

Bank Underwriting of Corporate Bonds:  
Evidence from Japan after 1994

First Draft: April 1997  
This Version: June 1997

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We thank Goldman Sachs (Japan) for providing data; Serdar Dinç, Tadashi Kikugawa and participants of the Hugh Patrick *Festschrift* Conference for useful comments and conversation; and Mingzhu Wang for research assistance. Hamao gratefully acknowledges support from the Mitsubishi Trust and Banking Professorship at Columbia University.

## ABSTRACT

This paper examines a recent major change in the corporate bond primary market in Japan, namely bond underwriting by bank subsidiary securities firms. We analyze yields on corporate bonds at the time of issue, searching for evidence of conflict of interest, bank certification, distribution advantage, or aggressive entry strategy by banks. Bank subsidiaries have been successful in acquiring the underwriting business of firms which have been reducing their ties with main banks through decreasing loans, rather than serving firms for which the parent banks are the main banks. This tendency is especially clear in the more recent period. After controlling for firm and bond characteristics, the choice of underwriter (existing or bank subsidiary securities firms) generally does not have a material impact on yield spread. On the other hand, when the choice of underwriters is interacted with the maturities of corporate bonds, there is some evidence of net certification effect and/or aggressive pricing for bonds with longer maturities, which would have less competition with bank loans.

## 1. Introduction

One of the features of the Japanese postwar financial system is a clear division between banking and the securities business. Article 65 of the Securities and Exchange Act of 1948 explicitly prohibited banks from underwriting securities. As financial markets underwent rapid product innovations from the late 1970s, this division, along with other partitions within the banking industry (city banks, long-term credit banks, and trust banks) became a subject of discussions on deregulation. The resulting change is the Financial System Reform Act which became effective on April 1, 1993. This law is intended “to promote the healthy development of financial markets through effective and proper competition and to give incentives to financial institutions to better serve their clients through the introduction of a variety of new products” (Ministry of Finance (1994)). One of the major changes under the new law is the lowering of the traditional wall between banks and securities firms, allowing banks (securities firms) to set up their security firm (trust bank) subsidiaries. The implementation of the law, however, was deliberately slow, and new subsidiaries were approved only gradually. For bank subsidiary securities firms, the first three banks that received licenses were the Industrial Bank of Japan, the Long-term Credit Bank of Japan, and Norinchukin Bank, which established their subsidiaries on July 26, 1993. City and trust banks followed, with the last one to start business opening its doors in November 1995. (See Table 1). The business activities of these bank subsidiary securities firms are still limited in equity and equity derivative transactions.

This paper compares the characteristics of straight corporate bonds underwritten by existing securities firms and bank subsidiary securities firms. In making and monitoring loans, commercial banks acquire private information about a firm that is not available to general

investors in the securities market. Thus, if banks are allowed (through subsidiaries in the Japanese case) to underwrite corporate securities, a conflict of interest can develop. For instance, banks can underwrite corporate bonds issued by a firm that they privately know is unsound and then require that firm to use the proceeds to repay loans, transferring their risk to general public investors.

The Ministry of Finance has set up a Ministry Order to prevent such conflict of interest (“firewall regulation”).<sup>1</sup> But since Japanese commercial banking features a tradition of strong relationship banking as seen in the main bank system (see for example, Aoki and Patrick (1995)), it is nevertheless of interest to examine if there is any evidence of conflict of interest. If there is a conflict of interest, rational investors would require higher yields on securities underwritten by bank subsidiaries. If the underwriter’s parent company is the main bank of the issuing firm, this effect may be even stronger.

On the other hand, underwriters can certify the value of the new issue. Having more information about a firm, banks would have a greater ability to certify than would their counterpart securities firms. Since correct certification by underwriters would improve their own reputation, they have an incentive to do so. Certification would lead to a lower yield for bonds underwritten by bank subsidiaries. Again, in the case of main banks, the effect may be even more prevalent. We examine the extent of the certification effect in the Japanese corporate bond market.

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<sup>1</sup>See, for example, Finance Ministerial Order, Banking #610 (April 1, 1993), which orders “Parent banks or subsidiary banks of securities companies are not allowed to receive undisclosed information about security issuers or customers of their related securities company, or provide such information to the related securities company.”

Another possibility is that securities firms, having more accumulated skills with regard to pricing and distribution of corporate bonds compared to newly established bank subsidiaries, may have some advantage in placing corporate bonds. This would lower yields on bonds underwritten by existing securities firms compared to those underwritten by bank subsidiaries. We will also examine this hypothesis.

