined as a keiretsu bank if it is a city or trust bank of one of the big six financial keiretsu: Daiichi Kangyo Bank, Fuji Bank, Mitsubishi Bank, Sakura Bank, Sanwa Bank, and Sumitomo Bank. Other empirical studies occasionally add the Industrial Bank of Japan and Tokai Bank as keiretsu banks.

¹² According to the Teikoku Database, 10,723 firms filed for bankruptcy in Japan in 1991.

Table 1
 Statistics concerning the randomness of the sample

	Our sample (172 firms)	1991 bankruptcies in our sample (18 firms)	Bankrupt firms in 1991 owing at least 5 b. yen (215 firms)	“1000 Largest Bankruptcies” in 1991 (972 firms)
Reorganized (%)	27.3	33.33	21.4	9.0
Liquidated (%)	72.7	66.67	78.6	91.0
Liquidated firms that are <i>Hasan</i> filings (%)	52.8	50	22.5	17.4
Range of liabilities (yen)	352 m.–434 b.	1.2 b.–208 b.	5 b.–430 b.	700 m.–430 b.
Median liabilities (yen)	8.6 b.	9.5 b.	10.0 b.	1.5 b.
Keiretsu (%)	43.0	33.33	37.21	27.37

(excluding the ones that filed an unusual type of bankruptcy procedure). The table indicates that the largest firms in 1991 (those with more than 5 billion in liabilities) are more likely to reorganize than liquidate and, if they liquidate, are more likely to use *Hasan*. Our 1991 bankruptcies have attributes that align them more closely with the largest bankruptcies.

We appear to have a rather large fraction of *Hasan* filings, which are difficult to explain merely by size. Statistics from the longer list of 1991 bankruptcies (not shown) do not indicate that keiretsu firms use *Hasan* more or less than other firms. Moreover, our sample does not suggest an increase in *Hasan* filings over time. It appears that our sample simply includes a disproportionate number of *Hasan* filings as a fraction of the firms that are liquidated (perhaps because TSR found it easier to collect data on firms that liquidated in court). We make some corrections to our estimates to deal with this sampling problem and find that the results are robust to the selection of the sample.

4. Results

4.1. Full sample characteristics

Table 2 presents information on the size, profitability, and other characteristics of sample firms, taken from their last financial statements prior to bankruptcy, and segmented by keiretsu affiliation. Seventy-four of the 172 failed firms, or 43 percent of the sample, has an affiliation with a keiretsu bank. Clearly, keiretsu bank affiliation does not guarantee a firm’s escape from bankruptcy when it is financially distressed.

A slightly higher fraction of the keiretsu firms (74.3 percent) are liquidated (this compares to 71.4 percent of the non-keiretsu firms). Although the difference in frequencies is not statistically significant, the sign of the difference is consistent with the first hypothesis that bankrupt firms affiliated with keiretsu banks are more likely to be liquidated because we do not observe their most frequent type of bankruptcy, the out-of-court restructuring.

Keiretsu liquidations are more likely to result in a *Hasan* filing than other liquidations (62 percent vs. 46 percent), although this may merely reflect oversampling of keiretsu firms that file for *Hasan*.

Table 2
Selected firm characteristics: Both full sample and stratified by keiretsu bank affiliation

	All firms (172 firms)	Keiretsu bank affiliated firms (74 firms)	Other firms (98 firms)
Reorganized	47/172 = 27.3%	19/74 = 25.7%	28/98 = 28.6%
Liquidated	125/172 = 72.7%	55/74 = 74.3%	70/98 = 71.4%
Liquidated firms that are <i>Hasan</i> filings	66/125 = 52.8%	34/55 = 61.8%*	32/70 = 45.7%
Liabilities (bb yen)	25.7 (8.6)	35.3* (11.1)*	18.4 (6.4)
Net worth/assets	0.028 (0.025)	0.035 (0.027)	0.023 (0.025)
Net worth/assets (relative to industry)	-0.138 (-0.115)	-0.124 (-0.102)*	-0.148 (-0.124)
Firms with net worth < 0	23/172 = 13.4%	8/74 = 10.8%	15/98 = 15.3%
Operating profits/assets	0.021 (0.024)	0.024 (0.023)	0.018 (0.025)
Operating profits/assets (relative to industry)	-0.020 (-0.015)	-0.016 (-0.016)	-0.023 (-0.011)
Operating profits/interest expense	0.55 (0.78)	0.85* (0.84)*	0.32 (0.67)
Firms with operating profits/interest expense < 1	126/172 = 73.3%	49/74 = 66.2%*	77/98 = 78.6%
Debt/liabilities	0.69 (0.69)	0.69 (0.72)	0.69 (0.67)
Debt/liabilities (relative to industry)	0.17 (0.18)	0.18 (0.19)	0.16 (0.18)
Tangible assets/debt	0.36 (0.23)	0.37 (0.27)	0.36 (0.21)
Employees	168 (74)	185 (82)	155 (65)

Source. Standard financial ratios of Japan's medium and small-sized companies, Annual, 1989–1992.

