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LOANS TO JAPANESE BORROWERS

David C. Smith

Board of Governors of the Federal Reserve System

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**Center for Pacific Basin Monetary and Economic Studies
Economic Research Department
Federal Reserve Bank of San Francisco**

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**Center for Pacific Basin Monetary and Economic Studies
Economic Research Department
Federal Reserve Bank of San Francisco
101 Market Street
San Francisco, CA 94105-1579
Tel: (415) 974-3184
Fax: (415) 974-2168
<http://www.frbsf.org>**

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by

David C. Smith*

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Loans to Japanese Borrowers

Abstract

This paper examines the characteristics of loans to Japanese borrowers using a relatively unexplored, contract-specific data set. We show that loan spreads for Japanese borrowers are substantially lower, on average, than for borrowers with similar characteristics from France, Germany, the United Kingdom, and the United States. Moreover, we find that Japanese banks are willing to offer lower-priced loans to a riskier set of Japanese borrowers than are foreign banks within the same market. Japanese banks also vary their pricing less across borrowers than foreign banks, suggesting that they do not distinguish good risks from bad. Taken together, our pricing results do not support the argument that Japanese banks suffer simply because of poor economic conditions. Instead, the findings suggest that the problems at Japanese banks stem from the behavior of the banks themselves.

Japanese banks and their borrowers have been the focus of numerous empirical studies. For instance, researchers have studied the costs and benefits of relationship banking within the Japanese banking system (Aoki and Patrick, 1994; Hoshi, Kashyap, and Scharfstein, 1990, 1991; Gibson, 1995, 1997; Weinstein and Yafeh, 1998; Kang and Stulz, 2000), the role of Japanese banks in corporate governance (Kang and Shivdasani, 1995, 1997; Morck and Nakamura, 2000; Dinç, 2000; Hoshi and Kashyap, 2001), and the impact of deregulation and the subsequent crisis on the functioning of the financial system (Bayoumi, 1999; Yamori and Murakami, 1999; Hoshi and Kashyap, 1999; Hoshi and Patrick, 2000; Spiegel and Yamori, 2003; Brewer, Genay, Hunter, and Kauffman, 2003). Despite the knowledge gained from these papers, there is scant empirical evidence on the characteristics of loan contracts between Japanese firms and their banks. This paper incorporates relatively unexplored, contract-specific data on bank loans to large borrowers to help fill this gap. Specifically, we examine how the pricing and terms of loans to Japanese borrowers vary as a function of borrower and bank characteristics, and compare loans to Japanese borrowers with loans made to similar non-Japanese companies.

Roughly two decades have past since Japan began deregulating its financial sector. The period since then has been tumultuous for both banks and their borrowers. During the 1980s, large, high-quality firms migrated from banks to capital markets, forcing banks to lend to a wider scope of customers. Much of the new lending went to small firms and to the real estate sector, substantially increasing banks' credit exposure (Hoshi and Kashyap, 1999). Bank earnings declined through the beginning of the period and then fell precipitously after the collapse of the Japanese asset price "bubble" around 1990. Today, Japanese banks continue to be plagued by severe asset-quality problems and low profitability. Non-financial firms have fared no better. Over the last ten years, firms have experienced lower growth, profitability, and productivity than their peers in other developed countries. Average bankruptcy rates are currently at a near all-time high and large, listed firms are declaring bankruptcy at rates that are unprecedented by Japanese standards.

Against this background, an analysis of the lending practices of Japanese banks could yield better insight into why Japan's banks, and its economy in general, have struggled so much over the last decade. Competing views have been put forth to explain the low profitability of Japanese banks. Pundits on one side of the debate believe that banks' low profitability results primarily from poor macroeconomic conditions. They argue that Japan's sluggish economy lacks enough profitable investment opportunities, or that falling prices and near-zero nominal interest rates prevent banks from earning a fair return on their investment. Pundits on the other side of the debate believe that Japanese banks are unprofitable because they are unable, or unwilling, to exploit profitable lending opportunities. They maintain that government participation and interference, regulatory forbearance, and close historical ties between banks and borrowers create an environment where banks "compete" to keep deadbeat borrowers alive to the detriment of healthier borrowers. Arguments on the latter side often imply that it is the dysfunctional banking sector – characterized by low profitability – that impedes economic growth in Japan, not the reverse.

The data collected for this paper can help distinguish between these competing arguments. By relating contract-specific information to characteristics of the borrower and by comparing the characteristics of loans to Japanese borrowers with those to non-Japanese borrowers, we can observe how Japanese banks price and supply loans to their domestic customers. For example, do Japanese banks relate their loan prices to the riskiness of the borrower, or do prices depend on other characteristics? How do loan spreads of Japanese borrowers compare with non-Japanese borrowers? How often are loans rolled over and who benefits from the refinancing? Our sample enables us to answer such questions. More importantly, our sample includes loans to Japanese borrowers from foreign (i.e., non-Japanese) banks, the characteristics of which can be used as benchmarks for studying the causes of low Japanese bank profitability. If Japanese banks are unprofitable because of weak macroeconomic conditions, then foreign bank loans should be similarly unprofitable. However, if the low profits

reflect bank-specific or Japanese-specific factors, then we might expect foreign banks to make more profitable loans.

We obtain our sample of loans from Loanware, an archive of over 120,000 loan deals from around the globe. Loanware is primarily marketed as a source of information for banks that want to participate in loan syndicates. For that reason, most of the loans in the data set are syndicated loans, though bilateral loans and “club” deals are also included. A typical Loanware record contains a wealth of information about each credit agreement, including borrower name and nationality, loan pricing and other contract details, the purpose of the loans, borrower information such as credit ratings, and the identity of the banks arranging, managing, and participating in the loan. The data set includes 874 loans to Japanese borrowers dating back to 1980, though nearly two-thirds of the observations come from the last three years in the sample, 1999-2001.

Though highly detailed in nature, there are several reasons why our data might not properly represent the typical loan to a Japanese business. First, data on loans to large firms are likely to differ from loans made to small and medium-sized firms, which today represent a growing share of the business at Japanese banks. Second, focusing on Loanware data likely overstates – even for large firms – the importance of syndicated lending in Japan, which has grown in popularity but still represents a small fraction of total lending in the country.¹ Third, Japanese loans are underrepresented in Loanware relative to other developed countries. The 874 Japanese loans are a small fraction of the 120,000+ deals available in the database. Fourth, the methods Loanware uses to collect loan information makes it hazardous to draw conclusions based on time series patterns in the data. For instance, the larger quantity and improved accuracy of observations in the latter years of the database likely reflects both improvements in disclosure that have led to better sampling, and changes in the global structure of bank lending. Separating these

two effects could be challenging. Despite these drawbacks, we believe the data provide an important glimpse at the nature of loans to Japanese borrowers. Indeed, a separate goal of this paper is to identify some of the pitfalls in using these types of data.

We show that loan spreads for Japanese borrowers are substantially lower, on average, than for borrowers with similar characteristics from four “benchmark” countries: France, Germany, the United Kingdom (U.K.), and the United States (U.S.). Thus, banks appear to underprice loans to Japanese borrowers. Of more interest, we document a significant difference in the way that Japanese and foreign banks price loans to Japanese borrowers. Japanese lenders charge a median loan spread that is 25 to 50 basis points lower than foreign lenders, even after controlling for a variety of loan and borrower characteristics. In fact, Japanese borrowers from foreign banks are *less risky*, on average, than Japanese borrowers from Japanese banks, but are willing to pay higher loan prices from foreign banks. Moreover, we find that Japanese banks vary their pricing less across borrowers than foreign banks, suggesting that they do not distinguish good risks from bad. Taken together, our pricing results do not support the argument that Japanese banks suffer simply because of poor economic conditions. Instead, the findings suggest that the problems at Japanese banks stem from the behavior of the banks themselves.