The move toward “universal banking” is a global trend. There is a controversy regarding banks’ engaging in corporate bond underwriting in the United States where traditional prohibition of such activities by the Glass-Steagall Act is now being actively discussed. Kroszner and Rajan (1994) and Puri (1996) both examine data from the pre-Glass-Steagall period. The former find that the public rationally accounted for the potential conflict of interest. The latter finds banks’ certification effect to be significant so that investors were willing to pay higher prices for bank-underwritten securities.

White (1986) examines the relation between banks’ involvement in the securities business and their probability of failure during the pre Glass-Steagall period. He finds the probability of failure was actually lower for those banks which were actively involved in the securities business. Hoshi (1996) examines pre-war Japanese corporate finance when banks dominated the corporate bond underwriting business. He finds that the failure of banks during both the financial depression in 1927 and the depression after Japan’s return to the gold standard (1930) was unrelated to the banks’ involvement in the securities business.

Our paper is the first to examine current evidence of this issue in Japan. For the United States, Gande, Puri, Saunders, and Walter (1997) look at securities underwritten by Section 20 subsidiaries of U.S. commercial bank holding companies and find that yields are lower for bank

subsidiary underwritten bonds issued by lower credit rating, consistent with the certification effect.

The paper is organized as follows. In the next section, we describe the data and the selection of the sample. In section 3, we report empirical findings. Section 4 concludes.

## **2. Data**

We examine primary market data for domestic corporate straight bond issues from February 25, 1994 (first occurrence of bank subsidiary's underwriting) to September 30, 1996. The original data are collected from Nikkei NEEDS "Corporate Action" magnetic tapes, which record all changes in corporate financing through financial markets (new issues of debt, equity or convertible securities, retirement of securities, conversion of convertible securities, etc). We chose only domestic public issues because underwriters' identities are not available for Euro and privately placed issues in this data set. Only straight bonds are considered since (1) they have become a major financing tool for Japanese corporations during the time period we examine, and (2) we would like to have a direct comparison with traditional bank loans. We also exclude bonds issued by NTT and electricity power utilities from the analysis.

The attributes we use in this data set are: date of issue, identity of issuers, industry code, issue amount, maturity, coupon rate, issue price, JBRI (Japan Bond Research Institute) ratings, use of funds, and lead underwriter of issues. The JBRI ratings do not cover the entire universe of issuing firms, and the use of funds can be (1) investment in equipment; (2) operation funds; (3) repayment of debts; or (4) others (such as investment in subsidiaries). Multiple reasons may be recorded for a single issue.

We also use data on the Japanese Government Bonds (JGBs) as a basis to compute yield spread at the time of the issue. The JGB yield with a matching maturity to a new corporate bond issue is computed by interpolating yields of two bonds with closest maturities. For example, suppose a corporate bond is issued on May 20 with 4 years of maturity. Then two JGBs are searched; one with a maturity just short of, but closest to 4 years (e.g., 3 years and 350 days) and another with a maturity just over, but closest to 4 years (e.g., 4 years and 10 days), as of May 20. The yield to maturity of these two JGBs are averaged and used as a benchmark for this corporate bond issue. The yield spread is defined as yield to maturity of corporate bond minus its benchmark JGB yield to maturity. The JGB yield history data are provided by Goldman Sachs.

Additional data on characteristics of the issuing firms are obtained from NEEDS financial statement data and Hamao (1991) monthly stock returns data. The items we use are: market value of outstanding equity, total debt, total loan, EBIT (earnings before interest and taxes), and interest expenses. They are used to compute size of the firm, market debt-to-capital (debt plus market value of equity) ratio, bank loan-to-total debt ratio, and interest coverage ratio (earnings before interest and taxes over interest expenses). The data are as of the closest previous accounting cycle.

Finally, data on the main bank relationship are taken from *Kigyo Keiretsu Soran*. For each exchange-listed firm, a main bank is identified as the lender with the largest share, and the ratio of loans by the main bank to total debt is computed. When a company has no bank loan outstanding, we interpret that the company has no main bank.

### **3. Empirical Investigation**

### *3.1 Share Growth of Bank Subsidiary Securities Firms*

During the short period of time, bank subsidiary securities firms have aggressively increased their share of the bond underwriting business. Table 2 shows number and the amount of domestic straight bond issues by Japanese corporations from the second quarter of 1994 to the third quarter of 1996. Soon after all the major banks established their securities subsidiaries in November, 1994 (see Table 1), their share in corporate underwriting jumped to 34% in value and 42% in number (1st quarter of 1995). Bank subsidiaries continued to increase their influence and by the end of our sample period (3rd quarter of 1996), their share had reached 48% in value and 55% in number.<sup>2</sup> Thus, in a little over three years from the establishment of the first bank subsidiary securities firms, they have quickly become major players in the corporate bond market.