Note. Medians are in parentheses. Debt includes bonds, short and long-term loans, and bills discounted. The industry averages are calculated from industry-specific financial ratios reported by Tokyo Shoko each year. The figures for keiretsu firms are marked * if significantly different from the same figures for the other firms at a 10 percent confidence level (*t*-test for means, Wilcoxon rank-sum test for medians, binomial test for frequencies).

The mean (median) size of the sample in terms of book value of liabilities is 25.7 (8.6) billion yen, or about \$230 (\$72) million, which is smaller than typically found in U.S. studies. Prior to 1991, few large Japanese firms went bankrupt (or reorganized privately). Since then both the number and the average size of trouble firms in Japan have increased, and our sample reflects that trend. Firms with a keiretsu bank affiliation are about twice as large as other firms.

Firms report relatively little capital in their financial statements prior to failure. The net worth to asset ratio averages 2.8 percent, nearly 14 percent below the corresponding industry average. Bankrupt firms with keiretsu bank affiliation tend to have higher net worth ratios than other firms in the sample, and significantly so when compared to industry medians. A lower fraction of firms affiliated with keiretsu banks report negative net worth prior

to failure, but the difference is not significant. This is weak evidence that keiretsu banks are efficient and therefore less likely to delay bankruptcy and dissipate firm value in the process.

The profitability and interest coverage statistics are also indicative of a difference between keiretsu and non-keiretsu firms, although most measures are not significantly different across the two samples. When operating profits are scaled by interest expense, the differences between subsamples are sharper. Independent firms have significantly lower coverage ratios prior to bankruptcy than the keiretsu bank affiliated firms. More than three-quarters of these firms report operating profits less than interest expenses (i.e., a coverage ratio below one) versus 66 percent of the keiretsu firms. This also suggests that keiretsu banks are efficient and avoid delays in filing for bankruptcy.

The last four rows of Table 2 report additional statistics for variables to be used in the logistic regressions of bankruptcy choice. None of these variables are significantly different across the keiretsu and non-keiretsu samples.

4.2. Sample characteristics by type of business failure

In Table 3, the characteristics of firms that are liquidated (125 firms) are compared with those that are reorganized in court (47 firms). We also include statistics on keiretsu and non-keiretsu firms for each type of bankruptcy.

Overall, liquidated firms tend to be much smaller than reorganized firms. Liquidated firms have liabilities that are typically three to four times less than those of the firms that do court-supervised reorganizations. Liquidated firms also have much less employees.

The firms that are liquidated in this sample do not exhibit markedly worse operating performance than the firms that reorganize. To the extent there is evidence of liquidated firms being the worst of the bankruptcies, it is only apparent in the keiretsu bank affiliated subsample, and even then the differences are not significant. However, of the firms that reorganize via the courts there are some statistical differences between keiretsu firms and other firms. The keiretsu firms are less likely to have negative industry-adjusted operating profits or to have interest coverage less than one.

The means and medians of the asset tangibility (secured debt) measure are higher for liquidated than reorganized firms, but the difference is only statistically significant among the subsample of firms that are not affiliated with keiretsu banks. This result is inconsistent with the view that keiretsu banks force liquidation to advance their own interests as senior creditors and the related hypothesis that the likelihood of liquidation should be more sensitive to measures of secured debt for keiretsu bank affiliated firms.

In Table 4, the characteristics of liquidated firms whose liquidation is privately managed (59 firms) are compared with those that end up in bankruptcy court (66 firms). Again, the bivariate relations of firm characteristics to liquidation type are mostly as expected. Privately managed liquidations are smaller on average than *Hasan* filings, especially measured by employees. Privately managed liquidations also have a slightly higher fraction of liabilities that are debt, and much greater measures of asset tangibility (secured debt) than *Hasan* filings. Finally, private liquidations are much less likely to be of firms headquartered in Osaka than are *Hasan* filings (3 versus 21 percent).

