The Impact of Bank Entry in the Japanese Corporate Bond Underwriting Market

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ABSTRACT

The 1993 Japanese financial system reform allowed banks to enter the underwriting market for corporate bonds through bank-owned security subsidiaries. This paper examines empirically whether underwriting commissions and spreads for corporate bonds fell as a result of this bank entry. The empirical results show that bank entry significantly lowers underwriting commissions. Commissions charged by banks are significantly lower than those charged by investment houses. In contrast, there is no strong evidence that bond spreads are significantly lowered by bank entry. A main bank relationship between the issuing firm and the parent of a bank-owned underwriting subsidiary does not have any significant influence in commission setting or the determination of spreads.

Keywords: financial system reform, bank entry, bank share, commission, main bank, spread, underwriting.

JEL Classifications Numbers: G2, K22

1 Introduction

The purpose of this paper is to evaluate the Financial System Reform Act in 1993 in respect of its effect on the Japanese corporate bond market. Although reform of Japanese financial system continues, the Financial System Reform Act in 1993 was an historical change in Japan. The explicit purpose of this financial reform was to promote competition in the Japanese bond corporate market and to provide better service. The implicit purpose was to lower the costs of bond raisings for issuing firms. The focus of this paper is to verify whether these purposes of the financial reform were achieved. The Financial System Reform Act which became effective on 1 April 1993 allowed banks to engage in securities business. When a bank engages in both loan and securities business, there is a possibility that conflicts of interest will occur (for discussions of this conflict of interest, see Puri (1996, 1999), Hamao and Hoshi (2000), Konishi (2002) and Takaoka and McKenzie (2003))[1]. Banks were not permitted to directly enter the securities business, but rather had to enter through a subsidiary. If the Financial System Reform Act works as anticipated, commissions earnt by underwriters are expected to be lower than before the Act became effective, when underwriters appeared to enjoy high underwriting fees on bond issues.

This paper investigates the factors influencing the costs of raising funds by corporate bond issues in the domestic market, namely, underwriting commissions and spreads (the difference between returns on assets issued by the private sector and government bonds). Underwriting commissions and spreads in the domestic bond market are analysed over the period from January 1992, following a change in the method for underwriting corporate bonds, to March 2002.

The literature to date on the impact of the entry of bank-subsidiary (Section 20 subsidiaries) security companies on the American corporate bond underwriting market has focused on whether bank entry has (a) led to conflict of interest or certification effects (for example,

[1]Not only was the direct participation of banks in securities business prohibited, but firewall regulations were imposed by the Ministry of Finance. For example, these regulations prohibited the exchange of undisclosed information without the customer's permission.

Gande et al. (1997) and Roten and Mullineaux (2002)); and (b) had favourable competitive effects on gross spreads and yield spreads (for example, Gande et al. (1999) and Roten and Mullineaux (2002)). The available evidence on both issues is mixed. While Gande et al. (1997) report significant certification effects for banks, Roten and Mullineaux (2002) using data for a later period find no evidence that a prior bank lending relationship affects yields. Gande et al. (1999) report that bank entry in 1989 led to a significant decline in underwriter spreads and ex-ante yields. Roten and Mullineaux (2002) fail to find any significant competitive effects on gross yields or yield spreads associated with regulatory changes in 1997 that eased restrictions on the activities of Section 20 subsidiaries.

In contrast, the literature to date on the impact of the entry of bank-subsidiary securities companies on the Japanese corporate bond underwriting market has focused on (a) whether bank entry has led to conflict of interest or certification effects on spreads (Hamao and Hoshi (2000, 2002) and Takaoka and McKenzie (2003)); and (b) the choice of underwriter in the post-bank entry environment (Yasuda (2001)). Hamao and Hoshi (2000) using 31 months of data on spreads immediately after bank entry find no evidence statistically significant conflict of interest or certification effects. In a slightly more sophisticated analysis, Hamao and Hoshi (2002) using 34 months of data on spreads immediately after bank entry present very weak evidence supporting the existence of conflict of interest effects. Takaoka and McKenzie (2003) find no evidence of either conflict of interest or certification effects using data on spreads on bonds issued in 1999.

This paper differs from the existing literature in several respects. First, the direct competition effect of bank entry is considered by using a sample period that includes data for both before and after the Financial System Reform Act in Japan. Second, unlike Hamao and Hoshi (2000, 2002) who only examine spreads, here both commissions and spreads are analysed. Third, the share of the issuing firm's loans made by the firm's main bank is used to measure the strength of the firm's main bank relationship. Fourth, in the model for spreads, Tobin's q is used as a proxy for the firm's expected future profits. There is some evidence that a rise

in Tobin's q leads to a fall in the spread on a firm's bond issue. Fifth, given that ten years of data are being analysed, several macroeconomic variables are used to explain variations in the magnitude of the spread over the business cycle. It is found that these macroeconomic variables are statistically significant in explaining variations in the spread. Although the relationship between macroeconomic factors and spreads has been discussed in the literature on spread determination (see Roma and Walter (1997) and Athanassakos and Carayannopoulos (2002)), papers examining the impact of bank entry on corporate bond spreads and underwriting commissions have tended to ignore these macroeconomic factors or modeled them using simple dummy variables (see, for example, Gande et al. (1987, 1989), Hamao and Hoshi (2000, 2002), and Roten and Mullineaux (2002)).

The empirical results show that bank entry significantly lowers underwriting commissions and, moreover, commissions fall as the bank share in the underwriting market increases. Commissions charged by banks are significantly lower than those charged by securities companies, and this difference appears to persist throughout the post-entry period. In contrast to the United States, there is no strong evidence that bond spreads are significantly lowered by bank entry. A main bank relationship between the issuing firm and the parent of the bank owned underwriting subsidiary does not have any significant influence in commission setting or the determination of spreads.