We also show that the maturity structure of loans to Japanese borrowers changed significantly in 1998, a year in which Japanese regulators imposed stricter disclosure standards on banks. Starting in that year, the median maturity of loans to Japanese borrowers shortened to 12 months, compared with an average maturity of 72 months for loans originated during the years 1980-1997. No similar decline occurred among borrowers in the benchmark countries. We argue that the change in maturity structure likely reflects the combined effects of an increase in the popularity of loan commitments in Japan and a shift in the perceived risk of Japanese borrowers.

¹ For instance, the 2001 flow of syndicated loans to Japanese borrowers relative to the amount of commercial and industrial loans outstanding at Japanese banks in 2001 was 2.9%. By comparison, the flow of syndicated loans to U.S. borrowers in 2001 was 114.0% of outstanding C&I loans.

The rest of the paper proceeds as follows. Section 2 provides some background information and reviews related literature. Section 3 provides an overview of the Loanware database. Section 4 contains summary comparisons of Japanese borrowers to borrowers from the four other developed nations and then moves on to compare the pricing characteristics of domestic and foreign bank loans to Japanese borrowers. Section 5 uses cross-sectional regressions to further investigate the pricing differences between Japanese and foreign banks. The section also conducts a more detailed examination of the decline in loan maturity observed during the late 1990s. Section 6 concludes.

2. Background and Related Literature

Figure 1 compares the profitability of U.S. and Japanese banks over the period 1989 to 2001 using an adjusted measure of return on assets (AROA). The adjustment takes out fluctuations in profits due to taxes and changes in the value of securities holdings and real estate, and thus provides a measure of “core profitability.”² The figure shows that U.S. banks’ AROA averaged 1.5% over the period, with profits increasing throughout most of the 1990s. Though not shown in the figure, European banks were likewise profitable over the decade of the 1990s.³ By contrast, Japanese banks averaged zero AROA over this period, suffered four years of losses, and experienced no year in which AROA exceeded 0.5%. Although Japanese analysts often tie the poor performance of Japanese banks to the 1990-91 collapse of land and stock following the bursting of the Japanese “bubble,” Figure 1 shows that Japanese banks were unprofitable prior to the price collapse. In fact, Hoshi and Kashyap (2000) show that core profitability began to decline in Japan in the 1950s, and accelerated in the late 1980s as financial deregulation began to take effect.

² Specifically, the numerator of the adjusted return on assets ratio is net interest income + noninterest income – noninterest expenses – additions to loan loss provisions.

³ Banks in France, Germany, and the U.K., had an average AROA of 0.5% in 1990 and 0.8% in 1999 (*OECD Bank Profitability*, 2002).

The extant literature has, to varying degrees, attempted to address the debate over the causes of low profitability at Japanese banks. For example, Koo (2001) argues that the primary cause of poor bank profitability is the corporate debt overhang left by the collapse of the Japanese asset pricing bubble. Sugiura (2002) attributes the problems at banks to a slumping economy, general price deflation, a greater burden of debt repayments, and an inability of small companies to restructure. But Hoshi and Kashyap (1999) find that macroeconomic variables cannot account for the secular decline in core profits that began in the 1950s, and that fluctuations in the Japanese economy explain little of the variation in bank profits over the last 40 years. Instead, Hoshi and Kashyap document a negative relation between bank profitability after deregulation and a bank's reliance on traditional sources of income (such as interest on loans) before deregulation. They also find that banks fare more poorly after deregulation if they relied heavily on customers that could easily shift to bond financing after the onset of deregulation. Overall, Hoshi and Kashyap conclude that Japanese banks have not adapted well to competitive changes spawned by deregulation.

Japanese banks may be slow to adapt because the incentives of bank managers are not properly aligned with profit maximization. Japanese banks often establish close ties with their customers. While these relationships can reduce information asymmetries and lead to more efficient financing, they can also work to bind banks and their customers to protect each other at all costs. The relationships are often solidified through so-called "stable-shareholding" agreements whereby banks, borrowing firms, and their affiliates cross hold equity shares. These arrangements act as explicit barriers to takeovers, making it difficult to oust poor managers at banks and their client firms. Banks and affiliated financial institutions, such as life insurance companies, also formulate "double-gearing" arrangements in which banks supply subordinated loans to the institution in exchange for a capital investment in the bank. Fukao (2003) argues that double-gearing between banks and life insurance companies has contributed to the weakening condition at both types of institutions.

One particular manifestation of the close ties between banks and their customers is the practice of “evergreening” – that is, continually rolling over or refinancing – loans to poorly performing borrowers. There are several reasons why banks may continue to evergreen loans to unprofitable borrowers. First, bank managers may be sensitive to the negative impact that a loan denial would have on the borrower and decide to forego the unpleasant consequences. Second, close borrowers may threaten the bank with retaliation if cut off, either by selling their current equity stake in the bank, or by refusing to provide capital support to the bank in the future.⁴ Third, by refinancing weak borrowers, banks do not have to classify the borrowers as “non-performing,” thereby avoiding the credit costs associated with increased loan loss provisions. Fourth, government authorities might pressure banks to continue lending to unprofitable borrowers to prevent a credit crunch, or because borrowers exert political pressure on authorities.

Peek and Rosengren (2002) study the allocation of credit to a large panel of Japanese firms during the 1990s. They find that main banks are more likely to offer additional loans to borrowers that are deteriorating than to otherwise similar borrowers that are healthy. A similar relation holds for borrowers that are members of the same keiretsu as the bank. Borrowers are not accorded the same benefits from non-bank lenders, or when they are not members of a keiretsu. Peek and Rosengren argue that this behavior is consistent with the evergreening of loans to banks’ closest customers.

Evergreening could put a drag on economic growth if it favors unprofitable borrowers at the expense of healthy borrowers with valuable growth opportunities. Caballero, Hoshi, and Kashyap (2003) argue that evergreening could have a negative impact on economic growth even when financing is not rationed to healthy borrowers. They reason that evergreening keeps alive firms that would normally be killed off by competitive pressures. Such “zombie” firms could drive down the profit potential of healthy firms by offering below-cost prices in product and labor

⁴ Dvorak (2002) uses the relationship between Ashikaga Bank and its local customers to highlight the practice of keeping a borrower financed so that the borrower can, in turn, provide capital for the bank.

markets. In other words, evergreening can prevent creative destruction and promote unfair competition in the real sector.

Overall, the papers discussed above focus on the relation between bank profitability and economic growth in Japan. These papers tend to point to distorted incentives created by close relationships and the practice of evergreening as the culprits for low bank profitability. However, to date, none of the studies directly investigates the practices that propagate the low profitability. The contract-specific information utilized in this paper enables us to conduct just such an investigation. In the next section, we introduce the source of the contract-specific data, Loanware, and discuss the potential drawbacks in sampling from the data set.

3. Overview of Loanware

Loanware is a global database that tracks loan contracts on medium and large-sized borrowers. It is used primarily by banks interested in participating in loan syndicates, or for obtaining detailed information on particular segments of the syndicated loan market. Dealogic, a company owned jointly by Euromoney Publishers and Compusoft Software, maintains the Loanware database. A typical record in Loanware includes the borrower's name, industry, nationality, and a variety of credit ratings; the loan type, amount, maturity, purpose, pricing and fee information, whether or not the loan is secured with collateral, the identity of bank(s) arranging the loan, and the identity of non-arranger banks participating in the loan. Records are created for each "tranche", or part of a loan, and any one loan deal, or "facility" in Loanware parlance, can contain multiple tranches.⁵ The information currently fed into *Loanware* comes from a variety of sources, including government filings, company annual reports, and public news releases, but Dealogic obtains most of the data – particularly for borrowers outside the U.S – directly from the banks arranging the loan deals. These banks compete for positioning in "league tables" and therefore have a strong incentive to document as many deals as possible. For loans

from the 1980s and early 1990s, Dealogic relies on information contained in archived stories from *Euromoney* and *Euroweek*. For that reason, the pre-1990s data should be treated with extra caution. Loanware contains some traditional bilateral and “club” loan observations, but syndicated loans clearly dominate the database.