Table 3
Selected firm characteristics stratified by type of business failure and by keiretsu bank affiliation

	Liquidation			Reorganization		
	All	Keiretsu	Non-keiretsu	All	Keiretsu	Non-keiretsu
Number of firms	125	55	70	47	19	28
Liabilities (bb yen)	14.9*	21.0*	10.1	54.3	76.8	39.0
	(5.9)*	(8.6)*	(4.3)	(23.0)	(37.0)*	(16.2)
Operating profits/assets	0.021	0.023	0.020	0.019	0.025	0.014
	(0.028)	(0.024)	(0.030)	(0.019)	(0.021)	(0.016)
Operating profits/assets (industry-adjusted)	-0.018	-0.016	-0.020	-0.025	-0.019	-0.029
	(-0.011)*	(-0.015)	(-0.009)	(-0.024)	(-0.018)	(-0.026)
Firms with ind.-adj. operating profits/assets < 0	92/125 = 74%	42/55 = 76%	50/70 = 71%	37/47 = 79%	13/19 = 68%*	24/28 = 86%
Firms with operating profits/interest expense < 1	91/125 = 73%	38/55 = 69%	53/70 = 76%	35/47 = 74%	11/19 = 58%*	24/28 = 86%
Firms with net worth < 0	20/125 = 16%	7/55 = 13%	13/70 = 19%	3/47 = 6%	1/19 = 5%	2/28 = 7%
Debt/liabilities	0.684	0.695	0.676	0.695	0.670	0.713
	(0.699)	(0.741)	(0.652)	(0.686)	(0.686)	(0.687)
Tangible assets/debt	0.380	0.362	0.395	0.321	0.377	0.283
	(0.212)	(0.227)	(0.211)	(0.268)	(0.277)	(0.212)
Employees	81*	200*	66	400	433	378
	(54)*	(63)*	(48)	(240)	(220)	(242)

Note. Medians are in parentheses. An asterisk next to the characteristics for liquidated firms in the "All" column indicates a significant difference for these firms vs. the corresponding firms in reorganization (at the 0.10 level, by the Wilcoxon rank-sum test for medians, *t*-test for means, binominal test for frequencies). An asterisk in the keiretsu column indicates a significant difference for these firms vs. the corresponding non-keiretsu firms (at the 0.10 level, by the Wilcoxon rank-sum test for medians, *t*-test for means, binomial test for frequencies).

Although some of the variables are not significantly different between the keiretsu and non-keiretsu subsamples, several of the results in Table 4 indicate that keiretsu firms that are liquidated out of court are worse than their non-keiretsu counterparts, while the keiretsu firms that are liquidated in court are somewhat bigger and healthier than their non-keiretsu counterparts.

Consistent with this view are the significance tests in Table 4 between keiretsu firms that use *Hasan* and those that are liquidated privately. The former tend to be healthier, if health is measured by industry-adjusted operating profits. The median of this variable for privately liquidated keiretsu firms is more than twice as negative as the comparable figure for keiretsu firms that file for *Hasan*. Likewise, the fraction of firms for which this measure of profitability is negative is sharply higher among the keiretsu firms that are privately liquidated than those that use the courts. In contrast, the non-keiretsu firms that are liquidated privately have higher operating profits, whether in absolute or industry-adjusted terms, and a greater fraction of firms with interest coverage over one.

Table 4
Selected firm characteristics stratified by type of business failure: Private liquidation versus *Hasan*