The plan of this paper is as follows. Section 2 briefly describes the Japanese underwriting market, changes in regulations relating to issuing requirements, and the method used for underwriting bonds in Japan. The hypotheses to be tested empirically are discussed in section 3, and the models to be estimated are detailed in section 4. The data used are explained in section 5, and section 6 presents the empirical results. Section 7 concludes the paper.

2 The Japanese Bond and Underwriting Market

For a long period of time, Japan had a financial system which was divided strictly between banking business and security business. One reason for this strict division was the possibility

of conflicts of interest when a financial institution engages in both loan and securities business. Hence, prior to 1993, banks wanting to engage in underwriting business within Japan were denied the permission to do so. Section 65 of the Securities and Exchange Act of 1948 defined that the only players in the corporate bond underwriting market were security companies. This division has been the subject of discussions on deregulation for a long time. One reason is that the customers, here the issuing firms, were not satisfied with the service provided in the highly regulated market. Long discussions finally led to the Financial System Reform Act in 1993, which allowed banks to enter the underwriting market through a security firm subsidiary. In this paper, the term 'investment house' refers to those securities companies that do not have a bank as their parent company.

The first bank entrants in the form of security firm subsidiaries were IBJ Securities, Norinchukin Securities and LTCB Securities established in July 1993. Sumitomo Trust Securities and Mitsubishi Trust Securities entered in November 1993. City banks followed by establishing their subsidiary securities companies in November 1994. Between July 1993 and April 1996, twenty new bank subsidiary securities companies were established. The first underwriting of corporate bond by a bank subsidiary did not occur until 25 February 1994 (Hamao and Hoshi (2000)). Bank-owned security firm subsidiaries expanded their share in the underwriting market smoothly. When underwriters are ranked by the total value of bonds for which they were the lead underwriter (shukanji), in fiscal year 1995, ten bank-owned subsidiaries ranked in the top fifteen underwriters, but there was a big difference in the shares held by the top four investment houses and the bank subsidiaries. Daiwa Securities, an investment house that ranked fourth, gained a share of 15.1%, whereas IBJ Securities, the top bank subsidiary and ranked fifth, had a share of only 5.7%. The top four investment houses at the time (Nomura, Nikko, Yamaichi and Daiwa) managed to keep their high rankings. That is, bank entry into the underwriting market appeared to provide serious competition to the ten intermediate size security companies such as New Japan, Kankaku, Kokusai and Wako. The share of these ten intermediate size security companies decreased from 17.3% in fiscal year 1994 to 12.1% in fiscal

year 1996. Their shares gradually decreased as a result of bank entry (see Matsuo (1999) for a detailed explanation). Gradually, the bank subsidiaries expanded their shares, and the total share held by bank-owned security subsidiaries in the market more than doubled from 22.1% in fiscal year 1995 to 53.0% in fiscal year 1997. Behind these figures, it is natural to consider the harsh competition brought about by bank entry.

This suggests that bank entry were successful. However, the harsh competition caused by bank entry decreased the profits of individual companies. Among the bank-owned subsidiaries, IBJ Securities and LTCB Securities increased their profits. On the other hand, the average profits of all bank-owned subsidiaries were negative for each fiscal year from 1993 to 1996. Two out of five bank subsidiaries showed a loss in fiscal year 1993, eight out of fourteen subsidiaries in fiscal year 1994, six out of seventeen subsidiaries in fiscal year 1995, and twelve out of nineteen subsidiaries showed a loss in fiscal year 1996 (see Matsuo (1999)). It appears that the security companies competed with each other to maximize their own market share after bank entry, rather than maximize their profits each year. As a result, the market share of bank-owned subsidiaries increased at the expense of their profits.

Prior to February 1987, in order to be eligible to issue corporate bonds, firms needed to satisfy issuing standards (*tekisai kijun*) that specified numerical standards relating to various financial indices. In February 1987, the standards were amended to incorporate ratings so that the numerical standards a firm was required to meet depended on its rating. From November 1990, issuing standards were, in principle, based on ratings only so that firms with a BBB or higher rating were eligible to issue secured bonds, and firms with an A or higher rating were eligible to issue unsecured bonds. These ratings standards were completely abolished in January 1996 (for further details, see Tachi (1994), Matsuo (1999) and Takeda et al. (2000)).

Under the 'proposal method' for underwriting corporate bonds that began to be used in May 1987, firms would have several securities companies present proposals detailing issuing conditions including the issuing price and coupon rate. The issuing firm would then use this and other information to choose a lead manager for the issue, and finally the lead manager

and the issuing firm would consult and determine the issuing conditions. From April 1988, this method was used for all straight bonds. It has been suggested that the proposal method led to issuing conditions that ignored market conditions and that underwriters often discounted the bonds during the subscription period.

The 'fixed price reoffer method' (*kinitsu kakaku hanbai hoshiki*) is currently used for issuing most straight bonds. Based on surveys of expected investor demand conducted by the lead manager, the lead manager and the issuing firm agree on a selling price for the bond. During the subscription period the bonds are sold to investors at this uniform price. This method was first employed on an issue of NTT bonds in December 1991. For nearly all bonds issued publicly in Japan, underwriters are required to purchase any bonds that remain unsold at the end of the subscription period.

3 Hypotheses

This section presents the hypotheses to be examined empirically in section 6.