Table 1 reports the distribution across years of the 874 loans to Japanese borrowers on Loanware through 2001. The table also reports similar distributions for borrowers from France, Germany, the U.K., and the U.S., and for the entire Loanware universe. In subsequent tables, we use the combination of observations from the four countries – France, Germany, U.K., and U.S. – to create a benchmark for comparison with Japanese borrowers.

U.S. borrowers dominate the Loanware universe with 68,134 loans, accounting for over half of all the observations. U.K. borrowers are also well represented with 8,367 loans, comprising about 7% of the total universe. With the exception of the years 2000 and 2001, Japan has the fewest borrowers in the data set of the five countries listed in Table 1, but over the entire sample period Japanese borrowers are about as well represented as borrowers from Germany, which contributed 881 observations. The fact that Japan and Germany have large banking systems yet contribute relatively few borrower observations to the data set likely reflects the countries’ strong reliance on bilateral rather than syndicated loans.

Table 1 also reports the annual proportion of Japanese loans in which the lead arranging bank is foreign. A foreign bank has its primary headquarters or a parent bank located outside of Japan. The pattern in the table hints at the “evolution” in the collection of Japanese loans by Loanware. In the early part of the sample, foreign lenders arrange nearly all of the loans. Apparently, Japanese banks were reluctant during this period to divulge information on their bilateral bank relationships. Japanese-led loans begin to appear in 1988 and constitute at least half of the sample thereafter. But the Japanese-led loan records fail to identify most of their

⁵ The Dealogic terminology differs from that of its competitor, Loan Pricing Corporation, which maintains the Dealscan database. In Dealscan, a “facility” refers to an individual component of the loan (i.e., a

borrowers by name until after 1997, suggesting banks provided information conditional on borrower anonymity. After 1997, this practice ceases and all borrowers are identified by name. At that point in time, Dealogic began requiring that borrowers be identified as a condition for having loan deals count toward a bank's league table score.

With some insight into the nature of the Loanware sample, we now turn to comparing the loan contract characteristics of Japanese borrowers to the characteristics of contracts to borrowers in the benchmark countries, France, Germany, the U.K., and the U.S.

4. Comparing Japanese borrowers to borrowers in benchmark countries

In Table 2, we provide an annual comparison of Japanese borrowers to French, German, U.K., and U.S. borrowers, referred to collectively as the “benchmark borrowers”, over the 1980-2001 period using five separate characteristics related to the loan contract or the borrower. We describe each of the characteristics below. Not all borrower records contain complete information for every characteristic. For this reason, we list at the bottom of Table 2 the number of observations and percentage of all records available for each characteristic over the sample period.

The first characteristic is the median value of the borrower's current (as of September 2002) Moody's long-term debt rating, measured across all borrowers with ratings information. The current Moody's rating provides us with a uniform measure of credit risk, though it has at least two drawbacks. First, only those firms that are large and informationally transparent enough to issue public debt are rated.⁶ The bottom of the table shows that only 32.3% of the Japanese observations and 21.5% of the benchmark observations contain Moody's ratings information. The unrated borrowers are likely to be smaller and more informationally opaque than the rated borrowers. Second, the current rating may not reflect the riskiness of the borrower at the time the loan was originated, particularly for loan agreements in the 1980s. Unfortunately, Loanware has

Loanware “tranche”), not the entire loan deal.

only scant information on the rating of a borrower at the time of the loan. Therefore, we rely on the current rating, assuming that persistence in the quality of the borrower through time makes the current rating informative about credit risk at the time of the loan.

The second characteristic is the median amount of the loan tranche, measured in millions of U.S. dollars.⁷ The loan provides a proxy for the size of the borrower obtaining the loan, as larger borrowers are more likely to obtain larger loans. Because size is a measure of credit risk, smaller-sized loans should typically be riskier loans. However, the relative size of loans can vary for reasons other than risk – for example, the purpose of the loan could influence its size – so one should be cautious about making inferences based only on the loan amount. One advantage to using loan amount as a proxy for riskiness is that nearly all of our observations contain loan amount information.

The third characteristic is the median term or maturity of the loan, measured in years from the signing date. Like the loan amount, the maturity can provide a signal of the riskiness of the loan, as riskier borrowers are likely to get shorter-maturity loans (see Flannery, 1994). But maturity will also be related to the type of the loan. Holding borrower other borrower characteristics constant, loan commitments are typically of a shorter maturity than term loans. Maturity could also be related to the propensity to evergreen, since keeping the term short enables the bank to more easily roll over a loan.

The fourth characteristic is the proportion of sample loans that are recorded as secured with collateral. The interpretation of collateral as a risk variable is especially ambiguous. On one hand, holding other risk characteristics constant, the presence of collateral should lower the riskiness of the loan. Theories also suggest that low-risk borrowers might pledge collateral to distinguish themselves from high-risk borrowers.⁸ On the other hand, banks are more likely to

⁶ Moody's does provide *bank debt* credit ratings for firms with no public debt, but the frequency of such ratings is small.

⁷ All loans are converted to U.S. dollars using the exchange rate on the signing date of the loan agreement.

⁸ For example, see Besanko and Thakor (1987).

require collateral from riskier borrowers. Empirical evidence on the use of collateral suggests that the latter effect tends to dominate.⁹ But the type and purpose of the loan, and the ease with which the underlying assets can be evaluated and seized in case of bankruptcy, will also influence whether or not collateral is pledged.

In addition to its ambiguous interpretation as a risk variable, there is an acute sampling problem with the collateral variable. Loanware records a “yes” in the collateral field of a loan record if the information source for the loan mentions explicitly that the loan is secured with collateral, otherwise the field is left blank. Therefore, Loanware does not distinguish between a loan agreement that is unsecured and a loan that is missing information about the security status of the loan. For the statistics in Table 2, we count all blank fields to mean “unsecured,” so that our estimates clearly understate the true proportion of loans that are secured.¹⁰ However, we can use the collateral data for comparison purposes if we assume that the recording errors do not vary systematically across borrower nationality.

The final characteristic is a median measure of loan price, what we term the “loan premium.” For the cross-country comparisons, we define the loan premium to be the interest spread on loans priced off the London interbank offer rate (LIBOR), the standard basis for pricing syndicated loans. The loan premium includes the interest charged on the drawn portions of the loan, plus utility and facility fees. Thus, the loan premium reflects both interest and non-interest sources of revenue. Some records also contain pricing information that uses benchmarks other than LIBOR. For example, Japanese borrowers also receive loans priced off of the Tokyo interbank offer rate (TIBOR). Other records contain no pricing information at all. Out of the sample of 874 Japanese borrowers, 19.5% contain LIBOR pricing information, compared with 55.8% of the benchmark borrowers.

⁹ See Berger and Udell (1990), Strahan (1999), and Booth and Booth (2002).

¹⁰ For example, Carey, Post, and Sharpe (1998) estimate that 70% of U.S. Dealscan bank loans are secured. By comparison, for loans originating in 2001, Loanware implies that only 29% of U.S. borrowers were secured.

The bottom of Table 2 summarizes the five characteristics by calculating the average median value across the entire 22 years in the sample, and across the 1990-2001 subsample. Given the uneven sampling methods used in the 1980s, we focus much of our attention on the 1990-2001 subsample. We calculate the average Moody's ratings by first converting annual median ratings to an integer using a linear scale (i.e., Aaa = 1, Aa1 = 2, . . . , C = 21). We then compute the average values, round to the nearest integer, and reconvert to the Moody's credit rating scale. For averages that are halfway between two ratings, we report the ratings that straddle the average.