	Private liquidation			<i>Hasan</i>		
	All	Keiretsu	Non-keiretsu	All	Keiretsu	Non-keiretsu
Number of firms	59	21	38	66	34	32
Liabilities (bb yen)	13.1 (4.2)	17.9 (5.7)	10.5 (4.1)	16.5 (7.6)	22.9* (9.2)*	9.7 (5.1)
Operating profits/assets	0.025 (0.030)	0.018 (0.014)*	0.029 ^a (0.033) ^a	0.018 (0.024)	0.026 (0.028)	0.010 (0.022)
Operating profits/assets (ind.-adj.)	-0.015 (-0.011)	-0.022 (-0.022)* ^a	-0.011 ^a (-0.006) ^a	-0.022 (-0.012)	-0.012* (-0.010)	-0.032 (-0.021)
Firms with operating profits/assets (ind.-adj.) < 0	41/59 = 69%	18/21 = 86%* ^a	23/38 = 61% ^a	51/66 = 77%	24/34 = 71%* ^a	27/32 = 84%
Firms with operating profits/interest expense < 1	40/59 = 68%	15/21 = 71%	25/38 = 66% ^a	51/66 = 77%	23/34 = 68%* ^a	28/32 = 88%
Firms with net worth < 0	10/59 = 17%	3/21 = 14%	7/38 = 18%	10/66 = 15%	4/34 = 12%	6/32 = 19%
Liabilities/paid in capital	346.2 (103.2)	230.2 (115.2)	410.3 (93.9)	262.6 (92.2)	214.4 (132.5)	313.7 (69.5)
Debt/liabilities	0.684 (0.719)	0.696 (0.756)	0.677 (0.675)	0.685 (0.675)	0.694 (0.718)	0.676 (0.650)
Tangible assets/debt	0.443* (0.359)*	0.439 (0.330)	0.446 (0.412)	0.324 (0.167)	0.314 (0.159)	0.335 (0.191)
Employees	58* (43)*	76 (46)	48 ^a (42) ^a	100 (74)	114 (80)	86 (65)
Percent Osaka firms	2/59 = 3.4%*	0/21 = 0% ^a	2/38 = 5%	14/66 = 21.2%	10/34 = 29%* ^a	4/32 = 13%

Data source. See previous table.

Note. Medians in parentheses. An asterisk next to the characteristics for privately liquidated firms in the "All" column or a superscripted "a" in the keiretsu or non-keiretsu column indicates a significant difference for these firms vs. the corresponding firms that filed for *Hasan* (at the 0.10 level, by the Wilcoxon rank-sum test for medians, *t*-test for means, binominal test for frequencies). An asterisk next to the characteristics for keiretsu firms indicates a significant difference for these firms vs. the corresponding non-keiretsu firms (at the 0.10 level, by the Wilcoxon rank-sum test for medians, *t*-test for means, binomial test for frequencies).

4.3. Logit regression analysis

In order to sort out which variables independently affect the likelihood of different bankruptcy procedures, we estimate multivariate logistic regressions, the results of which are reported in Tables 5 and 6. The dependent variable in the first set of regressions, estimated over the whole sample of 172 firms, equals one if the firm is liquidated, and zero if it ends up in a bankruptcy procedure that aims at the continuation of the firm as a going concern. All estimated specifications include industry indicator variables, whose coefficients are not shown.

Table 5
Logit estimation of liquidation vs. reorganization in bankruptcy court

Independent variables	(1)	(2)	(3)	(4)	(5)
Keiretsu bank affiliation	1.05** (0.53)	1.04** (0.53)	1.29* (0.70)	1.51* (0.80)	2.11** (0.93)
Profitability (firm)	-6.92 (6.92)	-6.66 (6.87)	-6.47 (6.85)	-8.33 (7.68)	-7.43 (7.91)
Profitability (ind.-adj.) × keiretsu bank affiliation				8.68 (14.38)	10.54 (15.22)
Liabilities	-2.16** (1.03)	-2.12** (1.03)	-2.01* (1.05)	-2.02* (1.05)	-2.11** (1.01)
Debt/liabilities	0.32 (1.63)	-0.04 (1.54)	-0.05 (1.54)	0.19 (1.56)	0.66 (1.66)
Tangible assets/assets	1.10 (1.75)				
Tangible assets/debt		0.05 (1.20)	0.44 (1.41)	0.58 (1.44)	0.16 (1.44)
Tangible assets/debt × keiretsu bank affiliation			-0.86 (1.56)	-1.03 (1.59)	-0.86 (1.56)
Employees	-1.47** (0.32)	-1.49* (0.33)	-1.52** (0.31)	-1.54** (0.34)	-1.56** (0.36)
Recession indicator					0.10 (0.67)
Recession indicator × keiretsu bank affiliation					-1.66 (1.08)
Constant	9.13 (2.06)	8.78 (2.06)	8.80 (2.07)	8.94 (2.11)	9.65 (2.34)
Log-likelihood	-61.85	-62.05	-61.90	-61.72	-65.05
P-value for model	0.0001	0.0001	0.0001	0.0001	0.0001
Pseudo R-squared	0.387	0.385	0.386	0.388	0.406

Note. Dependent variable = 1 if firm is liquidated ($n = 125$), and equals 0 if it files for a reorganization under the bankruptcy laws ($n = 47$). Standard errors are in parentheses. An asterisk denotes statistical significance at the 10 percent level, two at the 5 percent level (not included for constant term). Explanatory variables based on accounting data from the financial statement prior to business failure. Keiretsu bank affiliation = 1 if lead transaction bank was identified by Tokyo Shoko Research to be a bank of the six major keiretsu. Profitability is operating profits over assets. The unit of liabilities used in the regression is 100 billion yen. Estimations include industry indicator variables whose coefficients are not shown. Other variables defined in text.

