ELSEVIER Journal of Banking & Finance 26 (2002) 767–793

Journal of BANKING & FINANCE

www.elsevier.com/locate/econbase

Bond underwriting by banks and conflicts of interest: Evidence from Japan during the pre-war period

Masaru Konishi *

Graduate School of Commerce and Management, Hitotsubashi University, 2-1 Naka, Kunitachi, Tokyo 186-8601, Japan

Received 24 December 1999; accepted 4 January 2001

Abstract

Article 65 of the Securities and Exchange Law of Japan, which was carried into effect in 1948, prohibited banks from underwriting corporate securities partially because of the concern that combining the banking and securities businesses might result in a potential conflict of interest. This paper studies the pricing and long-term default performance of industrial bonds underwritten by commercial banks, the Industrial Bank of Japan (IBJ), and trust firms as compared to those underwritten by investment houses during the pre-war period in Japan when banks were allowed to underwrite industrial bonds. The evidence rejects the concern about the conflicts of interest. © 2002 Elsevier Science B.V. All rights reserved.

JEL classification: G21; G24; N25
Keywords: Commercial banks; Conflicts of interest; Bond pricing; Default performance

* Tel.: +81-0554-66-3432.
E-mail address: ckonishi@d4.dion.ne.jp (M. Konishi).

PII: S0378-4266(01)00170-4

1. Introduction

Article 65 of the Securities and Exchange Law of Japan was carried into effect in 1948 as a directive from the Allied Powers' General Headquarters (GHQ) after the end of World War II. The law prohibited commercial banks from underwriting industrial bonds partially due to the concern that combining banking and securities businesses might result in a potential conflict of interest with investors; i.e. that banks might use their informational advantage over investors to underwrite poor quality industrial bonds and make the bond issuers repay their debt obligations to the banks. Since the enactment of the Financial System Reform Law in 1993, commercial banks have been permitted to operate securities businesses through bank-owned securities subsidiaries, and they have been expanding their market shares in the domestic straight bond underwriting business at a rapid pace. It seems, however, that prior to the passage of the Financial System Reform Law, there had not been thorough discussion among financial authorities and academics about potential conflicts of interest between banks and investors.

The purpose of this paper is to analyze if there were conflicts of interest when banks were allowed to underwrite industrial bonds during the pre-war period, and re-examine the passage of Article 65 of the Securities and Exchange Law and the Financial System Reform Law. First, we examine ex ante pricing of bonds underwritten by commercial banks and investment houses. Bank underwriting can have two effects on the pricing of securities. Since commercial banks are better informed about bond issuers than investment houses, there may be a greater certification effect when securities are underwritten by commercial banks. Thus, commercial-bank-underwritten bonds could be priced higher than investment-house-underwritten bonds. However, if a conflict of interest arises when securities are underwritten by commercial banks, commercial-bank-underwritten bonds could be priced lower than investment-house-underwritten bonds. According to Puri (1996), one can conclude that the net certification effect (or net conflict-of-interest effect) exists if commercial-bank-underwritten bonds are priced higher (lower, respectively) than investment-house-underwritten bonds. Our empirical results suggest that neither the net certification effect nor the net conflict-of-interest effect arises when bonds are underwritten by commercial banks. Similar results are obtained when pricing of industrial bonds underwritten by trust firms and the Industrial Bank of Japan (IBJ) is examined as compared to those underwritten by investment houses. The results suggest rejection of the concern about conflicts of interest.

Further, we examine ex post long-term default performance of bonds underwritten by commercial banks as compared to those underwritten by investment houses. In particular, mortality rates defined in Altman (1989) (i.e.

default rates adjusted for the ages of bonds) are used to compare the default performance of commercial-bank-underwritten bonds and investment-house-underwritten bonds. Probit estimations are also used to control for factors that could possibly influence the default performance of bonds. Contrary to the conventional argument, the results show that both the mortality rates and the default probabilities of commercial-bank-underwritten issues were significantly lower than those of investment-house-underwritten issues. Similar results are obtained when default performance and default probability of trust-firm-underwritten issues and IBJ-bank-underwritten issues are compared with investment-house-underwritten issues. The evidence rejects the concern about conflicts of interest.

