

Determinants of the Japan Premium: Actions Speak Louder than Words

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Abstract

Since August 1995, Japanese banks have had to pay a premium on Eurodollar and Euroyen interbank loans relative to their U.S. and U.K. competitors. This so-called “Japan premium” provides a market indicator of investor anxiety about the ability of Japanese banks to repay loans. We examine the determinants of the Japan premium and find that events indicating concrete actions by the Japanese government reduced the Japan premium. We find that the failure of Yamaichi Securities, which was characterized by large undisclosed losses, contributed to increases in the Japan premium, while the failure of Hokkaido Takushoku did not.

Classification codes: F33, F34, G21

Keywords: Japan premium, Eurodollar, Euroyen, LIBOR

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Determinants of the Japan Premium: Actions Speak Louder than Words

Beginning in 1995, major Japanese banks paid higher interest rates on their interbank Eurodollar and Euroyen borrowing than those paid by many large American and European banks. This interest rate differential, referred to as the “Japan premium,” marked a sharp reversal for Japanese banks. Through the late 1980s, Japanese banks had benefited from booming stock prices, low deposit rates, and favorable credit ratings that provided them funding at costs below those faced by many of their global competitors. Japanese banks strategically exploited this cost advantage by rapidly expanding their wholesale banking operations worldwide. By 1994, Japanese banks accounted for all ten of the largest banks in the world and had a major presence in markets characterized as low-margin, high-volume businesses, such as loan participations to blue chip companies and many off-balance-sheet activities.

Because of rising concern about their solvency, since 1995 major Japanese banks have had to pay a premium on funds borrowed through the interbank market. This has seriously undermined their ability to specialize in low-margin businesses. Not surprisingly, as the Japan premium has risen and capital ratios have become more constraining, Japanese banks have significantly altered their activities, reducing their exposures in foreign credit markets and in many of the wholesale markets. This retrenchment will raise costs to loan customers in those markets and will further reduce the profitability of Japanese banks.

The question of which factors are most responsible for the Japan premium has major public policy ramifications. The increases in the Japan premium at the time of the failure of Hokkaido Takushoku have been used to justify avoiding the closure of large troubled banks. These increases have also been used to justify the infusion of government money into troubled banks, the

encouragement of large, healthier banks to acquire or financially support their more troubled brethren (the convoy policy), and the implementation of accounting practices that improve capital ratios but reduce still further the transparency of bank accounting statements. Thus, understanding the determinants of the Japan premium may be useful in evaluating the wisdom of many of the bank reform measures being considered or being implemented at this time.

This paper examines the factors most responsible for movements in the Japan premium since 1995. Major financial market disruptions, major government policy actions, and major changes in financial market conditions all had an impact on the Japan premium. Government announcements not associated with concrete actions had little impact. The largest movements in the Japan premium appear to be associated with announcements of large, previously undisclosed losses. For example, the announcement of the failure of Hokkaido Takushoku was not associated with an increase in the Japan premium, while the announcement of large previously unreported losses associated with the Yamaichi Securities failure caused the premium to increase substantially.

The first section of the paper discusses the general movement in the Japan premium since 1995 and the recent retrenchments by Japanese banks from wholesale banking markets. The second section discusses the data and methodology. The third section investigates factors that have affected the size of the Japan premium. The fourth section investigates the relative changes in the Japan premium across Japanese banks. The final section concludes.

1. Background

Figure 1 shows the Japan premium on the interbank loan rate (ILR) on one-year yen contracts. The spread is shown for two banks, Bank of Tokyo-Mitsubishi and Fuji Bank, and is

calculated as the difference between the one-year rate paid by each of the Japanese banks and the average ILR for the six banks from the United States and the United Kingdom that are included in the London Inter-Bank Offered Rate (LIBOR) quote. Because Bank of Tokyo-Mitsubishi (BOTM) is one of the strongest Japanese banks and tends to pay the lowest Japan premium, the spread between its ILR and that of the U.S.-U.K. average ILR can serve as a proxy for the base “Japan Premium.” On the other hand, other major Japanese banks, such as Fuji Bank, have been considered to be relatively more troubled and recently they have been required by the market to pay a premium larger than that paid by BOTM. Thus, the ILR spreads between Bank of Tokyo-Mitsubishi and the other major Japanese banks reveal differences in the perceived risks of their unsecured interbank debt. These risks are affected by such factors as the willingness of the government to allow weaker banks to fail or, alternatively, to embrace the “convoy” policy, as well as by changes in an individual bank’s health. As Figure 1 shows, this extra premium emerged only in November 1997 and, after shrinking in early 1998, has widened substantially more recently.

The Japan premium has been high during four distinct periods since 1995: the late summer-early fall of 1995, when the premium first emerged; after several large financial nationalizations in November 1997; a brief sharp spike in late June 1998, when Long-Term Credit Bank (LTCB) first was rumored to merge with Sumitomo Trust; and in October of 1998. Because of the size of the Japan premium, particularly since November 1997, Japanese banks have suffered from a major cost disadvantage relative to their European and American competitors. For example, while U.S. and British banks bought one-year Euroyen funds for 0.19 percent, on average, in October 1998, the cost to Japanese banks averaged 0.78 percent, a cost of funds four times greater than their competitors. The same pattern emerged in the Eurodollar market. While the average cost of one-year Eurodollar

interbank loans for U.S. and British banks was 4.82 percent in October 1998, the comparable rate for Japanese banks was 5.58 percent.