3.1 Relationship between the spread and bank entry

One reason why bank entry in the underwriting market has been the subject of so much discussion is the possibility that banks may drive investment houses out of the market. Compared to investment houses, banks potentially already have superior information about issuing firms through their lending activities. If this is true, banks may have the ability to evaluate issuing firms more accurately than investment houses. This is called the bank certification effect. In Japan, this effect may be especially strong when the parent of the securities company is the issuing firm's main bank.

Investors are likely to be willing to accept a lower spread on a security that has been evaluated by an underwriter based on more accurate and reliable information, and/or superior ability. If it is true that banks have superior information compared to investment houses, bonds underwritten by bank subsidiaries should have lower spreads. In the United States, Gande et al.

(1997) and Puri (1996) provide some empirical evidence suggesting that corporate bonds in the United States underwritten by banks have lower spreads compared to those bonds underwritten by investment houses. Gande et al. (1997) find this differential in the spreads associated with bonds underwritten by banks and investment houses is greater in the non-investment-grade segment of the market.

The expected relationship between bank entry and the spread is that bank entry lowers the spread via an indirect effect. Suppose that banks through their monitoring activities have superior information to evaluate the issuing firm. Bank entry provides an incentive for investment houses to make greater effort to search for information and material to evaluate the issuing firm more accurately. Otherwise, investment houses may be driven out of the market. Hence, the spread is expected to fall after bank entry.

3.2 Relationship between commissions and bank entry

The commission is the fee that the underwriter receives from the issuing firm to cover the cost of the underwriting services provided. Hamao and Hoshi (2002, p. 12) claim that 'underwriting fees for corporate bonds of the same maturity were fixed across underwriters until the beginning of 1998', so that underwriters could not undercut the market in setting commissions. This claim does not appear to be correct. For example, in June 1993, it was reported that Nomura Securities had reduced its commissions in anticipation of bank entry (Nikkei Shinbun, 2 June 1993). In our data set, for example, in 1993 on bonds of four (five) years maturity, commissions vary between 40 and 55 yen (45 and 50 yen) per 10,000 yen issued. While at any point in time underwriters may have charged the same commissions, this does not mean that commissions did not change over time, and underwriters were not free to change the commissions they charged.

Given that underwriters are able to set commissions individually, bank entry is expected to have a direct effect on commissions by causing them to fall. Competition brought about by bank entry causes underwriters to offer lower commissions compared to their rivals in order to win customers. For the new entrants with little or no experience in the market, lowering commission

charges in order to gain market share is a natural strategy. Even for existing underwriters, commissions should probably be lowered in order to maintain their existing market share.

Here, this paper considers it a natural outcome for bank entry to cause underwriters to lower their commissions. The reason is that the bond market was a highly regulated market until the Financial System Reform Act in 1993. Although gradual deregulation had taken place before this Act, this was the first time for the domestic underwriting market to see so many simultaneous entrants. If commissions before 1993 reflected economic rents induced by the regulated market, fiercer competition caused by bank entry should lead to a fall in commissions. In the short run, the main objective of bank subsidiaries, the new entrants, is not likely to be the maximization of short-run profits, but rather gains in market share. In this case, the hypothesis that commissions will fall after bank entry is likely to be supported.

4 Model

4.1 Commissions

Based on the models for gross spreads used in Gande et al. (1999) and Roten and Mullineaux (2002), the following model for underwriting commissions was assumed:

$$\begin{aligned} COMMISSION_j &= \alpha_0 + \alpha_1 log(AMOUNT_j) + \alpha_2 DAA_j + \alpha_3 DA_j + \alpha_4 DBBB_j \\ &\quad + \alpha_5 SMAT_j + \alpha_6 LMAT_j + \alpha_7 SECURED_j + \alpha_8 BANKENTRY_j \\ &\quad + \alpha_9 MARKET_j + \alpha_{10} BANK_j + \alpha_{11} MAINUW_j + \\ &\quad + \alpha_{12} MAINUW_j LOANSHARE_j + \sum_k \beta_k INDUSTRY_{jk} + u_j, \quad (1) \end{aligned}$$

where COMMISSION is the underwriting commission paid for issue j; AMOUNT is the size of the bond issue; DAA is a 0-1 dummy variable taking the value unity if the issuing firm's rating is AA+, AA or AA-, and zero otherwise; DA is a 0-1 dummy variable taking the value unity if the issuing firm's rating is A+, A or A-, and zero otherwise; DBBB is a 0-1 dummy variable taking the value unity if the issuing firm's rating is BBB+, BBB or BBB-, and zero otherwise; SMAT is a 0-1 dummy variable taking the value unity if the issue is a short-term

issue (less than five years in maturity), and zero otherwise; LMAT is a 0-1 dummy variable taking the value unity if the issue is a long-term issue (greater than 15 years in maturity), and zero otherwise; SECURED is a 0-1 dummy variable taking the unity if there is some form of mortgage associated with the bond, and zero otherwise; BANKENTRY is a 0-1 dummy variable taking the value unity if the bond is issued on or after 25 February 1994, and zero otherwise; MARKET is the market share of corporate bond underwritings held by bank-owned subsidiaries in the fiscal year the bond was issued; BANK is a 0-1 dummy variable taking the value unity if the lead underwriter is a bank-owned subsidiary, and zero otherwise; MAINUW is a 0-1 dummy variable taking the value unity if the lead underwriter is a bank-owned subsidiary and the parent bank is the issuing firm's main bank, and zero otherwise; LOANSHARE is the share of loans to the issuing firm made by the issuing firm's main bank; and INDUSTRY are a set of industry dummies.

Although some of the bank owned subsidiaries were established before February 1994, the first bank subsidiary underwriting of a bond issue occurred on 25 February 1994 (Hamao and Hoshi (2000)). BANKENTRY is defined to correspond with this first issue.