The remarkable growth of bank subsidiary securities firms may be less surprising if one notes the close relationship between Japanese banks and firms nurtured through the main bank system. Even before the passage of the Financial Reform Act of 1993, Japanese banks played the role of trustees for their customers placing corporate bonds in the domestic market. When Japanese corporations issued bonds abroad, Japanese banks often served as guarantors and sometimes co-underwrote bonds with Japanese securities houses. As Campbell and Hamao (1995) have shown, the trustees of domestic bonds and guarantors of foreign bonds were most likely to be the main banks of corporations.

It is natural to expect the main bank relationship to involve a bank subsidiary securities company when the main bank has one. Thus, when a company uses a bank subsidiary to

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<sup>2</sup>The share of bank subsidiary securities firms is larger when it is calculated for the number of underwriting than when it is calculated for the value. This implies the bank subsidiaries tend to underwrite smaller issues than do other securities companies, as we confirm in Table 3.



underwrite bonds, we would expect the company to use the securities subsidiary owned by the main bank. Our data are generally consistent with this expectation. When a company used a bank subsidiary, the subsidiary was owned by the company's main bank in 64% of the cases. If we limit the attention to those firms with a main bank that indeed has a securities subsidiary, the proportion increases to 77%. But we also find a sharp fall of the proportion of main bank subsidiary underwriting in the total underwriting by bank subsidiaries. Figure 1 shows this trend. In 1994, bank subsidiaries only underwrote bonds issued by their parent banks' customers. Until the end of 1995, the proportion of the main bank underwriting stayed above 80% (calculated in terms of the number of issues). In the last quarter of 1995, the ratio dropped to around 50%, where it stayed throughout 1996. Thus, main bank underwriting has declined over time. In other words, the bank subsidiary securities companies started to underwrite the bonds of corporations that do not have their parent banks as their main banks (or do not have any main bank).

The growth of underwriting by bank subsidiary securities companies, which is seemingly expanding beyond traditional main bank ties, would not have serious economic implications if it were just like that of established securities houses. But, as discussed in the introductory section, there are some hypotheses that suggest underwriting by bank subsidiaries is different from underwriting by securities houses. The rest of this section studies this difference using our database.

### *3.2 Characteristics of Bond Issues*

Table 3 reports the means of the major variables in our database. As discussed in the previous section, the JGB yields we used in calculating the spread are for bonds with maturity up

to 10 years. Consequently, we dropped from our sample issues with maturity longer than 10 years. (There are eight of them.) Four issues with floating coupons were also dropped. For twelve cases, we could not calculate loan to debt ratio of issuing firms since they do not have debt outstanding at the end of most recent accounting period. In one case, the market value of equity was not available at the end of the most recent accounting period. Eliminating these cases leaves us 432 issues out of the original 457 issues.

The means for the entire sample of 432 are reported in the first column, and the other two columns report the means for the cases where the lead underwriter is a bank subsidiary (182 observations) and the cases where the lead underwriter is the bank subsidiary owned by the main bank (118 cases).

The table reveals several interesting differences between the issues underwritten by bank subsidiaries and those underwritten by securities houses. First, the issue size is substantially (and statistically significantly) smaller for the issues underwritten by bank subsidiaries. This is what we would expect from Table 2, which showed the share of bank subsidiaries to be larger when it is calculated using the number of issues. Thus, compared with securities houses, bank subsidiaries seem to bring more small issues to the market. If small companies tend to issue a small amount of bonds, this result may support the hypothesis that bank subsidiaries (through their ties to the banks) have an advantage in assessing the value of smaller firms. But, more direct measures of firm size, such as capitalization and total assets, do not show much difference between the issues underwritten by bank subsidiaries and those underwritten by securities houses.

Second, the spread is slightly higher for issues underwritten by bank subsidiaries, but slightly lower if the underwriter is a subsidiary of the issuer's main bank. The difference,

however, is not statistically significant. We examine the effects of underwriters' identity on the spread in more detail below by estimating regression models.

Third, the companies that use bank subsidiaries for underwriting their bonds tend to have higher loan-to-debt ratios and higher dependence on the main bank (measured by the ratio of the loan from the main bank to the total debt). The difference is clearer (and statistically significant) for the companies that use the securities subsidiaries owned by their main banks.