Such a large (76-basis-point) cost disadvantage for marginal funds would likely eliminate Japanese banks from many loan participations. In fact, McCauley and Yeaple (1994) report that many of the large Asian loan participations in earlier years had been for less than 75 basis points over LIBOR. Because the interbank loan volumes of individual banks, or even aggregate totals for all interbank lending, are not publicly available, it is impossible to judge the total cost of this premium to Japanese banks. However, the magnitude of the premium indicates that the cost of marginal funds has made many loan participations uneconomical for Japanese banks, and it would not be surprising to observe these banks pulling back from these markets.

In fact, the emergence of the Japan premium has become a major impediment to the global strategy of many Japanese banks. While their problems with low capital ratios and substantial nonperforming loans had already caused many Japanese banks to begin pulling back from U.S. markets beginning in 1992 (McCauley and Yeaple 1994 ; Peek and Rosengren 1997, 1998a), the pressure to retrench was intensified to the extent that Japanese banks no longer had cost advantages. Beginning in 1995, Japanese banks began retreating from offshore markets such as Hong Kong and Singapore (Peek and Rosengren 1998b), and they continued to withdraw from low-margin markets in the United States. While problems with maintaining Bank for International Settlements (BIS) capital requirements that emerged in the early 1990s caused the initial decline in Japanese lending overseas, the emergence of the Japan premium in 1995 made many of these activities unprofitable, as well as an expensive use for scarce capital.

2. Methodology for Examining the Determinants of the Japan Premium

The existence of the Japan premium indicates that creditors believe Japanese banks have a higher probability of causing a loss of principal and interest than do U.S. and European banks. Those lending to Japanese banks are making two assessments. The first is related to an economic question: What is the probability that the bank will experience losses sufficient to make it insolvent? The second is partly political and partly economic: Given the failure of one or more Japanese banks, will the government be able and willing to shield creditors from losses? If Japanese banks have a higher probability of failure or a lower probability of receiving government support, compared to their American or European peers, then creditors will demand a premium to provide interbank loans to a Japanese bank. Note that even if Japanese banks had a much higher probability of failure, if the Japanese government could credibly stand ready to guarantee all debts, Japanese banks might not be required to pay a Japan premium. This may explain, in part, why the Japanese banks were not paying a premium prior to August 1995, despite the well-known difficulties arising from declines in the Japanese stock market and in Japanese real estate prices.

The Japan premium data are based on the individual quotes from the contributor panel of banks used to calculate the London Inter-Bank Offer Rates. The data are from Bloomberg and represent the quotes used by the British Bankers' Association for the daily LIBOR fixing as of 11:00 a.m. London time.¹ Note that 11:00 a.m. London time would correspond to 8:00 p.m. in Tokyo, well after the financial markets had closed for the day and after most announcements in Japan that occur after the close of Japanese trading.²

A different set of banks is used for the dollar and for the yen LIBOR instruments. For the dollar contracts, only three Japanese banks are used by the British Bankers Association: BOTM, Fuji

Bank, and Sumitomo Trust. For the yen contracts, the eight Japanese banks that report are BOTM, Fuji, Sanwa, Industrial Bank of Japan, Sakura, Tokai, Dai-Ichi Kangyo, and Sumitomo Bank.

We investigate the determinants of the Japan premium in two separate steps. First, we consider the basic premium defined as the difference between the Bank of Tokyo-Mitsubishi ILR and that for the average of the ILRs reported by the U.S. and U.K. banks. The second step then investigates the additional premium paid by other major Japanese banks over that paid by BOTM. In this way, we attempt to isolate the risk premium associated with being a major Japanese bank (the “Japan premium”) from the additional risk premiums paid by Japanese banks deemed by the market to be relatively more risky. We estimate variants of the following equation:³

$$JPREMIUM_{j,t} = \alpha_0 + \alpha_1 MARKET_{t-1} + \alpha_2 EVENT_t + \epsilon_{j,t} \quad (1)$$

For the first stage of the analysis, the dependent variable, JPREMIUM, is the change in the ILR quote reported for BOTM on day t, minus the corresponding change in the average ILR offered by U.S. and U.K. banks. The change is calculated as the difference between two contiguous trading days.⁴ The estimation uses daily data for the period February 1, 1995, through October 30, 1998. We first focus on Bank of Tokyo-Mitsubishi because it is considered the most internationally active and healthiest of the large city banks, and therefore is the Japanese bank that generally pays the lowest Japan premium.

In the second stage of the analysis, the dependent variable becomes the change in the ILR reported for Japanese bank j on day t, minus the corresponding change in the ILR reported for BOTM. For this analysis, equation 1 is estimated only from November 1, 1997, through the end of

October 1998, a period when the market differentiated the premiums according to perceptions of the health of individual banks.