The sample of Japanese borrowers appears to be less risky than the sample of rated benchmark borrowers. The average of the median Moody's ratings for Japanese borrowers over the entire sample period is Baa1, compared with an average between Baa2 and Baa3 for the benchmark countries. A rating of Baa3 is the lowest rating a firm can receive and still be considered "investment grade." The relative difference in risks between borrowers in Japan and the benchmark countries holds for most years in sample. For instance, the median benchmark borrowers over the years 1990-2001 are rated "junk" while the median Japanese borrower is still rated investment grade. Japanese loans also tend to be larger, on average, than loans in the other countries and tend to have an average maturity that is slightly longer than the benchmark loans. The lower risk of the Japanese borrowers could suggest that the pool of Japanese borrowers is less risky, on average, than non-Japanese borrowers, or it could suggest that banks in the syndicated loan market are more selective when lending to Japanese borrowers than when lending to benchmark borrowers. The fact that a substantially higher proportion of the sample of Japanese borrowers is rated suggests that banks require higher standards for the Japanese borrowers receiving syndicated loans.

The average loan maturity for Japanese borrowers of nearly six years during the 1990s masks a big drop in maturity at the end of the sample period. Specifically, beginning in 1998, the median maturity falls to one year. In fact, the prevalence of one-year maturities is so high in these

years that nearly *half of the entire sample* (47%) of Japanese loans has a maturity of one year. No such decline occurs in the maturity of loans to benchmark borrowers.

There are at least three potential explanations for this large change in the maturity structure of Japanese borrowers. First, the fraction of loans made under commitment increased drastically in Japan during the late 1990s and loan commitments tend to be of a shorter maturity than traditional term loans. The proportion of Japanese loans made under commitment increased to an average of 63% during the 1998-2001 period from 32% over 1980-1997 after a law change made commitment lending explicitly legal in Japan. The high proportion of loans made under commitment during the 1998-2001 period compares with an average of 44% of loans in the benchmark countries during the same period. But the median maturity of loans made under commitment in the benchmark countries from 1998 to 2001 is 2 years, equivalent to the median maturity among benchmark borrowers earlier in the sample. Moreover, 26% of Japanese non-commitment loans during the 1998-2001 period also had a maturity of one year or less. Therefore, while the increase in the popularity of loan commitments probably contributed to the decline in average maturity in the late 1990s, it cannot completely explain the incidence of one-year maturities.¹¹

Second, the incidence of short-maturity loans could indicate that Japanese banks began in the late 1990s to actively structure loan agreements to facilitate evergreening. The Financial Reconstruction Law (FRL) of 1998 greatly expanded the disclosure obligations of Japanese banks. In particular, the FRL required banks to classify loans according to asset quality into one of four categories: “normal,” “in need of attention,” “at risk,” or “unrecoverable.” Based on the classifications, banks were then required to set aside a specific proportion of loan

¹¹A similar explanation relates to Basel Accord rules regarding the risk weighting of loan commitments. These rules exempt the undrawn portion of loan commitments with maturities less than one from capital charges. That is, the undrawn portion of the commitment receives a zero-weight in calculating risk-weighted assets. Because Japanese banks have been capital-constrained since the late 1990s (see Fukao, 2003), one could argue that they have a stronger incentive when offering loan commitments to exploit the Basel rule that maximizes their reported risk-weighted capital.

loss reserves against the value of the loan, net of any collateral.¹² The classification systems, which are based on bank self-assessments, separate borrowers according to whether they are past due on a loan payment, and how far past due they are.¹³ Loans from borrowers that are three months past due, or worse, are labeled “nonperforming.” Under the FRL, loans that are “restructured” to a borrower experiencing difficulties are also to be classified as nonperforming, but in practice very few loans are classified as restructured. Therefore, by offering loans with one year of maturity (or less), banks could evergreen loans to keep them “performing” and avoid costly additions to loan loss reserves.

Third, the change in maturity structure could reflect a shift in how banks perceive, and react to, the credit risk of Japanese borrowers. Following the closure or nationalization of three large Japanese banks and requisite capital injections into most other large banks between 1997 and 1999, banks could have become more wary of entering into long-term contracts with their borrowers. By shortening the maturity of their loans, banks reduce their credit exposure. Moreover, a shorter maturity keeps borrowers on a “short leash,” improving the monitoring ability of the banks (Flannery, 1994). In the next section, we attempt to distinguish between the three explanations by estimating the relation between maturity and a set of variables meant to proxy for the risk and performance of the borrower.

Japanese loans are also much less likely to be secured with collateral than benchmark loans. This feature of the sample is surprising given that Japanese banks have historically emphasized collateral value when making loans. One potential explanation for the finding might be that Japanese banks rely on buildings and land for collateral, whereas the collateral backing the

¹² There are actually two borrower classifications described under the FRL. Banks are obliged to report classify loans, as described above, on an unconsolidated basis. Banks can also volunteer to report “risk management loans,” which may be consolidated, and can include credits other than loans. The two reporting methods, however, produce numbers of similar magnitude. Banks must set aside reserves equivalent to 15% of the net book value (book value – collateral value or specific reserves) of “needs attention” loans, 70% of the net value of “risk” loans, and 100% of the net value of “unrecoverable” loans. For more information on disclosure requirements, see Bank of Japan (2000) and Financial Services Agency (2001).

types of loans in Loanware – inventory, receivables, etc. – is uncommon in Japan. Another possibility is that Japanese banks underreport the security status of loans to Loanware relative to other banks. However, discussions with the Dealogic representatives that manage Loanware have uncovered no reason why reporting from Japanese banks would be different.

Finally, the loan premium charged on Japanese loans tends to be much smaller, on average, than the premium charged on benchmark loans. For example, over the 1990-2001 period, the average Japanese loan premium of 80 basis points is *less than half* the 164 basis point benchmark loan premium. The difference in the amounts charged on loans could be due to differences in risk. The average benchmark Moody's credit rating of Ba1 is two notches lower than the average Japanese rating of Baa2, and the benchmark loans are smaller and more likely to be secured, which could indicate that the loans made to benchmark borrowers are riskier.

On the other hand, the differences in loan prices could also reflect differences in *how* loans are priced in Japan after controlling for the riskiness of the borrower. For example, banks may also keep prices low on loans that they evergreen, either because strong relationship commitments hinder the ability to terminate loans, or because banks want to keep loans performing to increasing costly loan loss provisions. The fact that banks have been so unprofitable for so long – and that profit outlooks for the near future are equally dismal – suggests that Japanese banks are pricing loans below profitable levels.

To gain more insight into how Japanese banks set their loan terms, we now focus on how loan contracts offered by Japanese banks to domestic borrowers differ from those of non-Japanese banks. That is, we limit our sample to Japanese borrowers and compare the contract characteristics of loans from domestic (i.e., Japanese) banks to loans from foreign (i.e., non-Japanese) banks.

¹³ Borrowers in the “in need of attention” category are three months past due, in the “risk” category six months past due, and in the “unrecoverable” category borrowers are bankrupt or near bankrupt.

Table 3 provides summary statistics of the five loan characteristics of Japanese borrowers, sorted by the nationality of the bank arranging the loan. Specifically, we identify a loan as originating from a “domestic” lender if at least one of the arranging banks is headquartered in Japan. Otherwise, we label the lender as “foreign.” For this table, we increase the number of borrowers with credit ratings by supplementing the Moody’s ratings with similar ratings from Standard & Poor’s (S&P) because S&P rates some borrowers that are not covered by Moody’s. For reporting and averaging purposes, we express the S&P ratings in terms of the Moody’s scale (i.e., S&P AAA = Moody’s Aaa, S&P AA+ = Moody’s Aa1, and so on). For borrowers with both a Moody’s and S&P rating, we average the two ratings and round down to the riskier credit rating. This procedure nets 16 additional Japanese borrowers with credit ratings.