The definitions of the ratings variables (DAA, DA, DBBB) indicate that the base ratings group is AAA. As it is hypothesised that underwriting commissions rise with the riskiness of the bond issue, it is expected that $\alpha_4 > \alpha_3 > \alpha_2 > 0$. The definitions of SMAT and LMAT indicate that the base maturity group is bonds with maturities between 5 and 15 years. The maturity split created by SMAT and LMAT follows Gande et al.'s (1999) analysis. Matsuo's (1999) tables of underwriting commissions at selected points in time indicate that commissions are larger for longer maturity bonds. Thus, it is expected that $\alpha_5 < 0$, and $\alpha_6 > 0$. Since there is less risk for an underwriter when the bond has some sort of guarantee, it is expected that $\alpha_7 < 0$. Following the discussion in section 3.2 it is expected that $\alpha_8 < 0$, $\alpha_9 < 0$, and $\alpha_{10} < 0$.

The key role of the main bank in corporate finance in Japan is often stressed in the literature (see Aoki and Patrick (1994) and Hoshi and Kashyap (2001)). One facet of this role is that the main bank is often argued to have superior access to private information on the firms it deals

with or given its long standing relationship with the firm superior ability to process information about the firm. If this is the case the coefficients on MAINUW and MAINUW*LOANSHARE would be expected to be negative ($\alpha_{11}, \alpha_{12} < 0$). The reason for including LOANSHARE is to attempt to take account of the strength of the main bank relationship. It should be noted that since the equation already includes BANK, the coefficient on MAINUW measures the impact of the bank underwriter being the firm's main bank compared to the case when it is not. An alternative argument for including MAINUW and MAINUW*LOANSHARE is that there are many varied transactions occurring between the main bank and the borrowing firm, and the main bank may set commissions in the light of the overall main bank-firm relationship. In this case, the signs of the coefficients α_{11} and α_{12} are ambiguous as the main bank may offer preferential commissions in return for a higher return on another transaction or vice versa.

4.2 Spreads

Consistent with the models for spreads estimated in the literature (see Gande et al. (1999), Puri (1999), Hamao and Hoshi (2000), and Takaoka and McKenzie (2003)), the following models for the spread was assumed:

$$\begin{aligned} SPREAD_j \;=\; & \gamma_0 + \gamma_1 log(AMOUNT_j) + \gamma_2 DAA_j + \gamma_3 DA_j + \gamma_4 DBBB_j \\ & + \gamma_5 SMAT_j + \gamma_6 LMAT_j + \gamma_7 SECURED_j + \gamma_8 TOBINQ_j \\ & + \gamma_9 BANKENTRY_j + \gamma_{10} MARKET_j + \gamma_{11} BANK_j + \gamma_{12} MAINUW_j \\ & + \gamma_{13} MAINUW_j LOANSHARE_j + \gamma_{14} AGE_j + \gamma_{15} QDUM_j \\ & + \gamma_{16} \triangle CPI_j + \gamma_{17} \triangle IIP_j + \sum_j \delta_k INDUSTRY_{jk} + v_j, \end{aligned} \tag{2}$$

where SPREAD is the difference between the rate of the return on bond issue j and the return on a long-term government bond of similar maturity at the time the bond was issued; TOBINQ is the value of issuing firm's Tobin q in the accounting year immediately prior to the issuance; AGE is the number years that have elapsed since the company was formed; QDUM is a quarterly trend variable; $\triangle$ CPI is the annual inflation rate computed using the consumer price index;

and $\triangle$ IIP is the annual growth rate of the index of industrial production. The other variables are defined as for the commission equation.

The discussion in section 3.1 suggests that $\gamma_9 < 0$ and $\gamma_{10} < 0$. The sign of γ_{11} depends on whether certification effects or conflict of interest effects dominate. Lower ratings imply a higher risk of default so it is expected that $\gamma_4 > \gamma_3 > \gamma_2 > 0$. Bonds with some sort of guarantee are expected to have lower spreads ($\gamma_7 < 0$). Following the arguments in Athanassakos and Carayannopoulos (2002), it is expected that $\gamma_{16} > 0$ and $\gamma_{17} < 0$.

5 Data

The sample period for both commissions and spreads analysed in this paper runs from 1 January 1992 to 31 March 2002. The starting point of January 1992 is chosen to follow the introduction in late 1991 of a new method for underwriting corporate bonds (see Section 2).

Data on bond issues by individual firms that includes ratings information, issue rates, issue amounts, underwriter names, the year the issuing firm was established, details of any mortgages associated with the issue, and issue amounts are taken from the IN Information System's (INIS) IN Firm Finance Data Base. This data base also contains annual data on the market shares of individual underwriters in the corporate bond market between fiscal years 1991 and 2001. The market share data are used to compute the annual market share held by bank-owned security subsidiaries. Prior to fiscal year 1994, the annual market share held by bank-owned security subsidiaries was zero. In order to maximize the sample size, the maximum of the ratings provided by four ratings institutions, Rating and Investment Information, Inc., Japan Credit Rating Agency, Japan Bond Rating Institute, and Standard and Poors, was used. Spreads on corporate bonds at the time they were issued were obtained from Nikko Citigroup, and were matched with the individual issues in the INIS IN Firm Finance Data Base.

Tobin's q is proxied by the market to book ratio of the firm, where the market value of the firm is defined as the sum of the market values of stocks outstanding and interest bearing debt, and the total amount of assets is used as a proxy for the book value. Data on these variables

are obtained from the Nikkei Needs Corporate Data Base.