We examine four different LIBOR contracts: the one-month U.S. dollar ILR, the one-year dollar ILR, the one-month yen ILR, and the one-year yen ILR. The average of the ILR quotes for the set of U.S. and U.K. banks that serves as the reference rate are for those banks included by the British Bankers Association in the LIBOR fixing (as reported by Bloomberg) for the particular contract on date t . For the yen contracts, this includes quotes for Lloyds, Natwest, Midland, Citibank, Barclays, and J.P. Morgan. For the dollar contract, the quotes are for Lloyds, Barclays, Natwest, Chase, Citibank, Royal Bank of Scotland, and Abbey National. The individual quotes are frequently the same across these banks on any given day and they generally track each other quite well. Thus, the average would not be affected materially by the inclusion or exclusion of a particular bank from our sample.

The first set of explanatory variables (MARKET) controls for changes in market variables that might affect the probability of Japanese bank failures. Japanese banks have extensive cross-shareholdings with many of their major loan customers. Prior to recent accounting changes, the Tier 2 capital of banks directly affected their reported capital. While reported capital has now been insulated from market movements at those banks that have chosen to report shareholdings at book rather than market values, the true economic capital of Japanese banks will still be impaired by potential losses on their shareholdings, should they need to liquidate their cross-shareholding positions. To control for sensitivity to the likelihood of Japanese banks failing based on potential capital losses on their shareholdings, we include the percent change in the Nikkei index for that day.⁵ We use the quote for the same day because the Nikkei is closed for the day prior to 11:00 a.m.

London time when the LIBOR is fixed. The second variable in this set is the percentage change in the yen-dollar exchange rate for the previous trading day. The exchange rate may be important for a number of reasons. For example, a decline in the value of the yen will increase the yen value of dollar-denominated assets held by Japanese banks, putting pressure on bank capital ratios as the yen value of assets rises relative to yen-denominated bank capital. Because we use the value at the New York close for the exchange rate, this variable is lagged one day.

The second set of variables is composed of dummy variables that capture particular events that might be relevant to either the probability of Japanese bank failures or the ability or willingness of the government to protect creditors from such failures. These events are grouped into four general categories: ratings downgrades, failures of financial institutions, failures of nonfinancial firms, and government announcements. Table 1 contains a chronological list of the events used in the study with the date and event category, as well as a brief description of each event.

For all but the actual failures of financial institutions, we create a one-day event window for each event. We include a two-day event window for a failure of a financial institution, in order to capture the uncertainty surrounding the nature of the resolution of financial failures during this period. It is possible to so narrow the event window because Japanese markets have already closed by the 11:00 a.m. London fixing of the LIBOR quotes. All events are verified to ensure that the announcement was available at 11:00 a.m. London time.⁶ This enables us to avoid the wider windows employed in most studies, which often cannot verify whether, on the day of the event, the announcement occurred before the market opened, while the market was open, or after the close. Because the events often occur in clusters, wider event windows would complicate the estimation and

the interpretation of the results, because in many instances the event windows would include dates that overlapped with dates for other events.

The first set of events relates to the role of outside monitors. Rating agencies may have less information than the government about the condition of banks, but they may be more objective in assessing the information they do have. The rating agencies are worried about the risk that creditors will experience losses. Thus, their evaluations include assessments of the financial health of the firm as well as of the likelihood that the government will arrange an exit for the bank that does not result in losses to interbank lenders.⁷ We include announcements of actual downgrades of Japanese banks. We include only announcements in which at least two Japanese banks are mentioned and at least one of the banks being downgraded is one of the nine Japanese banks active in the dollar or yen LIBOR markets.⁸ This permits a focus on major downgrades and eliminates the numerous downgrades associated with scandals or problems at individual banks.

The second set of events focuses on failures of Japanese financial institutions. We include failures of banks and of other financial firms that might alter the probability of failure of individual banks or of all banks. We limit the set of failure events to those of firms with at least 1 trillion yen in assets, as of 1994. We also include announcements related to the possible acquisition of LTCB by Sumitomo Trust as a subset of events in this category. We include announcements that the merger was likely to occur separately from those that indicated that the merger was off and that LTCB would be closed. The announcement of the possibility of Sumitomo Trust acquiring LTCB was construed by many as a return to the convoy system, whereby healthy institutions are expected to acquire their weaker brethren. An announcement indicating a return to the convoy system might be expected to

increase the Japan premium for the remaining banks that would be required to shoulder the burden of bailing out the weakest banks.

The third set of events contains failures of nonfinancial firms with assets exceeding 250 trillion yen. Large nonfinancial failures are potentially important insofar as they reveal either a larger volume of nonperforming loans at banks than previously reported or a lower probability of recovery for previously declared nonperforming loans.

The fourth set of events includes government announcements. Because of the large number of government announcements made during this period, to keep the set of events manageable we limited it to those announcements deemed to be major. To ensure objectivity in the selection, we restricted the set of government announcements considered to those reported in The Wall Street Journal in a long or medium-length article directly related to the banking industry. We used the Japan section of The Wall Street Journal Index to identify such articles. Once the announcements were identified, they were checked on Bloomberg to obtain a definitive time of the announcement, so that the correct day for the event dummy variable could be identified.