We also report two additional measures of loan price that incorporate more information on revenue earned from non-interest fees. “Drawn return” starts with the loan premium and then adds participation and underwriting fees, expressed as a percentage of the loan amount. It measures the yield above LIBOR earned by a bank that receives all possible fees associated with originating and managing the loan, assuming that the borrower draws down the entire amount of the loan. “Undrawn return” equals the sum of upfront fees, facility fees (which are paid annually on the total amount of a loan), and commitment fees (which are paid on the undrawn portion of a loan) expressed as a percentage of the loan amount. Undrawn return estimates the return a bank would earn on the undrawn portion of a loan commitment.

Table 3 suggests that foreign lenders lend to observationally less risky borrowers than Japanese banks. Borrowers from non-Japanese banks are rated higher by Moody’s and S&P, and have larger loans with longer terms to maturity. In fact, a comparison of the median loan maturities indicates that Japanese banks offer loans with one year of maturity much more often than foreign banks. There is also less dispersion, as measured by standard deviation, in the risk characteristics of loans arranged by foreign lenders. For instance, the standard deviation in the

credit ratings of firms borrowing from foreign banks during the 1990-2001 period is 2.4 notches, compared with 2.9 notches for firms borrowing from domestic banks.

Despite the fact that foreign banks lend to a less risky group of Japanese borrowers, they charge a higher average loan premium and vary prices more, compared with Japanese banks. The median spread above LIBOR for non-Japanese banks is 75.0 basis points during the 1990-2001 period compared with 47.5 basis points for Japanese banks. Including participation and underwriting fees only widens the gap between the two types of banks. Foreign banks' median drawn return is 85 basis points above LIBOR, or 10 basis points higher than their median loan premium. In contrast, Japanese banks earn no extra premium, on average, from participation and underwriting fees. Meanwhile, the foreign loan premium has a standard deviation of 72.4 basis points compared with only 48.6 basis points in the prices of Japanese banks. Non-Japanese banks also tend to require collateral more often (18% of the time from 1990-2001) than Japanese banks (2% of the time).

If foreign banks tend to charge higher rates, vary their prices more, and demand more collateral on the loans they offer than Japanese banks, and if foreign banks are more picky about who they lend to, then why do Japanese companies borrow from foreign banks? In other words, why are foreign lenders not priced out of the Japanese market? There are two potential explanations. First, high quality Japanese borrowers may be willing to pay a premium for loan approval from a high quality bank. Billett, Flannery, and Garfinkel (1995) show that borrower stock price reactions to loan announcements are positively related to the quality of the lending bank, as measured by the bank's credit rating. Indeed, some Japanese companies are precluded from borrowing from their own country's banks because of the banks' poor quality. Dvorak (2001) reports that internal guidelines at Sony Corporation actually prohibit the company from borrowing from any bank with a Moody's bank financial strength rating of C, which is well

above the highest rating for a large Japanese bank.¹⁴ Second, the Japanese market could be segmented into firms that foreign banks are willing to lend to, i.e., high-quality firms, and firms that only Japanese banks are willing to finance, i.e., unprofitable firms with pessimistic future prospects. Somewhat perversely, interest rates in the Japan-only market could be lower than the high-quality market because the poor quality firms that are kept alive in the Japan-only market are unable to pay high interest rates.

In the next section, we extend our exploration of the pricing differences between Japanese and non-Japanese banks by controlling for cross-sectional variation in characteristics of the loan and borrower. We then use a similar cross-sectional framework to investigate the curious drop in Japanese loan contract maturities that began in 1998.

5. Cross-sectional regressions

We now introduce a set of exogenous loan and borrower characteristics that could help explain some of the variation in loan price and maturity across Japanese borrowers. Our ultimate goal is to use these characteristics to isolate significant differences in contract terms between Japanese and foreign banks. The characteristics are exogenous in the sense that realizations of the characteristics are unlikely to be influenced by the contract terms themselves. Therefore, the regressions in this section are “reduced form.” We group the characteristics into three categories: exogenous loan variables, borrower performance variables, and borrower credit risk variables.

The *exogenous loan variables* are characteristics of the loan that could help explain variation in loan price and maturity, but are determined independently of the contract terms. We distinguish these variables from potentially endogenous loan variables, such as the loan amount and whether or not the loan is secured, that are set simultaneously with price and maturity. The first exogenous loan variable is a dummy variable indicating whether or not the loan is made

¹⁴ Mitsubishi Tokyo Financial Group, with a rating of D-, has the highest financial strength rating of the big four Japanese banks. Of the ten largest publicly listed banks in Japan, only Shizuoka Bank (9th largest, financial strength rating = C+) and Chiba Bank (10th largest, financial strength rating = D) have higher ratings than Mitsubishi Tokyo (see Moody’s Investor Service, 2002).

under commitment, defined to be all loan tranches labeled by Loanware as a “line of credit,” “revolver,” “mix of facilities,” or “revolving/term.” The liquid nature of a loan commitment instrument suggests that its contract terms may differ from traditional “term loans.” James and Smith (2000), Kashyap, Rajan and Stein (2002), and Gatev and Strahan (2002) argue that part of what makes a bank special is its ability to provide liquid loans in the form of loan commitments. The second loan variable is a dummy variable set equal to one when a loan is denominated in yen. We add this variable to control for the possibility spreads that low nominal yields in Japan “squeeze” loan spreads to be lower on yen-denominated loans. We then include two dummy variables related to the purpose of the loan. One variable takes on the value of one if the loan is to finance an acquisition or a Leveraged buyout (LBO), the other equals one when the loan refinances existing debt, or is used as part of a recapitalization. Booth and Booth (2002) find that U.S. syndicated loan spreads tend to be higher on loans that finance a takeover or LBO, and lower on refinancings and recapitalizations. Loanware is the source for all four of these variables.

Given that Japanese banks may have incentive to alter loan agreements to facilitate the evergreening loans, we use the *borrower performance variables* to proxy for the quality of the borrower. The variables include three dummies that identify whether the borrower is in the retail, real estate, or construction sector. These sectors are commonly recognized in Japan as the weakest and most reliant on continued bank support. The other variable is the one-year change in the equity price of the borrower over the calendar year prior to the signing of the loan. We adopt this variable because large declines in stock price could signal that a borrower is distressed. The industry dummies are from Loanware. The equity price data, which are available only for firms with publicly-traded equity, come from Datastream.

The *borrower risk variables* include two equity market measures of risk, equity volatility and the market value of equity, and the current credit rating of the borrower (either Moody’s, S&P, or an average of the two), converted to an integer using a linear scale. We adopt the equity volatility variable as an ex-ante measure of the riskiness of the firm’s cash flows and the market

value of equity as a measure of firm size. The credit rating provides a direct assessment of the credit risk of the borrower, but as mentioned earlier, the current ratings may not reflect the condition of the borrower at the time of the loan. We calculate equity volatility using daily data for three years ending in the year prior to the signing date, and the market value of equity using the last trading day in the year prior to the signing date. The equity volatility and market value of equity variables are calculated from information in Datastream, while the credit ratings are from Loanware.

Table 4 presents the results from ordinary least squares (OLS) regressions of loan price on the exogenous characteristics using different measures of loan price, and for various cuts of the sample based on the availability of data. In addition to the exogenous characteristics discussed above, the reported regressions include two additional dummy variables. The first is a foreign bank dummy; it equals one when a foreign bank arranges a loan and zero when a domestic bank leads the loan. The second is a time dummy that takes the value of one if a loan observation is from the four-year period 1998 to 2001.