There are previous works related to the current analysis. Ang and Richardson (1994), Kroszner and Rajan (1994), and Puri (1994) highlight pre-Glass–Steagall periods and examine ex post default performance of issues underwritten by commercial banks as compared to those underwritten by investment houses. Their results discredit the concern about conflicts of interest. Puri (1996) also focuses on a pre-Glass–Steagall period, but analyzes effects of bank underwriting on the ex ante pricing of securities. She did not find any evidence that affirms the need for concern about conflicts of interest. Gande et al. (1997) study the effects of underwriting by Section 20 subsidiaries on the pricing of securities using a modern data set, and found no evidence of conflicts of interest. Hamao and Hoshi (1998) and Ito and Konishi (2000) focus on underwriting by banks' securities subsidiaries after the enactment of the Financial System Reform Law in 1993, and they examine the effects of bank underwriting on the ex ante pricing of industrial bonds. Using different time frames and data sets, Hamao and Hoshi (1998) found no evidence of conflicts of interest, but Ito and Konishi (2000) found some evidence that is consistent with the concern about conflicts of interest. Contrary to the previous research, this paper highlights a unique pre-war period in Japan when commercial banks as well as the IBJ and trust firms were allowed to underwrite industrial bonds.

The paper is organized as follows. Section 2 provides some historical background on bond underwriting by commercial banks. Section 3 describes data and sample selection. Testable hypotheses are developed in Section 4. Section 5 examines the ex ante pricing of bonds underwritten by commercial banks, the IBJ and trust firms as compared to the pricing of investment-house-underwritten issues. Section 6 examines the long-term performance of bonds underwritten by commercial banks, the IBJ and trust firms as compared to that of investment-house-underwritten issues. Section 6 also studies the long-term performance of commercial-bank-underwritten issues as compared to the IBJ- and trust-firm-underwritten issues to ascertain whether commercial banks were better informed about bond issuers than the IBJ and trust firms were. Section 7 reviews the implications of this paper.

2. Historical background

Japan is one of the few industrial countries where the banking and securities businesses have been legally separated until very recently. [1] Before the enactment of Article 65 of the Securities and Exchange Law in 1948, however, commercial banks were allowed to engage in securities business, and they were major underwriters of industrial bonds.

Prior to the war, banks were defined as "those who, in their offices open to the public, conduct businesses of the discounts of securities, or the transactions of exchanges, or the acceptances of deposits, or advances ... whether they may designate themselves" by Article 1 of the Bank Decree of 1890 (Tamaki, 1995). Since there was no law prohibiting banks from engaging in the securities business as long as they conducted the businesses listed in Article 1 of the Bank Decree of 1890, banks were heavily involved in bond underwriting operations under the category of ancillary business. At the time, banks were also allowed to engage in stock underwriting and securities dealing operations as ancillary businesses. However, banks were rarely involved in these businesses since banks considered them to be too risky. [2]

On 1 September 1923, the Great Kanto Earthquake hit the Tokyo region, and the industrial facilities in the area were damaged seriously. Many borrowers were unable to repay their debt to banks, which in turn caused the banking crisis of 1927 (see Yabushita and Inoue, 1993, for details). Accordingly, the Banking Law was promulgated in 1927 and came into effect in January 1928 in order to realize a sound and stable banking system following the philosophy of commercial banking. The Banking Law limited the range of banking businesses to the acceptance of deposits, advances of money, discount of bills, and foreign exchange transactions (Article 1). The law also prohibited banks from engaging in non-bank activities except businesses that were ancillary to the typical bank businesses listed in Article 1 and businesses that were specified by the Law on Collateralization of Securities and Trusts of 1905 (Article 5). At the time, the Ministry of Finance interpreted that Article 5 of the Banking Law permitted banks to engage in the bond underwriting operation

[1] Banks are allowed to underwrite securities in countries such as the UK, Belgium, France, Germany, Hong Kong, Italy, Netherlands, Singapore and Switzerland. In 1987, Canada also discontinued the separation of financial businesses so that the common ownership of banks, trust companies, savings institutions, insurance companies, and securities firms is now legal. In the US, the Glass–Steagall Act of 1933 has prohibited commercial banks from engaging in securities businesses. However, the Glass–Steagall provisions were relaxed in 1987, and some banks set up so-called "Section 20 subsidiaries" which are allowed to underwrite securities.