Government announcements were further subdivided into announcements of concrete actions and those that were far less specific. Announcements of concrete actions include two subcategories: the infusion of government funds into banks and the easing of accounting rules. We include five subcategories of less concrete announcements: announcements of intentions to support large banks, announcements of intentions to close insolvent institutions, announcements that problem loans had increased, announcements that problem loans had decreased, and a set of five miscellaneous announcements that are less specific to banking problems. These include the transfer of Kizu Credit assets and liabilities to Tokyo Kyodou Bank; the establishment of the Financial Inspection and

Monitoring Agency to serve as an independent bank regulator; the resignation of the finance minister over bank-related scandals; the adoption of tax breaks for resolving bad loans at banks; and agreement on a banking bill in October 1998. While each of these events potentially could be important, none of the five announcements in the miscellaneous category produced significant effects and thus are not shown in the tables.

3. Empirical Results

Table 2 presents the results of estimating equation 1 for each of the four LIBOR contracts, over the period February 1, 1995, through October 30, 1998, for the BOTM premium measured relative to the average rate offered by the U.S. and U.K. banks. The ratings changes over this period are all downgrades. If a ratings downgrade coincides with another major event, we constrain its effect to be equal to the average for ratings downgrades and allow any remaining effect on that date to be attributed to the other coincident event.⁹

Of the 23 downgrades, only two have significant effects for at least two of the contracts. We report these two events separately, and constrain the remaining 21 downgrades to have the same (average) effect. For these 21 downgrades, the average estimated effect is positive for each contract, but statistically significant only for the one-month dollar contract. The magnitudes of the estimated coefficients indicate that while announcements of ratings downgrades tend to raise the Japan premium, the effect is quite modest. The two events for which at least two of the equations indicate a positive and significant event are the Fitch IBCA (IBCA) downgrades on 12/2/97 and the announcement by Moody's on 4/3/98 of a change to negative in the outlook for Japan's currency ceiling. Presumably, Moody's announcement that it was changing the outlook for Japan's currency

ceiling would affect the borrowing costs of Japanese companies generally, and this likely accounts for it having a larger impact on the Japan premium than announcements that were downgrades of individual banks. While public policy announcements have sometimes emphasized the role of outside monitors in contributing to the large size of the Japan premium, only two ratings downgrades were associated with large changes in the magnitude of the Japan premium.

The next set of events includes announcements related to failures of major financial institutions. For actual failures, we use a two-day event window that includes the day of the announcement as well as the day after the announcement in order to account for the fact that the initial announcement may not provide much indication of how the government is likely to resolve the failure. Information about the resolution of the failure is likely to have a major effect on the Japan premium. We include separate event dummy variables for three of the major financial failure dates. The Hyogo Bank/Kizu Credit event and the Yamaichi Securities event are shown separately because they have individual effects that are significant for at least two of the contracts. The Hokkaido Takushoku event is shown separately because it played an important role in the discussions of the costs and benefits of bank closures. The remaining failures (Taiheiyo Bank, Crown Leasing, Japan Leasing, and LTCB) do not produce individual effects that are significant and they are grouped together, with their average effect shown. This effect is quite small, with three of the four estimated effects negative and none significant. Finally, we include announcements concerning the potential merger of LTCB with Sumitomo Trust and announcements of the likely closure of LTCB as events separate from the actual failure announcements.

The failures of Hyogo Bank and Kizu Credit at the end of August 1995 heralded the emergence of the Japan premium. The estimated effect on the Japan premium is positive for all four

contracts and is statistically significant at traditional levels for both one-month contracts and at the 10 percent level for the one-year dollar contract. That these institutions could fail, and that the disposition of claims could be uncertain, caused many investors to reassess risks posed by unsecured lending to Japanese banks.

The failure of Hokkaido Takushoku in November 1997 represented the first time a major city bank had been allowed to fail. However, the estimated effect is negative for three of the four equations, although none is significant. A negative impact on the Japan premium is consistent with investors being relieved that the government was taking actions against the most troubled banks and would likely use government funds to resolve the losses, and that other banks were not expected to fund the losses. Consistent with this result, on the day after the failure the Prime Minister announced that public funds would be available (although he retracted the statement the following day).

When Yamaichi Securities failed the following week, the reaction was quite different. For this event, the estimated effect is positive and significant for each of the four contracts. The Yamaichi failure took many investors by surprise. It highlighted the fact that the extent of Japanese financial problems had not been fully disclosed, because it was announced that many of the losses had not been previously reported. Furthermore, the uncertainty about the disposition of creditor positions, and the concerns that many other financial institutions might have similar large undisclosed losses, likely resulted in a substantial reevaluation by foreign banks of their likely exposure to Japanese banks. The day after the failure, the finance minister and the governor of the Bank of Japan announced that there would be no more bankruptcies of financial institutions. Unlike the announcements after the Hokkaido Takushoku failure, the responses did not instill confidence in investors that the government was going to take decisive actions to clear up problem financial institutions.

The next set of financial events revolves around the potential merger of LTCB and Sumitomo Trust. LTCB-merge is the combination of two events. The first is the announcement on June 26, 1998, that a merger was being considered. When the announcement was made, LTCB claimed that it was a merger of equals, while Sumitomo Trust officials openly discussed concerns that LTCB was insolvent and that government funds would be needed. In the second announcement, on August 21, 1998, the Finance Minister advocated restructuring LTCB to make it a more palatable merger partner for Sumitomo Trust. Both of these announcements were construed as an attempt to return to the “convoy” policy of having healthier banks acquire their weaker brethren. They caused the Japan premium to increase for three of the four contracts, with the estimated effect significant for the one-month dollar and one-year yen contracts.