The first three columns use the all-inclusive drawn return as the measure of loan price, column (4) uses the loan premium above LIBOR, and column (5) adds in observations that price the loan premium off the Tokyo interbank offer rate (TIBOR). All but one of the columns (column (3))) excludes the credit rating variable because so few borrowers are rated. Column (1) also excludes those variables calculated with equity data. Moreover, we restrict all reported regressions to the more reliable 1990-2001 sample. Regressions that include the 1980-89 data are similar. We also exclude the real estate dummy from all loan price specifications because no firm from that industry survives the cuts required for the regressions. For similar reasons, we exclude the construction industry variable from the specification that only includes borrowers that are publicly traded and rated by Moody's and S&P (column 3).

Due to the paucity of pricing information on Japanese loans, the regression contain between 64 and 186 observations – a small fraction of the original 874 loans. Nonetheless,

several interesting patterns emerge in the data. Most importantly, foreign banks earn significantly more on loans to Japanese borrowers than Japanese banks do, even after controlling for a variety of loan and borrower and characteristics. The Table 4 estimates imply that foreign banks earn a drawn return that is 25 to 50 basis points more than Japanese banks. Foreign banks charge more, on average, across the sample of all borrowers in column (1), than they do across the subset of firms that are publicly-traded (2), and the publicly-rated firms are charged more than the subset that are traded and rated by Moody's or S&P in column (3). The differences in pricing across these columns probably reflect differences in risk that are not modeled, with the column (3) borrowers being the least risky of the three samples. But the results are also consistent with the idea that bank lending to the most transparent firms and internationally active firms is more competitive than the loans that are "down market" to more opaque, local firms. It is this latter set of firms that are most likely to required favored treatment from Japanese banks.

Consistent with risk-pricing behavior, smaller firms and firms with lower credit ratings (i.e., higher values of the integer representation of the credit rating) pay more on their loans. For instance, the credit rating estimate in column (3) implies that every ratings notch downward adds 11 basis points to the cost of the loan. Holding all else constant, banks also charge anywhere from 6 to 50 basis points less for loan commitments than for term loans, depending on the sample investigated. Loan commitments and term loans are priced nearly the same among borrowers that are publicly-traded and rated, so the largest pricing differences exist among those privately-held, which tend to be smaller, riskier, and more informationally opaque.

There is also some evidence that poorly performing borrowers can be charged lower rates than healthier borrowers, a sign that Japanese banks are helping to keep zombie firms alive. First, firms in the retail industry appear to be charged a lower loan spread than firms in other industries. However, upon further breakdown of the sample into foreign and domestic banks (not shown), we find that the negative estimate on the retail industry variable is due to foreign banks, not Japanese banks. Second, the positive and marginally significant estimate associated with one-year equity

price changes suggests that banks charge lower spreads on firms with falling stock prices. While this result is intriguing, it is not statistically significant in the other specifications.

We now turn to a cross-sectional analysis of loan maturity. In the last section, we presented three potential explanations for the anomalous decline in Japanese borrower loan maturities that began in 1998: (1) a sharp rise in the proportion of loans made under commitment in the late 1990s, (2) an increase in evergreening behavior after loan disclosure requirements were expanded, and (3) a general increase in the perceived riskiness of Japanese borrowers. We use cross-sectional regressions to provide some insight into the viability of these explanations.

Table 5 presents the results from OLS regressions of loan maturity, measured in years, on the exogenous characteristics. Following the earlier regressions, we limit the reported results in Table 5 to loan observations from the 1990-2001 sample period. Including the 1980-89 data produces results that are very similar. As in Table 4, column (1) excludes the equity-based variables and the credit rating variable. Because loan maturity information exists for much of the sample, this column contains the largest number of observations. Adding the equity variables (column (2)) and the credit rating variable (column (3)) substantially reduces the number of observations in the regression.

The main results from the table can be summarized as follows. First, loan commitments have a significantly shorter maturity than term loans. The estimates imply that the maturity on loan commitments can be from six months to three years shorter than term loans, holding all other variables constant. Thus, loan commitments are associated with shorter-term maturities and lower interest rate spreads (Table 4). Strahan (1999) and Booth and Booth (2002) document a similar result. Second, none of the borrower performance variables (the three “weak” industry indicators and the one-year change in equity price) are statistically significant. Third – and somewhat surprisingly – foreign banks offer shorter maturity loans than domestic banks, holding other variables constant. In fact, a comparison between the time dummy estimates in columns (4) and (5) shows that foreign banks are responsible for much of the reduction in loan maturities

during the 1998-2001 period. The point estimates suggest that foreign bank loan maturities fell by six months more than domestic bank loan securities during that period. This finding could point to an increased wariness by banks to lend long to Japanese borrowers after the peak crisis years 1997-1999.

Overall, the abrupt fall in loan maturities that began in 1998 appears to be driven by two factors. First, Japanese firms greatly increased their use of loan commitments in the late 1990s and loan commitments have shorter maturities. Second, banks – especially foreign banks – shifted the maturity structure of their loans to Japanese borrowers, perhaps due to general changes in the perception of risk profile of Japanese borrowers. Because much of the decline in loan maturities appears to originate from foreign banks, and because borrower performance does not appear to be related to maturity, our results are not consistent with the idea that banks shortened maturities to facilitate evergreening as disclosure requirements became stricter.

6. Conclusion

Japanese banks continue a decade-long struggle to dig themselves out of a mountain of poorly performing loans. Since 1992, these banks have written off \$650 billion of bad loans, equivalent to 16% of their current GDP, yet most analysts believe that banks will have to realize losses of a similar magnitude to rid themselves of their existing bad loans. Why have Japanese banks been so unprofitable? This paper uses a relatively unexplored, global database of loan contracts to help answer that question. By relating the contract-specific information to characteristics of the borrower and by comparing the characteristics of loans to Japanese borrowers with those to non-Japanese borrowers, we observe how Japanese banks price and supply loans to their domestic customers. Our sample includes loans to Japanese borrowers from foreign (i.e., non-Japanese) banks, the characteristics of which can be used as benchmarks for studying the causes of low Japanese bank profitability. If Japanese banks are unprofitable because of weak macroeconomic conditions, then foreign bank loans should be similarly

unprofitable. However, if the low profits reflect bank-specific or Japanese-specific factors, then we might expect foreign banks to make more profitable loans.

We obtain our sample of loans from Loanware, an archive of over 120,000 loan deals from around the globe. The data set includes 874 loans to Japanese borrowers dating back to 1980, though nearly two-thirds of the observations come from the last three years in the sample, 1999-2001. Though highly detailed, our data might not properly represent the typical loan to a Japanese business. For example, most of the Loanware contracts are from syndicated loans and syndicated lending has only recently become popular in Japan. It still remains a small fraction of total lending in the country. For this reason, the paper attempts to identify some of the pitfalls from using the Loanware data.

We document a significant difference in the way that Japanese loans are priced and, in particular, show that Japanese banks underprice loans to their domestic borrowers compared the pricing by foreign banks. Japanese lenders charge a median loan spread that is 25 to 50 basis points lower than foreign lenders, even after controlling for a variety of loan and borrower characteristics. In fact, Japanese borrowers from foreign banks are *less risky*, on average, than Japanese borrowers from Japanese banks, but are willing to pay higher loan prices from foreign banks. Moreover, we find that Japanese banks vary their pricing less across borrowers than foreign banks, suggesting that they do not distinguish good risks from bad. Taken together, our pricing results do not support the argument that Japanese banks suffer simply because of poor economic conditions. Instead, the findings suggest that the problems at Japanese banks stem from the behavior of the banks themselves.