[2] Some banks, such as Nomura Bank and Kanda Bank, were heavily involved in securities trading operations. Although they have the word *bank* in their names, these institutions were securities-business-oriented banks which became investment houses by the mid-1930s.

as an ancillary business, and therefore, banks were major underwriters of corporate bonds even after the enactment of the Banking Law of 1927. [3]

After the end of World War II, Article 65 of the Securities and Exchange Law of Japan was carried into effect in 1948 as a directive from the Allied Powers' GHQ. In principle, Article 65 prohibited banks from engaging in securities businesses just as in the US Glass–Steagall Act, which prohibited commercial banks from conducting securities businesses due to the concern that combining the banking and securities businesses might result in potential conflicts of interest. [4,5]

The Financial System Reform Law of 1992 came into effect in 1993, and currently banks are allowed to operate securities businesses via subsidiaries. However, in the beginning, the range of securities businesses permitted to the subsidiaries was very limited. The securities subsidiaries were not allowed to compete in the primary and secondary markets for equities, or the secondary markets for convertible bonds and warrant attached bonds. Trading of stock-index futures and stock-index options was not permitted either. Furthermore, the securities subsidiaries were subject to a substantial set of firewalls that limited information and resource linkages between subsidiaries and their parent banks. [6] Regardless of these strict constraints, the securities subsidiaries have been largely influencing in domestic industrial bond underwriting operations. [7]

[3] From 1890 to 1927, there were 1059 industrial bond issues in total, out of which 281 (27%) were underwritten by commercial banks, while 133 (13%) were underwritten by investment houses (the first corporate bond in the Japanese history was issued by *Osaka Railway* in 1890). From 1927 to 1935, there were 789 issues in total, out of which 226 (29%) were underwritten by commercial banks, while 132 (17%) were underwritten by investment houses.

[4] Even after the enactment of Article 65, banks were permitted to purchase securities for investment purposes, and also to underwrite and trade government bonds, municipal bonds, and government-guaranteed bonds. In fact, regional banks have been major underwriters of privately placed bonds issued by local governments. Though Article 65 allowed banks to trade public bonds, the government actually prohibited the trading until the early 1980s. Banks were allowed to sell government bonds to individual investors in 1983, and government-bond dealing by banks was also permitted in 1984.

[5] For an extensive discussion of the Glass–Steagall Act of the US, see Benston (1990) and Litan (1987) for example.

[6] The Financial Supervisory Agency (FSA) removed the restriction on the range of securities businesses permitted to bank securities subsidiaries in October 1999. FSA also relaxed the firewalls in April 1999. For example, informational links between a bank and its securities subsidiary are now legal as long as there is a written agreement by their customer firms. See the press release of the FSA on March 25 for more details on the relaxation of the firewalls.

[7] 32.6% of industrial bonds were underwritten by banks' securities subsidiaries in fiscal 1996 and 55.7% in fiscal 1997. See the Federation of Bankers Associations of Japan (1994) for more details on Article 65 of the Securities and Exchange Law of Japan and the Financial System Reform Law of 1992.

The recent experience in the domestic straight bonds underwriting business raises questions concerning the cost of repealing the law separating the banking and securities businesses: in particular, the potential conflicts of interest with investors when banks underwrite industrial bonds. However, there was not an extensive debate over the potential conflicts of interest within either financial authorities or academia prior to the passage of the Financial System Reform Law. The remainder of this paper attempts to contribute to the issue by examining the pricing and long-term default performance of industrial bonds underwritten by banks and investment houses.

3. Sample selection and data

The sample of bond issues is collected from a pre-war period when commercial banks as well as the IBJ and trust firms were allowed to underwrite industrial bonds and were heavily involved in the bond underwriting business. The IBJ is treated separately from commercial banks since it is a special bank founded under the IBJ Act of 1900 to promote long-term financing to heavy industries, which was the goal of the government at the time.

Bonds issued in the period January 1919–December 1927 are used as the sample. 1919 is chosen as the beginning of the sample period since the number of bond issues increased tremendously from 1919. (The total amount of bond issues was 78.5 million yen in 1918 as compared to 141.7 million yen in 1919.) Furthermore, the underwriter(s) cannot be identified in many issues prior to 1919. [8] 1927 is chosen as the end since the Banking Law of 1927, which enhanced tremendously the power of the Ministry of Finance to audit banking activities, came into effect on 1 January 1928. The Banking Law of 1927 was intended to reduce market abuses by banks, possibly including banks' underwriting of poor quality bonds and making the issuers repay their debt to the banks. [9]

There were issues underwritten by life insurance companies in the sample period. Since life insurance companies also had lending exposure, it would be interesting to examine whether there were conflicts of interest when they underwrote bonds. However, these issues are excluded from the sample because

[8] From 1890 to 1918, the underwriter cannot be identified in 176 out of 351 issues (or 50.1%). From 1919 to 1927, the underwriter cannot be identified in 174 out of 708 issues (or 24.6%).