Information on a firm's outstanding loans was taken from the Toyo Keizai's Kigyo Keiretsu Soran. A firm's main bank was identified as the private financial institution (excluding life insurance companies) that has the largest amount of loans outstanding to the firm. A firm with no outstanding loans is deemed to have no main bank. When a firm has two financial institutions with exactly the same largest loan shares, the main bank of the firm cannot be identified, and is treated as missing. Data on the consumer price index and the index of industrial production were obtained from the Nikkei NEEDS Macroeconomic Data Base. For the purpose of creating the industry dummies, firms were assigned to thirty two industries using the industry classification in the Toyo Keizai's Kaisha Shikiho.

Table 1 presents some descriptive statistics on the key variables in the analysis for the full sample (1 January 1992- 31 March 2002) and by underwriter type for the Post-Entry sample (25 February 1994- 31 March 2002). The descriptive statistics reveal that for banks, on average, commissions tend to be lower, and the maturity of an issue tends to be shorter compared to issues underwritten by investment houses. In the United States, Gande et al. (1999) suggest that bank entry into the underwriting market was concentrated in the smaller and lower quality end of the corporate bond underwriting market. The descriptive statistics in Table 1 indicate that, on average, in Japan bank subsidiary security companies tend to underwrite smaller issues, and issues with AA or A ratings. Table 2 provides a more detailed distribution of the ratings of bonds underwritten by investment houses and bank subsidiaries for the post-bank entry sample period (25 February 1994 to March 2002). The key difference between investment houses and bank subsidiaries is for AAA rated bonds where investment houses have an overwhelming advantage. In most of the remaining groups, the shares for both types of underwriter are roughly the same.

[Table 1 around here]

[Table 2 around here]

6 Empirical Results

All equations reported in this paper are estimated by ordinary least squares using LIMDEP 8.0 (see Greene (2002)).

6.1 Commissions

The average commission on 190 bonds issued in the period 1 January 1992 to 24 February 1994 is 52.73 yen per 10000 yen issued, which is statistically higher than the average commission of 41.81 yen per 10000 yen issued on the 3,019 bonds issued in the period 25 February 1994 to 31 March 2002 (p value=0.00). While this simple analysis ignores all the other factors that may influence commissions, it suggests that there was a significant reduction in commissions around February 1994.

Estimates of equation (1) for underwriting commissions using data from 1 January 1992 to 31 March 2002 are presented as equation (3.1) in Table 3. The control variables generally have the expected signs: riskier issues and longer maturity issues all have higher commissions. For the purposes of this study, the three important variables are BANKENTRY, MARKET and BANK. In equation (3.1), the estimated coefficient on BANKENTRY is negative (-11.27) and statistically significant. The size of this coefficient relative to the size of the coefficients of the ratings variables and relative to the average size of commissions presented in Table 1 provide a guide to its economic importance. The other measure of bank entry, MARKET, is also found to have a negative coefficient, that is, as the market share of bank subsidiaries increases commissions tend to fall. However, this coefficient is not statistically significant. The result for the coefficient of BANKENTRY is consistent with the entry of bank-owned subsidiaries into the bond underwriting market leading to a significant one-off reduction in underwriting commissions. In addition, the estimated coefficient of BANK in (3.1) suggests that bank-owned subsidiaries on average offer lower commissions than investment houses, and that this difference in commissions is statistically significant. It is worth noting that neither of the main

bank related variables, MAINUW or MAINUW*LOANSHARE, is statistically significant[2].

[Table 3 around here]

For the United States, Gande et al. (1999) find that there is a much larger impact of bank entry for bonds with low ratings. In order to verify whether there is a similar effect in Japan, firms were divided into two groups, those with low ratings (A+ or less), and those with high ratings (AA- or higher). For these two groups, the estimated models for commissions (equation (1) excluding some of the ratings variables) are presented as equations (3.2) and (3.3) in Table 3.

The estimated results in Table 3 suggest that bank entry as measured by the BANKENTRY variable had the effect of significantly reducing commissions for both groups of firms. However, the impact is far larger for highly rated firms (-13.28) than for lower rated firms (-7.20), and this difference is statistically significant. When the impact of bank entry is measured using the market share of bank subsidiaries, MARKET, again the impact of entry is negative and statistically significant for issuing firms with high bond ratings, but insignificant for firms with low bond ratings.

Issues were also divided into small issues (less than 13 billion yen) and large issues (greater than or equal to 13 billion yen). For these two groups, the estimated models for commissions are presented as equations (3.4) and (3.5) in Table 3. The results here are similar to those for the ratings groups in that the impact of BANKENTRY is far larger for large bond issues compared to small bond (but the difference is statistically insignificant), and when MARKET is used to measure the impact of bank entry, the impact of entry is negative and statistically significant for large issues, but insignificant for small issues. Across all four groups, it is found that bank-owned subsidiaries offer significantly lower commissions.

The results in Table 3 suggest that bank-owned subsidiaries offer commissions that are significantly smaller than those offered by investment houses. To verify whether this was just

[2] Throughout this paper, it is assumed that BANK and MAINUW are exogenous variables. Tests for sample selection bias were conducted, but there was no evidence to support the use of a more sophisticated estimation procedure.

a result of vigorous competition immediately following bank entry or whether this significant difference continued over time, a restricted version of equation (1) was estimated using data for each calendar year between 1994 and 2000. Table 4 only reports the results of the estimated coefficient on the BANK dummy variable in these regressions. The estimated coefficients on this variable are negative in every year, and statistically significantly different from zero in four of the seven years. The variation in the size of the estimated coefficients across time can be partially attributed to the sample sizes being used to estimate these equations. This suggests that bank subsidiaries have continued to offer lower commissions.