We also show that the maturity structure of Japanese loans by Japanese banks changed significantly in 1998, a year in which Japanese regulators imposed stricter disclosure standards on banks. Starting in that year, the median maturity of Japanese bank loans shortened to 12 months, compared with an average maturity of 72 months for loans originated during the years 1980-1997. No similar decline occurred among borrowers in the benchmark countries. We argue that

the change in maturity structure likely reflects two factors. First, borrowers greatly increased their use of loan commitments beginning in 1998, shortly before Japanese law codified the legality of offering loan commitments, and loan commitments have a shorter maturity than term loans. Second, banks – particularly foreign banks – appear to have reacted to increases in the perceived risk of Japanese borrowers by shortening the maturity of their loans.

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Table 1. Characteristics of Loanware Sample for Borrowers from Japan, France, Germany, U.K., and U.S., 1980-2001

Year	Japanese borrowers:		Number of loans from:				Number of all Loanware loans
	Number of loans	Proportion arranged by foreign bank	France	Germany	U.K.	U.S.	
1980	5	1.00	16	17	35	59	1,120
1981	7	1.00	22	13	35	133	1,552
1982	9	1.00	38	4	41	139	1,665
1983	11	1.00	30	12	37	134	1,243
1984	10	0.80	32	19	88	255	1,789
1985	3	1.00	26	8	146	270	1,533
1986	10	0.70	40	25	194	271	1,501
1987	6	0.83	61	18	333	736	2,209
1988	11	0.55	82	8	515	1,293	3,186
1989	11	0.45	53	30	576	2,268	4,436
1990	14	0.36	56	24	481	3,132	5,409
1991	3	0.00	43	14	365	3,653	5,891
1992	15	0.60	49	29	405	4,947	7,229
1993	18	0.28	45	26	465	4,394	6,919
1994	17	0.35	59	36	682	5,009	8,062
1995	23	0.35	84	57	585	5,289	8,859
1996	51	0.29	74	55	432	6,584	10,267
1997	41	0.49	103	60	474	7,287	11,492
1998	28	0.89	56	42	388	4,946	10,067
1999	76	0.50	272	123	714	7,977	9,126
2000	173	0.27	241	107	727	5,277	9,065
2001	332	0.11	244	154	649	4,081	7,786
Total	874	0.58	1,726	881	8,367	68,134	120,406

Table 2. Comparing Loans to Japanese Borrowers with Loans to Borrowers in Benchmark Countries.

	Median Moody's rating of borrower		Median loan amount (millions U.S. \$)		Median maturity (years)		Proportion of loans that are secured		Median loan premium (b.p. over LIBOR)	
Year	Japanese	French, German, U.K, U.S.	Japanese	French, German, U.K, U.S.	Japanese	French, German, U.K, U.S.	Japanese	French, German, U.K, U.S.	Japanese	French, German, U.K, U.S.
1980	Baa2	Baa1	106	45	8	5	0.40	0.03	--	63
1981	A2	Baa1	10	75	5	5	0.00	0.02	50	55
1982	A3	A2	30	65	3	7	0.33	0.01	88	55
1983	Baa1	Baa1	24	70	4	5	0.00	0.06	50	59
1984	Baa2	Baa1	40	75	4	5	0.10	0.05	80	55
1985	Baa1	A3	25	90	2	5	0.00	0.03	125	34
1986	A3	A2	46	91	4	5	0.00	0.02	100	34
1987	Baa1	Baa1	90	100	4	5	0.00	0.07	75	36
1988	Baa3	Baa2	100	100	4	5	0.18	0.08	50	75
1989	A3	Baa3	74	46	1	5	0.00	0.09	25	150
1990	A2	Baa3	150	31	5	4	0.00	0.10	38	125
1991	A2	Baa2	500	24	9	3	0.33	0.26	--	143
1992	Baa3	Baa2	74	25	12	4	0.00	0.35	40	150
1993	Baa3	Baa3	100	40	12	3	0.11	0.38	50	150
1994	Baa3	Baa3	39	45	10	4	0.06	0.35	138	150
1995	Baa3	Baa3	59	52	7	5	0.00	0.34	48	150
1996	A3	Ba1	17	50	6	4	0.06	0.37	113	165
1997	Baa1	Ba3	33	60	6	4	0.15	0.36	150	161
1998	Baa1	B1	120	63	1	5	0.21	0.38	70	175
1999	Baa2	Ba3	139	73	1	4	0.18	0.39	88	200
2000	Baa1	Ba2	113	100	1	3	0.06	0.30	70	200
2001	Baa2	Baa3	47	100	1	3	0.02	0.27	72	200
Average (1980-2001)	Baa1	Baa3	88.01	64.53	4.94	4.44	0.10	0.20	75.84	117.45
Average (1990-2001)	Baa2	Ba1	115.94	55.24	5.92	3.81	0.10	0.32	79.48	164.06
Available Observations (% of total)	283 (32.3)	16,984 (21.5)	870 (99.5)	78,433 (99.1)	813 (93.0)	62,782 (79.4)	874 (100.0)	79,108 (100.0)	170 (19.5)	44,127 (55.8)

Table 3. Comparing Loans to Japanese Borrowers from Domestic and Foreign Banks

	Moody's rating of borrower	Loan amount (millions U.S. \$)	Loan maturity (years)	Loan premium (b.p. over LIBOR)	Drawn return (b.p. over LIBOR)	Undrawn return (b.p.)	Proportion secured
Sample: 1980-2001							
Domestic banks							
Median	Baa2	52.58	1.00	48.75	48.75	17.50	0.02
Mean	Baa2	295.03	3.29	63.16	64.92	20.68	
Std Dev	2.8 notches	834.80	3.48	45.92	46.83	18.43	
Number of observations	145	594	559	32	32	71	
Foreign banks							
Median	Baa1	92.05	3.00	75.00	85.00	17.50	0.16
Mean	Baa1	213.84	3.53	94.41	105.80	33.91	
Std Dev	2.3 notches	401.16	3.42	69.26	76.74	60.94	
Number of observations	152	275	255	137	137	143	
Sample: 1990-2001							
Domestic banks							
Median	Baa2	51.03	1.00	47.50	47.50	17.50	0.02
Mean	Baa2	295.20	3.30	67.65	67.50	20.68	
Std Dev	2.9 notches	843.14	3.50	48.64	48.64	18.32	
Number of observations	138	577	544	25	25	71	
Foreign banks							
Median	Baa1	114.22	2.00	75.00	85.00	17.50	0.18
Mean	Baa1	254.64	3.38	98.14	108.853	33.78	
Std Dev	2.4 notches	444.45	3.54	72.44	79.45	64.26	
Number of observations	110	213	203	117	117	124	