Finally, there seems to be a weak correlation between the use of bank subsidiary securities companies and the stated purpose of issuing bonds. The companies that use bank subsidiaries are more likely to list repayment of debts as one of the primary uses of funds and less likely to list investment. This may imply the existence of conflict of interest.

### *3.3 Regression Results*

To examine the characteristics of bond underwriting by bank subsidiary securities companies in more detail, we estimate two sets of regression models. The first set of regressions focuses on spread as the dependent variable and asks whether bank underwriting influences the magnitude of spread. The second set examines the factors that influence the choice of underwriter.

Table 4 shows the estimation results for the first set of regressions. In order to control for the effects of firm characteristics (other than the identity of bond underwriter), the regressions in columns 1 and 2 include the amount of total assets (in log), the debt-to-capital ratio (in market value), the interest coverage ratio, the loan-to-debt ratio, and industry dummies (for which coefficient estimates are not reported). Two dummy variables to control for the effect of maturity

on the spread are also included in the regression. The first dummy variable (Maturity < 5 years) takes the value one if the maturity of the bond is relatively short (3, 4, or 5 years) and zero if the maturity is long (6, 7, 8, or 10 years). We also included a dummy variable for the bonds with 7 years of maturity since there is an anomaly in the JGB market that 7 year JGB tends to be relatively cheap (higher yield) compared to the fitted term structure model.<sup>3</sup> Column 1 estimates the effects of the use of bank subsidiaries on the spread and column 2 examines the effects of the use of main bank subsidiaries. In both regressions, the control variables enter the regressions with expected signs, although the statistical significance is only marginal in some cases. Size, measured by the log of total assets, is an important determinant of the spread. A larger corporation enjoys lower spread. The existence of debt, and especially bank debt, increases the spread as the coefficient estimates on the debt-to-capital ratio and the loan-to-debt ratio suggest. Finally, good performance of the company compared to its debt obligation (measured by the interest coverage ratio) reduces the spread. The coefficient estimates on the short maturity dummies suggest that the spread tends to be higher for bonds with relatively short maturity. If the yield curve is upward sloping (which is the case for our sample period), this implies that the yield curve for Japanese corporate bonds at the time of issue is flatter than that for the government bonds. The coefficient estimate on the 7 year maturity dummy confirms the existence of an anomaly in the JGB yield curve. The yield on the 7 year JGB is exceptionally high, which reduces the spread estimates. The regressions in columns 1 and 2 suggest that the use of bank subsidiary securities companies, whether they are main bank subsidiaries or not, does not influence the

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<sup>3</sup>Indeed, it is often the case that 7 year JGBs are the cheapest to deliver against JGB futures which has a delivery option.

spread very much. Although the estimates in both specifications are negative, suggesting that the certification effects may dominate the conflict of interest effects, the estimates are not statistically significant. The magnitude of the estimates is also small. Even the larger estimate implies that using the securities subsidiary of the main bank reduces the spread by less than 4 basis points. Compared to the sample mean of the spread (26 basis points) or the sample standard deviation (32 basis points), this is a small number. Thus, the regression result suggests the difference between bank subsidiary securities firms and existing securities houses is not only statistically but also economically insignificant, as far as the spread is concerned.

For a subset of the observations, we can use the bond rating by JBRI to control for the firm characteristics. Columns 3 and 4 replicate the regression analysis in the first two columns for the sample subset by replacing size and financial variables with rating dummies. The industry dummies are still included in the regressions although their coefficient estimates are not included in the table to save space. The rating dummy for AAA- and AAA is dropped to avoid multicollinearity. We find that the coefficients on the rating dummy for BBB and BBB+ is positive and statistically significant, implying that those firms have higher spreads than those with AAA- or AAA ratings as one would expect. The coefficient estimates on other rating dummies, however, are not reliably different from zero, suggesting that the spreads for the bonds issued by A or AA firms are not much different from those issued by AAA firms. As to the effects of bank subsidiary underwriting on spread, we do not find any significance, similar to the results for the first two columns. Thus, the regressions in Table 4 suggest no significant implications of bank subsidiary underwriting on spread, after controlling for other firm characteristics. The bank subsidiaries appear to be just like other securities houses, and there is no evidence of strong conflict of interest

or certification effect.