The signs on the control variables are large as expected, although not always significant. Generally, we find that larger firms are less likely to be liquidated, whether measured by liabilities or employees. Size is an important control variable, as most keiretsu firms are larger and reorganizations tend to occur more often among larger firms. Thus, unconditionally, we expect keiretsu firms to reorganize as often, or more often, than other firms in the sample.

The impact of keiretsu bank affiliation on the likelihood of liquidation is highly significant. Confirming Hypothesis 1, it greatly increases the likelihood of the failed firm ending up in liquidation. The logit results concerning keiretsu affiliation are somewhat at odds with those in Table 2, which suggest that keiretsu affiliation has no impact on whether or not a firm is liquidated. The important difference here is that the logits control for size, indicating that given two similar sized firms in the sample, the one that is a keiretsu firm

Table 6
Logit estimation of private liquidation vs. bankruptcy (*Hasan*)

Independent variables	(1)	(2)	(3)	(4)	(5)
Keiretsu bank affiliation	0.28 (0.56)	0.28 (0.55)	0.26 (0.70)	0.63 (0.64)	0.45 (0.68)
Profitability	12.83 (7.72)	12.72 (7.76)	12.76 (7.85)	13.86* (8.04)	15.62* (8.48)
Keiretsu bank affiliation × profitability	−24.21* (12.46)	−23.72* (12.50)	−23.89* (12.79)	−23.67* (12.58)	−26.01* (13.09)
Liabilities	−47.90 (116.50)	−46.44 (114.60)	−47.00 (116.00)	159.00 (222.00)	213.80 (231.00)
Liabilities × keiretsu bank affiliation				−251.40 (227.70)	−302.00 (234.80)
Debt/liabilities	0.20 (1.50)	0.39 (1.39)	0.40 (1.41)	0.21 (1.42)	0.19 (1.45)
Tangible assets/assets	0.33 (1.49)				
Tangible assets/debt		0.76 (0.98)	0.75 (1.11)	0.77 (0.99)	0.67 (1.00)
Tangible assets/debt × keiretsu bank affiliation			0.04 (1.29)		
Employees	−0.88** (0.31)	−0.89** (0.32)	−0.89** (0.32)	−0.94** (0.32)	−0.92** (0.32)
Recession indicator					−0.57 (0.64)
Recession indicator × keiretsu bank affiliation					0.89 (1.04)
Osaka firm dummy	−2.57** (0.93)	−2.59** (0.92)	−2.58** (0.94)	−2.88** (1.01)	−2.89** (1.03)
Constant	3.30 (1.51)	2.79 (1.63)	2.79 (1.63)	2.82 (1.65)	2.94 (1.67)
Log-likelihood	−70.70	−71.84	−71.84	−74.40	−76.30
P-value for model	0.0036	0.0030	0.0047	0.0032	0.0057
Pseudo R-squared	0.204	0.208	0.208	0.215	0.221

Note. Standard errors are in parentheses. The dependent variable = 1 if the firm is liquidated privately ($n = 59$) or 0 if liquidated in a court-supervised liquidation (*Hasan*, $n = 66$). An asterisk denotes statistical significance at the 10 percent level, two at the 5 percent level (not included for constant term). Explanatory variables based on accounting data from the financial statement prior to business failure. Keiretsu bank affiliation = 1 if lead transaction bank was identified by Tokyo Shoko Research to be a bank of the six major keiretsu. Profitability is operating profits over assets. The unit of liabilities used in the regression is 100 billion yen. Estimations include industry indicator variables whose coefficients are not shown.

is more likely to be liquidated. In particular, as the keiretsu firms are themselves quite large, it means that of two large firms, the keiretsu firm is less likely to be reorganized. By itself, the significance of the keiretsu variable might be consistent with the view of keiretsu banks providing financial distress insurance to firms and permitting firms to dissipate value before they go bankrupt. But given that the keiretsu variable is only significant when one controls for size, and our earlier result that bankrupt firms affiliated with a keiretsu bank have higher measures of net worth, there is little sense that these liquidations are occurring only after a failed attempt to prop up the companies.