Table 4. Loan Premium Regressions: Japanese borrowers, 1990-2001

Variable	(1) All available borrowers y = drawn return	(3) Borrowers with equity information, y = drawn return	(3) Borrowers with equity and ratings information, y = drawn return	(4) Borrowers with equity information, y = loan premium	(5) Borrowers with equity information, y = LIBOR or TIBOR premium
Constant	76.446*** (18.894)	327.459*** (54.480)	43.635 (77.385)	292.644*** (45.866)	200.056*** (29.897)
Loan Commitment	-50.080*** (13.957)	-30.645*** (11.561)	-5.713 (14.004)	-25.903*** (9.733)	-21.495*** (6.869)
Yen-denominated	6.061 (12.772)	-12.001 (11.595)	-8.467 (12.079)	-10.007 (9.762)	-0.223 (9.181)
Purpose acq/LBO	47.892* (24.523)	-0.235 (21.875)	21.749 (21.720)	0.710 (18.416)	-0.639 (17.303)
Purpose refinancing	-12.742 (13.582)	-13.598 (11.009)	-23.826** (10.525)	-7.375 (9.269)	5.222 (7.273)
Industry retail	-27.059 (34.851)	-59.617** (24.999)	-47.477* (27.256)	-45.306** (21.046)	-22.707* (12.894)
Industry construction	20.869 (30.942)	8.957 (21.573)		13.608 (18.162)	-3.661 (14.241)
One year change in equity price (b.p.)		0.467 (0.741)	1.618* (0.901)	0.712 (0.624)	0.107 (0.323)
Equity volatility (b.p.)		0.111 (0.344)	0.406 (0.366)	0.158 (0.289)	-0.040 (0.145)
Ln(market value of equity)		-16.862*** (3.852)	-5.540 (4.618)	-15.099*** (3.243)	-7.748*** (1.980)
Credit rating			11.031*** (3.043)		
Foreign bank	51.952*** (16.534)	30.759** (13.542)	25.236* (14.175)	20.240* (11.401)	21.993*** (6.887)
Year = 1998-2001	6.381 (14.573)	-10.799 (14.476)	5.510 (17.786)	-10.316 (12.187)	-18.899* (10.526)
Adj. R-squared	0.186	0.370	0.316	0.365	0.199
Number of Observations	138	105	64	105	186

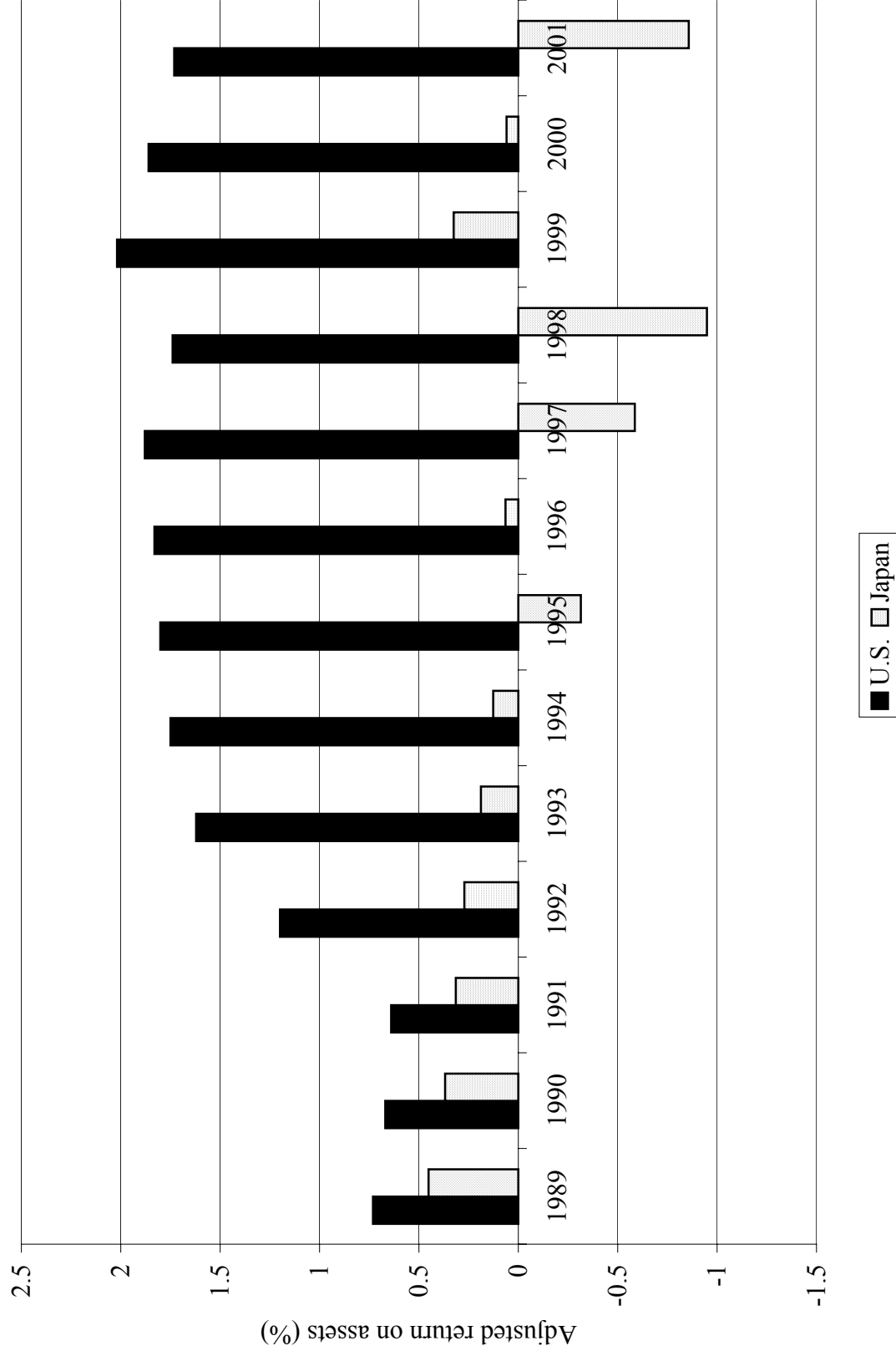
***significant at a 1% level, **significant at 5% level, *significant at 10% level.

Table 5. Loan Maturity Regressions: Japanese borrowers, 1990-2001

Variable	(1) All borrowers	(2) All borrowers with equity information	(3) All borrowers with equity and ratings information	(4) Borrowers from domestic banks with equity information	(5) Borrowers from foreign banks with equity information
Constant	9.231*** (0.312)	6.358*** (1.261)	4.354 (3.625)	7.336*** (2.655)	3.701*** (1.233)
Loan Commitment	-3.225*** (0.206)	-1.025*** (0.291)	-0.491 (0.497)	-1.523** (0.587)	-0.565** (0.252)
Yen-denominated	-2.119*** (0.290)	-0.341 (0.387)	0.057 (0.548)	-0.229 (1.042)	-0.075 (0.297)
Purpose acq/LBO	-2.015*** (0.548)	0.708 (0.730)	0.200 (1.044)	1.552 (1.718)	-0.728 (0.779)
Purpose refinancing	-0.144 (0.262)	0.153 (0.307)	0.101 (0.448)	0.435 (0.717)	-0.321 (0.247)
Industry retail	-0.009 (0.373)	0.390 (0.544)	0.190 (1.087)	0.231 (1.036)	0.344 (0.489)
Industry real estate	-0.132 (0.724)	-0.707 (1.785)		-0.299 (2.455)	
Industry construction	-0.535 (0.405)	0.498 (0.601)		0.527 (1.227)	0.090 (0.480)
One year change in equity price (%)		4.039 (13.632)	11.954 (33.996)	2.915 (22.025)	10.452 (16.879)
Equity volatility (%)		-4.412 (6.187)	0.178 (16.905)	-9.610 (10.221)	7.530 (7.718)
Ln(market value of equity)		-0.131 (0.084)	0.062 (0.222)	-0.197 (0.150)	-0.035 (0.084)
Credit rating			-0.016 (0.121)		
Foreign bank	-1.223*** (0.227)	-0.628** (0.291)	-0.422 (0.437)		
Year =1998-2001	-2.482*** (0.266)	-1.522*** (0.444)	-3.121*** (0.911)	-1.241 (1.295)	-1.705*** (0.361)
Adj. R-squared	0.503	0.224	0.207	0.127	0.394
Number of Observations	749	186	93	84	102

***significant at a 1% level, **significant at 5% level, *significant at at 10% level.

Figure 1: Adjusted Return on Assets, U.S. vs. Japanese Banks



Sources: The Federal Reserve Board's *Federal Reserve Bulletin* and the Bank of Japan's *Quarterly Bulletin*.