One may expect the extent of the conflict of interest effect to depend on the maturity of the bond. For example, bonds with relatively short maturity may be close substitute of bank loans. Then, underwriting of bonds with short maturities by bank subsidiaries is more likely to cause suspicion of conflict of interest than bonds with longer maturities. This possibility is explored in Table 5. Again the first two columns report regressions for the entire sample and the last two columns report the results for the JBRI rated issues. In the specification of Table 5, the dummy variable that indicates bank underwriting or main bank underwriting is interacted with the dummy variable for short maturities (less than or equal to 5 years). This allows us to estimate the effects of bank underwriting on the spread for issues with short maturities and those with long maturities separately.

The result indicates that the bonds with long maturities that are underwritten by bank subsidiaries tend to have lower spreads, suggesting that the certification effect dominates for these issues. But the coefficient estimates are statistically significant only in the first column. The magnitude of the point estimates is still small, ranging from 6 to 8 basis points. When the maturities of bonds are short, the effect of bank underwriting is close to zero. The point estimate in the first column implies that the bank underwriting of bonds with short maturities *increases* the spread (consistent with the net conflict of interest effect), but the coefficient is not statistically significant.

Even though the evidence is weak, the results in Table 5 suggest the possibility that the effect of bank underwriting on corporate bond yields may be more serious for the bonds with short maturities, which are close substitutes for bank borrowing. If the effect of conflict of

interest is large enough to offset the certification effect, we would find bank underwriting does not influence the bond yields, which is the results in Table 5. For bonds with longer maturities, the conflict of interest may be less serious and the certification effect may dominate. The results in Table 5 are mostly consistent with this view, although the estimates are often not reliably different from zero.

As we noted in discussing Figure 1, the proportion of main bank underwriting in total underwriting by bank subsidiaries has been declining. Over time, the bank subsidiary securities firms have started underwriting bonds of issuers without main bank ties. This trend may have influenced the extent of conflict of interest or certification effects in bank underwriting of corporate bonds. The regressions in Table 6 examines this point. We split the sample into two sub-periods according to the issue date and replicate the regressions in the first two columns of Table 5. We chose October 1, 1995 as the threshold, since by this time bank subsidiaries have started to underwrite corporate bonds for firms whose main banks are not their parent banks. The results in Table 6 suggest that the effects of bank underwriting for bonds with long maturities are negative in both sub-periods , although the coefficients are less precisely estimated in the earlier period. The effect on bonds with short maturities are often not reliably different from zero, but the coefficients for after October 1, 1995 are positive (though only the third column shows marginal significance and the magnitude is small). We obtain similar results for JBRI rated issues (not reported); weak evidence for certification effects in both periods and the conflict of interest, if it exists, is found only in the second period.

This conclusion, however, is not robust to time periods. When we examine sub-periods, we find weak evidence (in each period) that suggests corporate bonds underwritten by bank subsidiaries have spreads different from those underwritten by securities companies. In Table 5, we split the sample into two sub-periods according to the issue date and replicate the regression analyses. We chose October 1, 1995 as the threshold, since by this time bank subsidiaries have started to underwrite bonds for corporations whose main banks are different from the parent banks (or who do not have main banks). (See Figure 1.) Columns 1 and 2 report the regression estimates for the period before October 1, 1995. During this period, the coefficient estimates on the bank subsidiary dummy and the main bank subsidiary dummy are negative, although their statistical significance is marginal. This suggests the bonds underwritten by bank subsidiaries enjoyed lower spreads during the period before October 1, 1995, which is consistent with the certification hypothesis. The slightly larger and more significant coefficient on main bank underwriting is more promising for this hypothesis. In this earlier period, existing securities firms must have had more distribution advantage and they must have been able to offer lower rates. But the negative coefficients for bank subsidiaries imply that they are instead offering lower yields than existing securities firms. This is consistent with the view that the bank subsidiaries offered better rates to attract business in the earlier period.

Columns 3 and 4 show a similar regression analysis for the period after October 1, 1995. This time, bank underwriting variables enter positively, although the statistical significance is again marginal. The result is consistent with a conflict of interest hypothesis. It is also consistent with the story that existing securities companies are now enjoying some distributional advantage. The coefficient and the significance level are slightly higher when the main bank underwriting



variable is included, indicating the net effect of conflict of interest (i.e., net of certification effect) is more prevalent for bonds underwritten by main banks.

Table 6 replicates the analysis for firms with JBRI ratings. The results are consistent with those in Table 5. While bank underwriting reduced the spread for the first sub-period, it increased the spread during the second sub-period. Together with Table 5, this confirms that when we estimated the regressions for the entire sample period in Table 4, we found no effects of bank underwriting because the opposite effects of the two sub-periods canceled each other.