[Table 4 around here]

In contrast to the analysis of underwriting commissions in Table 3 that includes data from both before and after bank entry, the analysis in Table 5 is limited to commissions on issues after bank entry (from 25 February 1994). In Table 5, the analysis of commissions is also undertaken by size of the issue and by the rating of the firm. The impact of bank entry measured by MARKET is negative and statistically significant in its impact on commissions for large bond issues and those issues by highly rated firms. Again it is observed that commissions on bonds with a bank-owned subsidiary as the main underwriter have significantly lower commissions in all the equations in Table 5. This difference appears to be larger for small issues and for lowly rated issues.

[Table 5 around here]

6.2 Spreads

The average spread in the period 1 January 1992 to 24 February 1994 is 7.02 basis points for 197 bond issues, which is statistically lower than the average spread of 38.98 basis points on 2,613 bond issues in the period 25 February 1994 to 31 March 2002 (p value=0.00). This simple analysis suggests that there was a significant increase in spreads around February 1994, but a more detailed analysis will reveal that the change is attributable to other factors.

Estimates of equation (2) for spreads using all the data on bond issues between January 1992 and March 2002 are presented in equation (6.1) in Table 6. Most of the control variables have the expected signs, riskier bonds have larger spreads, firm's with a higher Tobin q can issue bonds with lower spreads, spreads tend to fall when the economy is expected to improve, and bonds with some sort of mortgage tend to have lower spreads. The significance of the Tobin q variable suggests that earlier analyses of bond spreads in Japan (for example, Hamao and Hoshi (2000, 2002)) and the United States (for example, Roten and Mullineaux (2002)) which have excluded this variable may well be mis-specfied. The three variables included to take account of changes in macroeconomic conditions, $\triangle$ CPI,$\triangle$ IIP and QDUM, are all highly significant. Earlier analyses for Japan (Hamao and Hoshi (2000, 2002)) do not include any variables to control for macroeconomic conditions, and analyses for the United States use only a time trend and/or quarterly dummies (see, for example, Roten and Mullineaux (2002)). Our results suggest the models used in these analyses may well be mis-specified. The two variables associated with bank entry, BANKENTRY and MARKET, both have negative impacts on spreads, that is, bank entry led to smaller spreads, and an increase in the market share of bank-owned subsidiaries led to smaller spreads. However, only BANKENTRY is statistically significant. Consistent with the findings in Hamao and Hoshi (2000) and Takaoka and McKenzie (2003), the BANK variable is found to be insignificant. That is, there do not appear to be any differences in spreads according to the type of underwriter. Furthermore, neither of the two main bank variables is significant. The key difference observed when issues are grouped according to size and ratings, is that BANKENTRY is only significant for highly rated firms.

[Table 6 around here]

Table 7 repeats the analysis in Table 6, but restricts the data to post-entry issues (25 February 1994 - 31 March 2002). MARKET is not significant in any of the regressions. Perhaps a little surprising is the finding that the BANK variable has a negative and significant coefficient for small issues and this provides some weak evidence for the existence of conflict of interest effects. Again there are no main bank effects.

[Table 7 around here]

7 Conclusion

The analysis in this paper suggests that the entry of bank owned subsidiaries into the underwriting market for straight corporate bonds in Japan has significantly reduced underwriting commissions on bond issues. While all firms have benefited from lower commissions, highly rated firms appear to enjoy a greater fall in commissions. The impact of this entry is far weaker for spreads, and again highly rated firms appear to enjoy a significant fall in spreads. The evidence also points to a significant difference in the commissions charged by bank owned subsidiaries and investment houses, and this difference does not appear to be disappearing over time.

The evidence for the United States suggests that bank entry into the corporate bond underwriting market was particularly important for small size bonds and for bonds issued by firms with poor ratings (see Gande et al (1999)). In addition, banks seem to use their superior information obtained through lending relationships to help these firms with poor ratings to issue bonds. The position for Japan is quite different. Japanese banks do not appear to have developed new areas of the underwriting market that might have exploited their information advantage, but rather have competed in existing areas.

The significance of variables relating to macroeconomic conditions, the annual inflation rate and the annual growth rate of the index of industrial production, and the Tobin q variable in the spread equation suggest that earlier analyses of spreads in both Japan and the United States may be mis-specified.

The results shown in this paper suggest that the financial system reform in 1993 was successful in reducing bond raising costs. However, the impact of the system reform is significantly greater for highly rated firms. That is, highly rated firms paid too much in bond raising costs prior to the entry of bank subsidiaries.

Table 1: Descriptive Statistics

	Full Sample	Post-Entry	
		Bank Subsidiary	Investment House
Number of Issues	2,797	949	1,662
Commission (yen/10,000 yen issued)	42.77	40.40	42.98
Issue Amount (million yen)	19,676	13,950	21,191
Rating			
DAAA (%)	17.8	6.6	20.2
DAA (%)	33.6	39.1	31.9
DA (%)	41.7	47.4	40.4
DBBB (%)	7.0	6.8	7.5
Maturity (years)	7.02	6.69	7.19
Secured (%)	16.9	6.3	19.3
MAINUW (%)	15.9	46.8	0
MAINUW*LOANSHARE(%)	0.02	0.07	0
Spread (basis points)	35.52	43.03	34.77
Tobin q	0.99	0.96	1.00
Age (years)	62.58	64.23	61.62

Notes:

(1) To correspond with the regression analysis in Tables 6 and 7, for the Spread, Tobin q and Age, the number of issues in each of the three samples are 2145, 859 and 1109, respectively.