The cumulative evidence is more supportive of the view that keiretsu banks are playing a role as informed creditors who are motivated to liquidate optimally or who actually force liquidation early. Also, we expect keiretsu firms to do more out-of-court reorganizations (which are not included in this sample), which would result in a smaller group of keiretsu-affiliated firms that enter bankruptcy in order to reorganize, again suggesting optimal liquidation. However, these results among larger firms may occur because keiretsu banks exercise their power as senior creditors to force the liquidation of viable firms to the detriment of other financial claimholders. Although our sample includes some of the largest bankruptcies, few of the firms are listed firms and may rank rather low in the pecking order among keiretsu members. Keiretsu ties may be weaker among these liquidations (compared to the firms that undergo out of court workouts), making them more likely targets for rent-seeking behavior by these strong banks. In an effort to distinguish between competing views of the keiretsu bank, the measures of asset tangibility and operating profits are interacted with the keiretsu bank indicator variable.

If the keiretsu bank is using its influence to block a reorganization filing to benefit its own position as a senior creditor when it is particularly advantageous, we should expect a stronger impact of the proxy measure for secured debt (fixed tangible assets/debt) on the likelihood of liquidation for keiretsu firms. However, the coefficient on the interaction term is not statistically insignificant.

The last column of Table 5 reports estimates from a specification that includes both an indicator variable for firms that go bankrupt in a recession and an interaction term for such firms that also belong to a keiretsu. Neither variable is significant. In specifications that are not shown, we examined several other specifications involving recessions, time trends, and dummy variables for years and interactions of these with the keiretsu indicator. None of these variable's coefficients were significantly different from zero.

Table 6 reports a second set of logistic regressions that explore which variables affect the likelihood of privately managed liquidation versus court-supervised liquidation. The dependent variable, estimated over the sample of 125 firms that liquidated, is a categorical variable for either a private liquidation or a *Hasan* filing. This set of regressions now includes an Osaka firm dummy. Few of the control variables are statistically important. However, firm size (employees) and the Osaka indicator variables are always statistically significant variables.

The negative and insignificant coefficient on the keiretsu affiliation variable is inconsistent with Hypothesis 2, and conflicts with the view that keiretsu bank activity may substitute for bankruptcy procedures in the liquidation of troubled firms (Sheard, 1994). To check whether an unspecified interactive effect of keiretsu affiliation was affecting the results, we ran regressions including interaction terms that are the product of the keiretsu bank indicator and other explanatory variables (profitability, liabilities, tangible assets and a recession indicator). Except for profitability, none of the interaction terms are statistically significant, and none cause the keiretsu variable itself to be statistically significant.

Among keiretsu firms that are liquidated, the more profitable ones are less likely to be liquidated privately. Including this interaction effect tends to make profitability itself significant, implying that the opposite is true for non-keiretsu firms (the more profitable firms are generally more likely to be liquidated privately if they are not keiretsu members). This is a surprising result, because if one thinks of private liquidations as potentially

aiding the preservation of value, then keiretsu firms are more likely to use the private liquidations for the more profitable firms. Thus, this result strongly contradicts the idea in Hypothesis 4 that keiretsu banks are likely to serve as substitutes for the courts in the event of liquidation.

In the last column of Table 6, we include the recession indicator variable as well as an interaction term for keiretsu bank affiliated firms that go bankrupt in a recession. Again, neither variable is significant. Consistent with the view espoused earlier, it appears that the entire time period is dismal throughout.

We indicated earlier that TSR appears to oversample *Hasan* filings relative to private liquidations. Hence, it is possible that our estimates reported in Table 6 are biased because our sample is not drawn randomly from the population. To correct for this problem, we estimate the logit using two other approaches. First, we estimate a weighted logit, where the weights are the sample proportions obtained from the list of the 1000 largest bankruptcies in 1991. A second solution is to drop observations from the group that is overweighted until the proportions are in line with those observed in our longer 1991 list. We use a random number generator to determine which firms will be deleted. The results from these two approaches are very similar to those reported in Table 6. The weighted logit models have the same signs and remain significant (or not) in all cases but one (the keiretsu variable is significantly positive at the 10% level in one of the five models). While the sample is smaller in the second approach, there are few qualitative differences in the results. Occasionally, the interaction of profitability and keiretsu is not significant, but it always has the same sign and a similar magnitude. All the other variables remain unchanged in sign and significance levels. Thus, we are confident that the only important effect of oversampling *Hasan* cases is that the constant term is biased.