These results can be interpreted as follows. In the earlier period when bank subsidiaries were establishing their bond underwriting business, main bank subsidiaries managed to have larger shares (Figure 1). During this period, underwriting by banks had a net certification effect. The effect is slightly larger for bonds that were underwritten by main banks who have more information about the issuing firm. On the other hand, as the market matures and main bank share declines in the later period, investors became aware of the potential conflict of interest in bank underwritten bonds and required higher yields. The main bank underwriting again stratifies this result, especially for firms with JBRI rated firms which presumably produce more public information.

In examining of the choice of bank subsidiaries, we estimated several probit models which attempt to explain the choice by the financial variables and main bank ties. The examination revealed that the single most important variable for the choice is the size of the issue. When the size of the issue is small, it is more likely to be underwritten by a bank subsidiary, as was pointed out in the discussion of Table 3. Other financial variables, such as debt-to-capital ratio or the interest coverage ratio do not seem to influence the choice of underwriter. Having a main bank

tie does not make it more (or less) likely for a corporation to choose a bank subsidiary over a securities house as the underwriter of bonds.

Table 7 shows an example of our probit analysis. The only variable that enters the regression significantly is the issue size. The coefficients on the other variables are not different from zero. The result does not change even when we split the sample into two sub-periods. The coefficient on the dummy variable that takes one when the main bank has a security subsidiary is positive before October 1995, suggesting the main bank ties were more important consideration in the choice of bank subsidiaries as bond underwriters. But, the coefficient is not statistically different from zero.

#### **4. Conclusions**

In this paper we examined a recent major change in corporate bond primary market in Japan, that is the introduction of bank subsidiary securities firms and their corporate bond underwriting activities. We examined yields on corporate bonds at the time of issue in view of potential net conflict of interest or net certification effect. The main bank system in Japan where a main bank has a particularly close relationship with its borrowers provides a good opportunity for testing these hypothesis. Although the entire sample do not show significant differences with regard to the type of underwriters, subsample analysis reveals contrasting results. In the earlier period when main bank subsidiaries were aggressively pursuing the new business, the result was consistent with net the certification effect or main banks undercutting the yield in order to attract business. On the other hand, in the later period, the result is consistent with the hypothesis that facing potential conflict of interest rational investors discount bond issues underwritten by main

bank subsidiaries.

## References

- Aoki, Masahiko and Hugh Patrick (eds), 1995, *Japanese Main Bank System*, Oxford: Oxford University Press.
- Campbell, John and Yasushi Hamao, 1995, "Changing Corporate Financing Structure and the Main Bank System in Japan," in Masahiko Aoki and Hugh Patrick (ed), *Japanese Main Bank System*, Oxford: Oxford University Press.
- Gande, Amar, Manju Puri, Anthony Saunders, and Ingo Walter, 1997, "Bank Underwriting of Debt Securities: Modern Evidence," forthcoming in *Review of Financial Studies*.
- Hamao, Yasushi, 1991, "A Standard Data Base for the Analysis of Japanese Security Markets," *Journal of Business* 64:87-102.
- Hoshi, Takeo, 1996, "Back to the Future: Universal Banking in Japan," in Anthony Saunders and Ingo Walter (eds), *Universal Banking: Financial System Design Reconsidered*, Chicago: Irwin.
- Kroszner, Randall and Raghuram Rajan, 1994, "Is the Glass-Steagall Act Justified?: A Study of the U.S. Experience with Universal Banking Before 1933," *American Economic Review* 84:810-832.
- Ministry of Finance, Japan, 1994, *Okurasho Shokenkyoku Nempo (Annual Report of the Securities Bureau, Ministry of Finance)* No. 42.
- Puri, Manju, 1996, "Commercial Banks in Investment Banking: Conflict of Interest or Certification Role?" *Journal of Financial Economics* 40:373-401.
- White, Eugene, 1986, "Before Glass-Steagall Act: An Analysis of the Investment Banking Activities of National Banks," *Explorations in Economic History* 23:33-55.

Table 1

## Bank Subsidiary Securities Firms

Date of Establishment	Name
July 1993	IBJ Securities Norinchukin Securities LTCB Securities
November 1993	Sumitomo Trust Securities Mitsubishi Trust Securities
July 1994	Yasuda Trust Securities Asahi Securities
November 1994	Sumitomo Capital Securities DKB Securities Fuji Securities Sakura Securities Sanwa Securities BOT Securities Mitsubishi Diamond Securities (The last two merged to become Tokyo-Mitsubishi Securities in April 1996)
March 1995	Tokai International Securities
May 1995	Mitsui Trust Securities Hokkaido Takushoku Securities
November 1995	Toyo Trust Securities

Source: *Kin'yu Business*, March 1997, p. 92.