(2) The full sample is from 1 January 1992 to 31 March 2002, and the post-entry sample is from 25 February 1994 to 31 March 2002.

(3) DAAA is a 0-1 dummy variable taking the value unity if the issuing firm's rating is AAA, and zero otherwise.

Table 2: Issuing firm's ratings by type of underwriter

ISSUING FIRM'S RATING	UNDERWRITER		TOTAL
	INVESTMENT HOUSE	BANK SUBSIDIARY	
AAA	336	113	449
AA+	143	137	280
AA	149	129	278
AA-	249	250	499
A+	172	155	327
A	240	209	449
A-	263	241	504
BBB+	38	38	76
BBB	77	48	125
BBB-	9	14	23
TOTAL	1,676	1,334	3,010
SHARE(%)	55	45	

Notes:

(1) This Table uses data on bond issues between 25 February 1994 and 31 March 2002.

Table 3: The effect of bank entry on commissions

	All issues (3.1)		Lowly rated firms (3.2)		Highly rated firms (3.3)		Small issues (3.4)		Large issues (3.5)	
Explanatory variables	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
LN(AMOUNT)	1.36	3.89*	3.36	5.71*	-0.40	1.05	3.71	4.36*	0.69	1.33
DAA	2.95	2.70*			2.98	2.85*	-0.91	0.64	3.12	2.27*
DA	2.98	2.66*					-1.03	0.78	3.42	2.40*
DBBB	14.24	7.66*	11.45	7.99*			9.71	4.97*	20.43	5.37*
SMAT	-1.66	3.11*	-1.94	3.30*	-2.03	2.22*	-2.43	3.57*	-0.79	0.87
LMAT	12.86	27.64*	10.99	3.89*	13.07	25.28*	9.43	9.27*	13.79	25.24*
SECURED	-2.49	2.35*	-2.70	0.67	-1.15	1.25	-4.36	3.30*	-0.85	0.66
BANKENTRY	-11.27	8.84*	-7.20	4.80*	-13.28	8.59*	-8.08	3.54*	-11.46	7.97*
MARKET	-0.18	1.78	-0.04	0.19	-0.28	4.19*	-0.07	0.39	-0.45	4.06*
BANK	-2.06	5.33*	-2.22	3.63*	-1.65	3.19*	-2.18	4.02*	-1.49	2.86*
MAINUW	-0.73	1.31	-2.09	1.95	-0.52	1.09	-1.16	1.69	-0.24	0.18
(MAINUW)* (LOANSHARE)	1.77	0.55	9.74	2.05*	2.48	0.83	5.96	1.76	-5.47	0.45
R^2	0.23		0.26		0.27		0.19		0.31	
Sample size	2,797		1,358		1,439		1,550		1,247	

Notes:
(1) T-ratios are the absolute values of t-statistics computed using estimates of standard errors adjusted by White's (1980) method.
(2) A '*' indicates the coefficient is statistically significantly different from zero at the five per cent significance level.
(3) All equations include a constant and industry dummies.
(4) Estimates in this Table use data from 1 January 1992 to 31 March 2002.

Table 4: Commission differences between bank subsidiaries and investment houses

YEAR	Coefficient	T-ratio	Sample Size
1994	-2.69	1.11	88
1995	-2.03	2.03*	228
1996	-1.18	1.90	326
1997	-3.35	2.21*	380
1998	-0.88	1.38	702
1999	-2.63	2.97*	359
2000	-4.10	1.97*	262

Notes:

(1) This table presents estimates of the coefficient of the bank dummy, α_{10}, in the regression

$$\begin{aligned} COMMISSION_j &= \alpha_0 + \alpha_1 log(AMOUNT_j) + \alpha_2 DAA_j + \alpha_3 DA_j + \alpha_4 DBBB_j + \alpha_5 NEW_j \\ &+\alpha_6 SMAT_j + \alpha_7 LMAT_j + \alpha_9 SECURED_j + \alpha_{10} BANK_j + \alpha_{11} MAINUW_j \\ &+\alpha_{12}(MAINUW) * (LOANSHARE)_j + \sum_k \beta_k INDUSTRY_{jk} + u_j \end{aligned} \quad (3)$$

(2) As for Table 3.

Table 5: Commissions after bank entry

	All issues (5.1)		Lowly rated firms (5.2)		Highly rated firms (5.3)		Small issues (5.4)		Large issues (5.5)	
Explanatory variables	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
LN(AMOUNT)	1.44	4.16*	3.43	5.66*	-0.34	0.99	3.70	4.33*	0.90	1.92
DAA	3.11	3.81*			2.68	3.58*	-0.60	0.59	3.06	2.92*
DA	3.30	3.67*					-0.73	0.83	3.45	2.71*
DBBB	14.07	8.31*	11.39	7.92*			10.03	5.80*	18.15	5.19*
SMAT	-1.13	2.11*	-1.73	2.89*	-0.87	0.90	-2.34	3.39*	0.75	0.80
LMAT	13.76	32.14*	11.08	3.90*	13.83	29.28*	9.77	11.25*	14.78	30.02*
SECURED	-3.09	3.93*	-10.66	6.57*	-1.40	1.84	-5.39	4.51*	-1.12	1.16
MARKET	-0.18	1.70	-0.03	0.18	-0.28	4.40*	-0.08	0.43	-0.43	3.93*
BANK	-2.12	5.45*	-2.13	3.47*	-1.60	3.10*	-2.24	4.14*	-1.33	2.60*
MAINUW	-0.75	1.36	-2.11	1.95	-0.41	0.81	-1.16	1.70	-0.54	0.40
(MAINUW)* (LOANSHARE)	1.87	0.59	9.79	2.05*	-0.05	0.02	5.98	1.76	-2.51	0.21
R^2	0.21		0.25		0.24		0.19		0.32	
Sample size	2,611		1,311		1,300		1,521		1,090	

Notes:
(1) T-ratios are the absolute values of t-statistics computed using estimates of standard errors adjusted by White's (1980) method.
(2) A '*' indicates the coefficient is statistically significantly different from zero at the five per cent significance level.
(3) All equations include a constant and industry dummies.
(4) Estimates in this Table use data from 25 February 1994 to 31 March 2002.