4.4. Discussion and examination of the reasons for liquidation

So far, the investigations have shown very little support for Hypothesis 4, which posits that keiretsu banks are more likely to liquidate out of court. We expect that keiretsu banks are less likely to need the assistance of the courts, as they should choose the appropriate method of auctioning off assets and they are likely to be more informed creditors. Yet, we observe no such relationship in the estimations in Table 6. One possible explanation is that managers wish to protect themselves from keiretsu banks and do so by seeking the aid of the courts. Another possibility is that keiretsu firms are more likely to fail because of the failure of another firm in the keiretsu and these complicated relationships are more efficiently sorted out with the help of the courts. In Table 7 we investigate these two explanations.

In Panel A of Table 7, we consider the idea that managers are using the bankruptcy courts to protect themselves from their keiretsu banks. Under this scenario, we would not expect to find that creditors filed the *Hasan* case if the firm had a keiretsu affiliation, but rather that management files for *Hasan*. Hence, we should find fewer creditor-initiated *Hasan* filings among firms with keiretsu bank affiliations. The table reports that creditors

Table 7
Further investigations into reasons for keiretsu-affiliated firms to liquidate via *Hasan*

Panel A		
The frequency of creditor-initiated <i>Hasan</i> among keiretsu and non-keiretsu firms		
Bankrupt firms liquidated via court-supervised procedure (<i>Hasan</i>)	Keiretsu bank affiliation	Other
<i>Hasan</i> initiated by creditors (<i>A</i>)	5	6
<i>Hasan</i> initiated by debtors (<i>B</i>)	29	26
Frequency $\{A/(A + B)\}$	14.7%	18.8%
Z-statistic for test of freq. (keiretsu) = freq. (non-keiretsu)	-0.44 ($p = 0.33$)	—
Panel B		
The use of <i>Hasan</i> by keiretsu and non-keiretsu firms that failed on their own		
Liquidations not due to related firm failure or delinquency (including financial notes)	Keiretsu bank affiliation	Other
<i>Hasan</i> (<i>A</i>)	16	22
Private liquidation (<i>B</i>)	12	17
Frequency $\{A/(A + B)\}$	57.1%	56.4%
Z-statistic for test of freq. (keiretsu) = freq. (non-keiretsu)	0.49 ($p = 0.31$)	—

filed for *Hasan* in nearly 15 percent of the keiretsu cases (versus 19 percent for other firms), which is not statistically significant.¹³

The second possible explanation for why keiretsu-affiliated firms so often use *Hasan* is related to why these firms failed. TSR writes a short summary of each firm's situation and how they got into trouble. Not infrequently, TSR states that a major customer went bankrupt and caused this firm to fail as well. Or, they will note that the firm in our sample lent money to another firm which then defaulted on the loan, causing a cash flow shortage and ultimately a *Hasan* filing. One of the responsibilities of the trustee in *Hasan* is to collect the claims of the bankrupt estate against other parties. Privately managed collection may be particularly difficult when the other parties are in distress or bankrupt, and the keiretsu bank may wish to avoid potential conflicts of interest. Thus it may be that whenever another troubled firm pulls our sample firm into distress, the situation is so complex that even a keiretsu bank would benefit from court assistance in the liquidation. If this is the explanation for the high incidence of *Hasan* filings by keiretsu-affiliated firms, then we should observe that the other firms (who failed on their own) do not require the courts to efficiently liquidate.

To investigate this explanation, we examine the primary reasons for failure among the 125 firms that were liquidated and divide them into firms that failed on their own and firms that failed because of the failure of another firm. The TSR summaries state that 22 of the liquidated firms became distressed because they lent money to another firm and that other

¹³ While it is also possible that secondary creditors filed for *Hasan* to counter the keiretsu banks, there was no mention of dissension among creditors in the rating agency reports for creditor filings.

firm defaulted on the debt. A similar trigger for failure is the practice of accepting bills from related firms, knowing that they are unlikely to pay them back, and then indeed not getting the money back.¹⁴ Several others failed because a subsidiary, customer or supplier failed and the firm in our sample either gave them funds or took on their debts. Only 67 of our 125 liquidations are firms that failed on their own. Because they are less complicated, our hypothesis is that they should not require the assistance of the courts and there should be fewer *Hasan* filings among them.