LTCB-close combines two announcements related to decisions by Sumitomo Trust not to purchase LTCB, thus likely requiring nationalization of LTCB. On August 27, 1998, it was revealed that Sumitomo Trust might not be willing to accede to government pressure, while on September 17, 1998, the government decided to adopt opposition bank-reform proposals that would enable LTCB to be nationalized. These announcements resulted in an increase in the Japan premium for three of the four contracts, with both one-month contracts having statistically significant effects. The fact that a series of announcements preceded the nationalization of LTCB likely accounts for the absence of significant effects on the Japan premium when the announcement of the actual nationalization finally occurred, since it was not a surprise.

The nonfinancial failure announcements include the announcements of failures of the largest nonfinancial firms during our sample period, those with assets greater than 250 million yen. Two of the announcement dates coincide with other event dates, the 7/4/97 announcement of lower bad loans

and the 8/21/98 announcement related to the merger of LTCB and Sumitomo Trust. For these two events, we constrain their effects to be equal to the average effect of nonfinancial failure announcements, with any additional effect on that date attributed to the coincident events. The average estimated effect of failure announcements for large nonfinancial firms shown in the table is quite small and is positive for only two of the contracts. Although these failures may have provided information on the extent and severity of the problem loan exposures of Japanese banks, the new information was not sufficient to affect the magnitude of the Japan premium in a meaningful way.

Government announcements of actions to resolve banking problems frequently result in a significant reaction by the Japan premium. The average estimated effect of the five major announcements related to the infusion of funds into the banking system reduced the Japan premium for all four contracts, with three of the four estimated effects significant at the 5 percent level and the other one significant at the 10 percent level. Similarly, the announcement on December 29, 1997, to postpone implementation of the new capital standards and the relaxation of other accounting rules to bolster bank capital, such as allowing banks to value their extensive cross-shareholdings at book rather than market values, reduced the premium for three of the four contracts, although only the estimated effect for the one-month yen contract was significant.

Several announcements were relevant to the banking industry but were not accompanied by concrete actions. These included announcements that the Japanese government would support the largest banks, that they would close insolvent institutions and no longer rely on convoy policies, that aggregate nonperforming loans were decreasing, and that aggregate nonperforming loans had increased. Among these announcements, only those related to closing insolvent institutions produced significant estimated effects on the size of the Japan premium for any of the contracts. In that case,

the estimated effects were each positive, with that for the one-year yen contract significant at the 5 percent level and that for the one-month contract significant at the 10 percent level. Finally, the specification also controls for the change in the Nikkei index and the change in the yen-dollar exchange rate, with neither variable having a statistically significant effect in any of the four contracts.

Overall, the evidence presented in Table 2 indicates that some actions have significantly affected the Japan premium. The closures of Hyogo Bank and Kizu Credit, the closure of Yamaichi Securities, and announcements regarding the likely merger or closure of LTCB increased the premium, while injections of government funds into the banking system reduced the premium. Government announcements not backed up by concrete actions appear to have had little impact on the size of the Japan premium. Furthermore, failures of other large financial firms, including the failure of Hokkaido Takushoku, did not significantly increase the premium, nor did ratings downgrades generally. It is financial failures such as Yamaichi Securities and LTCB, where disclosure was suspect and government resolutions uncertain, that caused the largest increases in the Japan premium.

4. Differences in the Size of the Japan Premium across Banks

One of the clearest manifestations of the convoy system operating among major Japanese banks was their ability to raise interbank Eurodollar and Euroyen funds at very similar rates, despite distinctions made among these banks by the major rating agencies. For example, when Moody's first provided the Bank Financial Strength Ratings (BFSR) on August 20, 1995, Bank of Tokyo-Mitsubishi and Sanwa Bank each had C+ ratings, while Sakura had a D+ rating. Yet, throughout 1995 and 1996, the LIBOR quotes for individual Japanese banks were very similar, with differences

rarely more than a few basis points. However, starting in November 1997 with the failure of Hokkaido Takushoku and Yamaichi Securities, the market began to distinguish among banks with respect to the riskiness of unsecured interbank loans.

To examine the factors that have had an impact on the dispersion of the Japan premium across major Japanese banks, we have reestimated equation 1 with the change in the ILR quotes for Japanese banks measured relative to that for BOTM. We estimate a separate equation for each bank in order to allow coefficients to vary across banks for any particular event. Thus, we can examine if lower-rated banks systematically react more to specific events than those viewed as more healthy, at least by Moody's standards. That is, we now focus on the determinants of the size of the additional premium paid by Japanese banks beyond the "base" Japan premium paid by BOTM.

The equation is estimated only for the period beginning November 1, 1997, since it was only in November that the premium began to vary systematically across banks. We use the same set of events as for Table 2, omitting events prior to November 1, 1997. Table 3 presents the results for the one-month yen contract, for which we have ILR quotes for seven banks that can be compared to that for BOTM.¹⁰ At the top of Table 3, we list the bank names and their BFSR ratings as of November 1997, with the banks ordered from the highest rating of B for BOTM to D+ for Sakura.