Table 2

Bank Subsidiary Underwriting of Corporate Straight Bonds  
94Q2 - 96Q3

Quarter	Number of Issues		Amount of Issues (Billion Yen)	
	Total	Bank Subsidiary Underwritten	Total	Bank Subsidiary Underwritten
94:2	18	1	520	10
94:3	12	3	250	30
94:4	11	0	275	0
95:1	33	14	532	183
95:2	30	8	580	100
95:3	65	25	1,010	316
95:4	71	29	983	383
96:1	58	27	1,200	320
96:2	66	34	839	385
96:3	82	45	1,060	512
Total	446	186	7,249	2,239

Source: Nikkei NEEDS database. Calculation by the authors.

Table 3

Characteristics of Bonds Underwritten by Bank Subsidiaries  
February 25, 1994 - September 30, 1996

	Entire Sample	Bank Underwriting	Main Bank Underwriting
Number of Observations	432	182	118
Amount of Issue (Billion Yen)	16.095	12.198***	12.725***
Yield Spread (Percentage Points)	0.255	0.265	0.249
Debt/Capital (Market)	0.332	0.342	0.326
Interest Coverage	1.893	1.977	1.958
Loan/Debt	0.507	0.522	0.537*
Market Capitalization (Billion Yen)	529.005	497.101	507.311
Total Assets (Billion Yen)	1,215.789	1,227.542	1,193.151
Main Bank Loan/Total Debt	0.072	0.074	0.083**
Use: Investment	0.431	0.401	0.373
Use: Repayment	0.625	0.643	0.627
Use: Working Capital	0.176	0.192	0.186

Note: "Yield Spread" is the difference between corporate bond yield at issue and corresponding JGB yield. (See text for the exact computation of JGB portfolio yield.) "Debt/Capital (Market)" is book debt (interest bearing liabilities) divided by market value of equity plus book value of debt. "Interest Coverage" is earnings before interest and taxes divided by interest expenses. "Loan/Debt" and "Main Bank Loan/Total Debt" are computed using book value of loan and debt. "Market Capitalization" is number of shares outstanding times price per share. "Total Assets" is the size of balance sheet (in book). "Use" shows percentage of these reasons. (Multiple reasons are possible). A "\*", "\*\*", and "\*\*\*" indicate significant differences from their complements at 10%, 5%, and 1% levels, respectively.

Table 4

## Regression of Yield Spread on Firm and Bond Characteristics

	Entire Sample		JBRI Rated Firms	
	Bank Underwriting	Main Bank Underwriting	Bank Underwriting	Main Bank Underwriting
Log (Total Assets)	-0.136 (-9.23)	-0.136 (-9.28)		
Debt/Capital (Market)	0.454 (2.91)	0.448 (2.88)		
Interest Coverage	-0.018 (-1.97)	-0.019 (-1.99)		
Loan/Debt	0.061 (0.90)	0.068 (1.01)		
Maturity < 5 years	0.106 (3.52)	0.104 (3.45)	0.093 (2.03)	0.095 (2.07)
Maturity = 7 years	-0.087 (-2.30)	-0.090 (-2.37)	-0.158 (-2.78)	-0.158 (-2.80)
BBB or BBB+			0.416 (2.21)	0.408 (2.18)
A-, A, or A+			0.128 (0.72)	0.123 (0.69)
AA-, AA, or AA+			-0.024 (-0.14)	-0.028 (-0.16)
Bank Subsidiary	-0.018 (-0.68)		-0.023 (-0.55)	
Main Bank Subsidiary		-0.035 (-1.19)		-0.034 (-0.74)
Number of obs	432	432	193	193
Adjusted R <sup>2</sup>	0.359	0.361	0.386	0.387

Note: The table reports estimated coefficients from cross-section regression of yield spread (the difference between corporate bond yield at issue and corresponding JGB yield) on various firm



characteristics and industry dummies. Coefficients on industry dummies are not reported. “Total Assets” is the size of balance sheet (in book). “Debt/Capital (Market)” is book debt (interest bearing liabilities) divided by market value of equity plus book value of debt. “Interest Coverage” is earnings before interest and taxes divided by interest expenses. “Loan/Debt” and “Main Bank Loan/Total Debt” are computed using book value of loan and debt. “Maturity < 5 years” is a dummy variable that takes the value one if the maturity of the corporate bond is relatively short (3, 4, or 5 years) and zero if the maturity is long (6, 7, 8, or 10 years). “Maturity = 7 years” is a dummy variable that takes the value one if the maturity of corporate bond is 7 years and zero otherwise. “Bank Subsidiary” and “Main Bank Subsidiary” are dummy variables that take value 1 when the bond is underwritten by bank subsidiaries or main bank subsidiaries and 0 otherwise. Numbers in parentheses are t-statistics.