Table 6: The effect of bank entry on yield spread

	All issues (6.1)		Lowly rated firms (6.2)		Highly rated firms (6.3)		Small issues (6.4)		Large issues (6.5)	
Explanatory variables	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
LN(AMOUNT)	-1.29	1.04	-1.26	0.62	-3.69	2.99*	3.31	1.15	-2.91	1.41
DAA	2.80	0.75			8.46	2.76*	7.16	1.10	3.35	0.82
DA	33.44	8.41*					37.15	5.67*	33.38	7.29*
DBBB	83.87	14.98*	55.28	13.61*			87.30	12.11*	94.13	7.01*
SMAT	13.23	8.11*	15.02	6.42*	3.19	1.75	14.60	6.66*	11.95	4.97*
LMAT	-6.24	0.66			0.12	0.01	-25.75	5.67*	3.74	0.38
SECURED	-16.20	3.31*	-36.71	3.75*	-4.55	1.16	-19.55	3.17*	-22.34	3.03*
Tobin's q	-4.47	2.44*	-3.41	1.24	-2.63	1.12	-1.66	0.57	-4.86	2.42*
BANKENTRY	-16.01	2.63*	-24.50	1.45	-13.29	2.57*	-41.58	1.34	-8.59	1.64
MARKET	0.27	0.26	1.93	0.67	0.23	0.25	6.71	1.28	-0.73	0.75
BANK	-2.48	1.50	-3.88	1.66	-0.45	0.23	-6.18	3.05*	3.36	1.20
MAINUW	-3.39	1.09	-1.88	0.38	-2.32	0.73	-1.16	0.29	-4.35	0.72
(MAINUW)* (LOANSHARE)	20.00	1.09	17.99	0.77	5.63	0.31	16.90	0.83	15.81	0.32
AGE	-0.07	1.75	-0.01	0.14	-0.003	0.08	-0.02	0.35	-0.07	0.94
QDUM	2.86	24.21*	4.22	15.19*	1.70	13.99*	4.03	8.69*	2.06	14.33*
△CPI	9.46	14.22*	11.51	9.16*	6.30	8.88*	8.32	4.56*	8.25	8.72*
△IIP	-3.73	32.38*	-4.87	26.99*	2.71	23.30*	-4.17	26.52*	-3.07	19.71*
R^2	0.68		0.68		0.59		0.67		0.68	
Sample size	2,145		1,087		1,058		1,255		890	

Notes:
(1) T-ratios are the absolute values of t-statistics computed using estimates of standard errors adjusted by White's (1980) method.
(2) A '*' indicates the coefficient is statistically significantly different from zero at the five per cent significance level.
(3) All equations include a constant and industry dummies.
(4) Estimates in this Table use data from 1 January 1992 to 31 March 2002.

Table 7: Yield spread after bank entry

	All issues (7.1)		Lowly rated firms (7.2)		Highly rated firms (7.3)		Small issues (7.4)		Large issues (7.5)	
Explanatory variables	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
LN(AMOUNT)	-0.83	0.63	-0.94	0.44	-2.82	2.05*	3.79	1.30	-1.73	0.70
DAA	4.29	1.03			6.12	1.90	7.74	1.12	1.70	0.35
DA	35.51	8.11*					38.18	5.50*	32.77	6.03*
DBBB	85.09	14.32*	55.42	13.59*			88.47	11.61*	92.53	6.49*
SMAT	15.87	8.96*	16.19	6.71*	6.95	3.27*	15.11	6.72*	17.12	5.94*
LMAT	-1.83	0.18			2.19	0.23	-25.13	5.47*	7.91	0.79
SECURED	-16.85	3.01*	-46.22	4.62*	-8.79	1.99*	-18.97	2.79*	-25.19	2.45*
Tobin's q	-4.85	2.59*	-3.34	1.18	-3.92	1.69	-1.55	0.51	-6.45	3.29*
MARKET	0.86	0.72	2.80	0.88	0.39	0.40	7.73	1.33	-0.29	0.26
BANK	-2.89	1.76	-3.85	1.65	-0.50	0.25	-6.21	3.06*	3.62	1.31
MAINUW	-3.25	1.05	-1.85	0.38	-2.99	0.95	-1.18	0.30	-4.95	0.86
(MAINUW)* (LOANSHARE)	18.58	1.03	17.67	0.76	7.15	0.39	16.92	0.84	18.01	0.38
AGE	-0.08	1.83	-0.01	0.23	-0.04	0.86	-0.02	0.46	-0.11	1.34
QDUM	2.94	22.41*	4.30	14.20*	1.79	13.83*	4.13	8.01*	2.13	13.25*
△CPI	9.09	12.96*	11.29	8.45*	6.11	8.24*	7.94	3.98*	7.89	7.89*
△IIP	-3.71	31.96*	-4.87	26.79*	-2.67	22.74*	-4.19	26.40*	-3.04	19.15*
R^2	0.69		0.68		0.61		0.67		0.71	
Sample size	1,968		1,041		927		1,226		742	

Notes:

(1) As for Table 6.

(4) Estimates in this Table use data from 25 February 1994 to 31 March 2002.

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