Panel B of Table 7 reports the number of liquidations broken down by type of liquidation and keiretsu bank affiliation for the 67 firms that failed on their own. We still do not find any support for Hypothesis 4: keiretsu bank affiliation is not significantly related to the method by which a firm is liquidated. Approximately 56 percent of both the keiretsu and non-keiretsu firms in this group were liquidated under the aegis of the court.

Bhattacharya and Singh (1999) argue that the choice of how to liquidate a failed firm is an important decision that, made poorly, can result in a loss to either creditors or shareholders, and that the courts may force adoption of the optimal auction method. While the dual role of keiretsu banks as creditors and shareholders should substitute for the help of the courts, we still find that keiretsu firms more often liquidate via *Hasan*. As Easterbrook (1990) states, “When we see creditors resort to bankruptcy, they are telling us that the legal process is superior to market methods available to them.” As the number of employees and geographic location are the most significant determinants of whether a *Hasan* filing occurs, perhaps the legal process’ superiority is in dealing with criminals and pressures to maintain jobs, and these are issues that keiretsu ties cannot deal with on their own.

5. Conclusions

This paper has examined the choice of bankruptcy procedure in a legal and institutional environment that is considerably different than that faced by firms in the USA. Firms filing for court-supervised reorganization face greater barriers to entrance and obtain fewer protections. Major creditors, more than managers, control the fate of the firm and can block court filings for reorganization. As a result, bankruptcy frequently leads to liquidation, even for larger firms.

On the one hand, Japan is often cited as a country where close bank–firm relationships keep banks relatively well informed about their borrowers, and thus it is possible that keiretsu bank screening may substitute for the lack of Chapter 11-type protections. On the other hand, with the prolonged economic distress and the apparent overstatement of the efficacy of their system in the 1980s, these days Japan is more often cited as an example of a failed economic system, with quite a few fingers pointed at the keiretsu system as symptomatic of cronyism and inefficiency. We do not find much support for either of these extreme views.

¹⁴ In Japan, firms frequently issue financial notes for related firms with liquidity problems to discount at a local bank (Nakamura, 1987). Since the related firm promises to pay the issuer back before maturity of the note, the issuance of financial notes is equivalent to providing risky credit.

The main difference between distressed firms belonging to a keiretsu and other distressed firms is that the former are more likely to be liquidated. We do not find accompanying evidence that keiretsu liquidations occur too late, as net worth is higher for bankrupt keiretsu firms and the liquidations occur among some of the largest firms in the sample (firms that might be expected to reorganize). Average profits are similar for keiretsu and non-keiretsu firms that are liquidated.

Nor do we see much evidence of the view that the higher rate of liquidations occurs because keiretsu banks abuse their power (à la Weinstein and Yafeh (1998) and Pinkowitz and Williamson (2001)). For example, there is no different relationship between our measure of secured assets and liquidation for keiretsu banks and many of the court-supervised liquidations are applied for by the debtor. The keiretsu banks appear to be more willing than other Japanese banks to liquidate larger failed enterprises, suggesting behavior that is close to optimal. And the reorganized keiretsu firms are somewhat more profitable than their non-keiretsu counterparts. Of course, the non-keiretsu banks may be quite inefficient, implying only that keiretsu banks are not the worst banks in Japan.

We do not observe major differences between keiretsu and other banks when choosing how to liquidate. The only significant difference in keiretsu banks' use of courts to liquidate is related to profitability, but that evidence does not support Sheard's (1994) view that keiretsu organizations can better manage liquidations privately. However, keiretsu firms tend to be larger and a larger work-force frequently leads to court-supervised liquidation rather than private liquidation.

Almost all of the firms analyzed in this paper failed near or during Japan's longest post-war recession, but none of the firms in the sample went bankrupt as late as 1998, when several large financial institutions failed. Further, there were a number of mergers among the keiretsu banks after 1998, including mergers between banks of different keiretsu. Researchers such as Yafeh (2002) argue that the recent developments indicate a new role for keiretsu banks. And this role will likely be affected by the weakness of the remaining banks whose financial positions have worsened dramatically. For instance, Kang and Stultz (2000) show that the poor performance of bank-dependent firms in the early 1990s in Japan is linked to the poor performance of Japanese banks. Research using more recent bankruptcy data may shed more light on the role of the keiretsu bank within the Japanese bankruptcy system.

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