Table 5

## Regression of Yield Spread on Firm and Bond Characteristics: Sub-period Results

	Before October 1, 1995		After October 1, 1995	
	Bank Underwriting	Main Bank Underwriting	Bank Underwriting	Main Bank Underwriting
Log (Total Asset)	-0.074 (-2.54)	-0.073 (-2.57)	-0.154 (-9.56)	-0.156 (-9.77)
Debt/Capital (Market)	0.477 (1.75)	0.474 (1.75)	0.345 (1.82)	0.373 (1.96)
Interest Coverage	-0.0023 (-0.13)	-0.0017 (-0.10)	-0.026 (-2.38)	-0.025 (-2.31)
Loan/Debt	0.017 (0.13)	0.025 (0.18)	0.117 (1.54)	0.101 (1.32)
Bank Subsidiary	-0.083 (-1.49)		0.053 (1.76)	
Main Bank Subsidiary		-0.103 (-1.81)		0.062 (1.82)
Number of obs	151	151	245	245
Adjusted R <sup>2</sup>	0.207	0.214	0.403	0.404

Note: The table reports estimated coefficients from cross-section regression of yield spread (the difference between corporate bond yield at issue and corresponding JGB portfolio yield) on various firm characteristics and industry dummies, for two sub-periods. Coefficients on industry dummies are not reported. "Total Assets" is the size of balance sheet (in book). "Debt/Capital (Market)" is book debt (interest bearing liabilities) divided by market value of equity plus book value of debt. "Interest Coverage" is earnings before interest and taxes divided by interest expenses. "Loan/Debt" and "Main Bank Loan/Total Debt" are computed using book value of loan and debt. "Bank Subsidiary" and "Main Bank Subsidiary" are dummy variables that take value 1 when the bond is underwritten by bank subsidiaries or main bank subsidiaries and 0 otherwise. Numbers in parentheses are t-statistics.

Table 6

Regression of Yield Spread on Firm Characteristics:  
Sub-period Results for JBRI Rated Firms

	Before October 1, 1995		After October 1, 1995	
	Bank Underwriting	Main Bank Underwriting	Bank Underwriting	Main Bank Underwriting
BBB or BBB+	0.247 (1.37)	0.247 (1.37)	0.949 (8.78)	0.965 (9.12)
A-, A, or A+	0.228 (2.69)	0.228 (2.69)	0.524 (5.83)	0.542 (6.13)
AA-, AA, or AA+			0.475 (5.69)	0.482 (5.93)
Bank Subsidiary	-0.159 (-1.54)		0.036 (0.95)	
Main Bank Subsidiary		-0.159 (-1.54)		0.085 (1.96)
Number of obs	63	63	108	108
Adjusted R <sup>2</sup>	0.186	0.186	0.579	0.593

Note: The table reports estimated coefficients from cross-section regression of yield spread (the difference between corporate bond yield at issue and corresponding JGB portfolio yield) on various firm characteristics and industry dummies, for two sub-periods. Coefficients on industry dummies are not reported. "Bank Subsidiary" and "Main Bank Subsidiary" are dummy variables that take value 1 when the bond is underwritten by bank subsidiaries or main bank subsidiaries and 0 otherwise. Numbers in parentheses are t-statistics. Columns 1 and 2 are the same since bank subsidiaries that underwrote bonds in this sub-period exactly coincided with main bank subsidiaries.

Table 7

## Probit Model of the Choice of Underwriters

	Entire Sample	Before October 1, 1995	After October 1, 1995
Constant	8.73 (4.77)	11.89 (3.47)	6.36 (2.81)
Log (Issue)	-0.570 (-5.07)	-0.802 (-3.89)	-0.422 (-3.02)
Debt/Capital (Market)	0.777 (1.45)	0.424 (0.47)	0.692 (0.99)
Interest Coverage	0.034 (0.82)	-0.073 (-0.92)	0.056 (1.05)
Loan/Debt	0.144 (0.47)	0.049 (0.09)	0.341 (0.89)
Main Bank has a Securities Subsidiary	-0.057 (-0.27)	0.663 (0.97)	-0.068 (-0.29)
Number of Obs.	396	151	108

Note: Dependent variable is “Bank Subsidiary” variable.