The first clear evidence that the ILR quotes of Japanese banks were reacting differently to events occurs immediately following the Yamaichi failure on November 26. This event has a positive estimated effect for all four contracts that is statistically significant at standard levels for each bank except Sakura, for which it is significant at the 10 percent level. While the premium for each bank increased relative to that of BOTM, the increases are surprisingly uniform, providing little differentiation across banks. The other financial event that had a major systematic impact on the

relative premium across banks was the pair of announcements related to the likely closure of LTCB. The relative premium for each of the seven banks exhibits a positive and significant response, with the impact being the smallest for the relatively healthy Sanwa, and largest for Fuji and Tokai. Note that after the Hokkaido Takushoku failure in mid-November 1997, many of the weaker banks suffered substantial rating downgrades, including Fuji. However, other financial failures, including the failure of Hokkaido Takushoku, had no significant impact on the premium spreads measured relative to BOTM.

Government announcements related to the injection of funds into the banking system reduced the relative premium, although the reductions are never statistically significant. However, the point estimates indicate that the relative premiums tended to decline most at the weaker institutions. Changing the accounting standards for calculating bank capital also reduced the size of the premium differential for each bank, with the estimated effect significant for Sumitomo, DKB, and Sakura. Announcements of intentions to close insolvent institutions also reduced the premium differential, although the estimated effect was never significant.

These results indicate that some differentiation did occur following the failure of Yamaichi Securities. While the initial reaction differentiated only between BOTM and the other banks, later announcements appear to have made finer distinctions among the banks.

5. Conclusion

The Japan premium has significantly increased the funding costs for Japanese banks since its emergence in 1995. It has also played a major role in the shaping of government policy toward the banking sector. By looking at major ratings changes, financial institution failures, government

announcements, and other announcements, we can obtain a better understanding of the factors contributing to the Japan premium. In effect, it provides a market indicator of whether actions taken by the government are viewed by investors as increasing or decreasing the likelihood of repayment on unsecured interbank loans.

We find that while the Japan premium increased with the failures of Hyogo Bank and Kizu Credit, that was not the case when Hokkaido Takushoku failed. In fact, the estimated response was negative, although not statistically significant, for three of the four LIBOR contracts considered. Thus, not all bank closures are likely to undermine confidence in Japanese banks. However, the reaction to the failure of Yamaichi Securities the following week was quite different. Over the following three days, the Japan premium rose to unprecedented levels, and the spread among the ILR quotes for major Japanese banks increased for the first time. Yamaichi Securities failed, in part, as a result of large undisclosed losses. Furthermore, the government was equivocating on how problem banks would be liquidated. Concerns with possible undisclosed losses at other institutions and concerns that the government did not have an effective plan to resolve banking problems caused investors to charge a much larger premium, particularly for some of the weaker banks.

Government announcements that occur in the absence of concrete actions appear to be ineffective. Announcements of intent to support banks had no discernible effect on the Japan premium. Similarly, announcements of lower or higher levels of problem loans had no effect on the premium. On the other hand, announcements of actions to help resolve banking problems did lower the Japan premium. Government injections of funds into the banking system reduced the magnitude of the Japan premium for each of the four contracts.

In summary, government actions have had more of an impact on the Japan premium than statements of intent. Actions to resolve the banking problems have lowered the Japan premium, while avoidance of addressing the banking problems has not. If Japanese banks are no longer to be charged large premiums in the interbank market, investors must be convinced that concrete actions have been taken to eliminate those banks that are not competitive in a way that does not imperil the remaining healthier banks.

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Acknowledgments

Valuable research assistance was provided by Steven Fay. We thank Takeo Hoshi and participants of the NBER Japan Project meeting in Tokyo for valuable comments. The views expressed are those of the authors, and do not necessarily reflect official positions of the Federal Reserve Bank of Boston or the Federal Reserve System.

Footnotes

1. Each bank is asked to contribute the rate at which it would borrow funds, were it to do so, by asking for and then accepting interbank offers in reasonable market size just prior to 11:00 a.m. London time. The official LIBOR rate is calculated by eliminating the top and bottom quartiles of the contributor panel quotes, and then calculating the arithmetic average of the two middle quartiles. This average rate is the LIBOR fixing for that particular currency, maturity, and fixing date.
2. There is an eight-hour time difference between Tokyo and London when daylight savings time is in effect, and a nine-hour time difference when it is not.
3. This estimation is similar in spirit to earlier studies that look at how particular events affected municipal bond market spreads (for example, Kidwell and Trzcinka 1982, 1983).
4. Thus, data do not include weekends, or days that are either (or both) Japanese holidays for which the Japanese ILR quotes are unavailable or U.S. and U.K. holidays for which reference bank ILR data are unavailable. A few Japanese banks have isolated days for which no quote is available. These are treated as missing observations. The changes in ILR rates are calculated between adjacent “trading days,” that is, days for which all necessary data are available.

5. Some of the aggregate movement in stock prices may be hedged with derivatives contracts on stocks. Given the volatility, this would be expensive. Furthermore, the portfolio concentrations of Japanese banks may not be reflective of the broader index, making the hedge imperfect.
6. For S&P and Moody's ratings changes, we verified from Bloomberg the exact time of the announcement so that we could properly date the event. Many of the IBCA ratings changes do not appear on Bloomberg, so we have relied on correspondence with IBCA to date their announcements.
7. Some ratings, such as Moody's BFSR rating, try to focus on the probability that the bank fails, rather than mixing the probability of failure with the likelihood of government support.
8. We also include the date of the first BFSR ratings issued by Moody's, many of which were lower than had been expected. In addition, we include downgrades that might affect Japanese firms generally, such as Japan's long-term foreign currency rating.
9. Only two event dates coincide with ratings downgrades. They are the announcement on 8/27/98 that Sumitomo Trust was delaying its decision on the merger with LTCB, and the announcement on 12/29/97 of the easing of accounting rules.
10. Qualitatively similar results are obtained for the one-year yen contract.

Table 1
Chronology of Events (dated as of 11:00 a.m. London time)

Event Date	Event Category	Description
6/20/95	Ratings	IBCA downgrades Sakura, Daiwa
8/21/95	Ratings	Moody's assigns BFSR
8/30/95	Financial: Hyogo/Kizu	Hyogo Bank and Kizu Credit fails
10/20/95	Ratings	IBCA downgrades 10 banks; Moody's downgrades 3
11/13/95	Government: lower NPL	MOF reduces estimate of NPL to 37.4 trillion yen
11/22/95	Government: miscellaneous	MOF transfers Kizu credit assets and liabilities to Tokyo Kyodou Bank
12/22/95	Ratings	S&P downgrades Mitsubishi, Sanwa, Sumitomo, DKB
1/23/96	Ratings	Moody's downgrades Sakura, LTCD, Daiwa
3/30/96	Financial	Taiheiyo Bank fails
6/27/96	Ratings	IBCA downgrades Sumitomo, DKB, Sanwa
12/24/96	Government: miscellaneous	Establish Financial Inspection and Monitoring Agency
2/10/97	Government: support banks	Financial Minister-support largest banks in crisis
4/1/97	Financial	NCB affiliates including Crown Leasing file for bankruptcy
7/4/97	Nonfinancial	Takai Kosyo, a construction contractor, to file for bankruptcy
	Government: lower NPL	MOF reduces estimate of problem loans to Y27.9 trillion
10/27/97	Ratings	IBCA downgrades Sanwa, Sumitomo, DKB, BOTM
11/13/97	Ratings	IBCA downgrades Fuji, IBJ, Sakura
11/14/97	Ratings	IBCA downgrades Tokai, Asahi, Mitsui Trust, Mitsubishi Trust, Sumitomo Trust, Yasuda Trust
11/17/97	Financial: Hokkaido Takushoku	Hokkaido Takushoku closed
11/25/97*	Financial: Yamaichi Securities	Yamaichi Securities closed
11/28/97	Government: close insolvent	MOF: close banks that are insolvent
12/1/97	Government: close insolvent	Prime Minister: close banks that are insolvent
12/2/97	Ratings: IBCA	IBCA downgrades LTCB, DKB, Sumitomo, Sanwa, Hokkaido Takushoku
12/8/97	Government: inject funds	LDP official: plan to use government funds for problem banks
12/19/97	Nonfinancial	Toshoku Ltd., a food trading company, files for bankruptcy
12/29/97*	Ratings	S&P downgrades Sakura and Sanwa
	Government: relax accounting rules	MOF: postpone implementation of new capital standards and relaxation of other accounting rules
1/8/98	Government: inject funds	MOF: provides details of government injections
1/12/98	Government: higher NPL	MOF: classified loans of Y76.7 trillion
1/27/98	Government: miscellaneous	FM resigns due to banking scandals
1/28/98	Ratings	S&P downgrades DKB; IBCA downgrades Sakura
3/5/98	Government: inject funds	Banks announce they will apply for government funds
3/17/98	Government: inject funds	Cabinet approves injection of funds

Table 2
Determinants of the Japan Premium for Bank of Tokyo-Mitsubishi
February 1, 1995 through October 30, 1998

	1 Month Dollar	1 Year Dollar	1 Month Yen	1 Year Yen
Ratings				
IBCA Downgrade	.030 (0.68)	.173** (5.23)	.191** (4.81)	.141** (4.67)
Country Ceiling Negative	.020 (0.46)	.092** (2.78)	.113** (2.84)	.046 (1.53)
Other Ratings (21 events)	.021* (2.18)	.009 (1.14)	.013 (1.48)	.012 (1.76)
Financial				
Hyogo Bank/Kizu Credit	.066* (2.16)	.044 (1.88)	.094** (3.44)	.033 (1.54)
Hokkaido Takushoku	-.049 (1.59)	.008 (0.33)	-.032 (1.16)	-.008 (0.36)
Yamaichi Securities	.128** (4.20)	.109** (4.63)	.074** (2.70)	.054* (2.51)
Other Financial Failures (4 events)	-.002 (0.13)	.009 (0.78)	-.021 (1.55)	-.004 (0.41)
LTCB-merge (2 events)	.116** (3.53)	-.011 (0.44)	.041 (1.38)	.084** (3.64)
LTCB-close (2 events)	.102** (3.32)	-.002 (0.06)	.094** (3.37)	.001 (.024)
Nonfinancial				
Nonfinancial Failures (4 events)	-.038 (1.52)	.009 (0.47)	.008 (0.35)	-.011 (0.65)
Government				
Inject Funds (5 events)	-.040* (2.10)	-.035* (2.34)	-.044* (2.54)	-.026 (1.94)
Relax Accounting Rules	-.030 (0.68)	-.010 (0.29)	-.278** (7.01)	.002 (0.13)
Support Banks	-.015 (0.34)	.007 (0.22)	-.031 (0.81)	-.004 (0.13)
Close Insolvent (3 events)	.015 (0.59)	.026 (1.34)	.043 (1.91)	.037* (2.11)
Lower NPL (2 events)	.008 (0.26)	-.023 (0.91)	-.006 (0.20)	.024 (1.02)
Higher NPL	.024 (0.55)	.042 (1.25)	-.004 (0.11)	.019 (0.62)
Market				
Nikkei	.001 (0.57)	-.001 (1.87)	.000 (0.31)	-.001 (1.27)
Yen	-.002 (1.13)	.000 (0.11)	.000 (0.07)	-.001 (1.02)
R ²	.071	.085	.140	.068
SER	.043	.033	.039	.030
SSR	1.604	.952	1.298	.796

Standard errors are in parentheses.

* Significant at the 5 percent level.

** Significant at the 1 percent level.

Table 3

Determinants of Japan Premium Differentials of Japanese Banks for One-Month Yen Contract
November 1, 1997 through October 30, 1998

	BOTM	Sanwa	Sumitomo	DKB	Fuji	IBJ	Tokai	Sakura
Moody's BFSR, November 1997	B	C+	C	C	C	C	D+	D+
	Ratings							
IBCA Downgrade	.160**	.072	.071	.121	.067	.070	.059	
	(2.67)	(1.19)	(1.16)	(1.83)	(1.04)	(1.10)	(0.88)	
Country Ceiling Negative	.038	.074	.073	.029	.037	.072	.062	
	(0.64)	(1.23)	(1.20)	(0.45)	(0.57)	(1.13)	(0.92)	
Other Ratings (16 events)	-.003	-.008	-.008	.006	-.004	-.006	.004	
	(0.20)	(0.50)	(.46)	(0.31)	(0.23)	(0.35)	(0.21)	
	Financial							
Hokkaido Takushoku	-.014	-.014	-.014	-.012	-.004	.002	-.001	
	(0.33)	(0.34)	(0.31)	(0.26)	(0.09)	(0.06)	(0.03)	
Yamaichi Securities	.099*	.099*	.098*	.099*	.095*	.098*	.083	
	(2.39)	(2.37)	(2.34)	(2.19)	(2.16)	(2.25)	(1.80)	
Financial (2 events)	.009	-.004	-.031	-.021	-.031	-.024	-.022	
	(0.31)	(0.13)	(1.03)	(0.67)	(1.00)	(0.78)	(0.68)	
LTCB-merge (2 events)	.072	.059	.053	.053	.055	.059	.058	
	(1.60)	(1.30)	(1.16)	(1.09)	(1.16)	(1.24)	(1.16)	
LTCB-close (2 events)	.087*	.090*	.104*	.130**	.098*	.119**	.115*	
	(2.07)	(2.12)	(2.44)	(2.81)	(2.19)	(2.68)	(2.46)	
	Nonfinancial							
Nonfinancial Failures (3 events)	-.017	-.023	-.012	-.011	-.017	-.024	-.023	
	(0.47)	(0.62)	(0.32)	(0.27)	(0.42)	(0.61)	(0.54)	
	Government							
Inject Funds (5 events)	-.028	-.023	-.029	-.053	-.037	-.036	-.047	
	(1.07)	(0.85)	(1.10)	(1.84)	(1.31)	(1.29)	(1.62)	
Relax Accounting Rules	-.086	-.144*	-.145*	-.095	-.057	-.116	-.157*	
	(1.43)	(2.38)	(2.39)	(1.45)	(0.89)	(1.83)	(2.33)	
Close Insolvent (3 events)	-.065	-.036	-.035	-.034	-.032	-.047	-.036	
	(1.90)	(1.04)	(1.01)	(0.90)	(0.87)	(1.30)	(0.94)	
Higher NPL	-.024	-.025	.006	.007	.002	-.026	-.056	
	(0.41)	(0.42)	(0.10)	(0.11)	(0.04)	(0.42)	(0.86)	
	Market							
Nikkei	.003	.003	.002	.002	.001	.002	.003	
	(1.27)	(1.26)	(1.15)	(1.06)	(0.36)	(1.07)	(1.30)	
Yen	-.002	.001	.002	.002	.001	-.000	.002	
	(0.67)	(0.32)	(0.45)	(0.39)	(0.27)	(0.00)	(0.43)	
R ²	.120	.102	.109	.111	.074	.103	.104	
SER	.056	.058	.058	.063	.061	.061	.064	
SSR	.730	.745	.747	.878	.826	.820	.909	

Standard errors are in parentheses.

* Significant at the 5 percent level.

** Significant at the 1 percent level.