[9] The Banking Law of 1927 "made it a routine task for the banks to audit twice yearly their whole business and prepare the reports to be ready for the examination of the Ministry of Finance at any time (Article 12). For the external audit by the Finance Ministry, the banks were requested to prepare their general business report, statement of balance sheets, statement of profit and loss accounts and statement of the disposal of surplus funds, the forms of which the Ministry specified" (Tamaki, 1995, p. 158).

life-insurance-underwritten issues were very rare. In fact, there were only two issues underwritten by life insurance companies in the sample period. The Bank of Taiwan, the Development Bank of Korea and the Bank of Korea, also underwrote industrial bonds in the sample period, however, these banks are excluded from the sample since they are colonial banks whose customers were limited to companies operating in Taiwan and Korea (there were 26 issues underwritten by these banks).

The sample of industrial bond issues is collected from *Kosai Shasai Meisai-Hyo* (*Semi-Annual Table of Bonds and Debentures in Japan*) published by the Research Department of the IBJ, which lists all the outstanding industrial bond issues with issue dates. Data on issue characteristics are collected from *Shasai Ichiran* (*Bond List*) published by the Research Department of the IBJ which lists bonds issued from 1890 to 1969 in alphabetical order. The lead underwriter, syndicate members, ex ante yield to maturity, issue size, and information on whether an issue was secured are taken from the *Bond List*. Information on when a bond defaulted is also taken from the *Bond List*. Data on issuing firms (book value of capital and total assets, date of establishment) are from *Kabushiki Nenkan* (*Stock Annual*) published by the Research Department of Osaka-ya Shouten. Data that are necessary to calculate ex ante yields to maturity of government bonds are also taken from the *Stock Annual*.

Since this paper compares the pricing and the default performance of bonds underwritten by commercial banks, the IBJ and trust firms with those underwritten by investment houses, it is critical to identify the four financial institutions. An underwriter is identified as a trust firm if the underwriter uses the word ''shintaku (trust)'' in its name except for Teikoku Shintaku, which is identified as an investment house since it was a securities-business-oriented trust firm. Investment houses are identified using the list of investment houses given in Shimura (1980, p. 57). It provides the list of investment houses that underwrote industrial bonds beginning in 1934. Due to the enactment of the Banking Law in 1928, financial institutions (investment houses, especially) that did not accept deposits were not allowed to use the word ''ginko (bank)'' in their names from 1934. Therefore, the investment houses that appear in Shimura's list are securities-business-oriented institutions even if they have the word ''ginko'' in their names during the sample period. When identification is ambiguous, further checks are made using the list of investment houses that participated in bond underwriting syndicates from 1926 to 1937 in Shimura (1980, p. 57).

There were 628 domestic straight bonds issued from 1919 to 1927. Issues missing any data on firm or issue characteristics; those underwritten by institutions other than commercial banks, trust firms, the IBJ and investment houses; and those issued directly by the issuers are excluded from the sample. This leaves us with 317 issues, out of which 116 were underwritten by commercial banks, 70 by the IBJ, 49 by trust firms, and 81 by investment houses.

Table 1
Descriptive statistics of the sample

Segment	Commercial bank	Ind. Bank of Japan	Trust firm	Investment house
Capital/asset				
Average	0.07	0.07	0.07	0.06
S.D.	0.07	0.10	0.06	0.04
Issue size (1000 yen)				
Average	6571	9755	4822	4391
S.D.	4921	8218	3533	3398
Age				
Average	19.9	16.3	18.1	12.7
S.D.	12.7	10.3	13.0	9.0
Syndicate size				
Average	3.1	4.9	3.6	2.7
S.D.	2.5	4.5	4.9	3.1
Secured				
Yes (%)	9	36	27	32
First issue				
Yes (%)	59	53	66	54
Maturity				
Average	5.4	5.6	5.3	4.3
S.D.	2.0	2.6	1.4	1.8
Industry (%)				
Railway & Tram	15	33	22	11
S.S. & Dockyard	5	7	2	9
Mining & Metallization	14	6	0	6
Elec. & Gas	31	19	33	26
Spinning & Weaving	9	3	10	11
Sugar M'fg & Brewing	4	1	12	1
Paper Mill	5	11	8	0
Cement	3	3	2	4
Chemical Industry	3	1	4	4
Manufacturing	4	3	4	6
Others	7	11	6	21
Total	100	100	100	100
Observations	116	70	49	81

Table 1 provides descriptive statistics of the sample, and Table 2 presents probit estimations of the following equation:

$$\mathrm{BANK}_i = \beta_0 + \beta_1 \mathrm{CAPITAL/ASSET}_i + \beta_2 \mathrm{LN(AMOUNT)}_i + \beta_3 \mathrm{LN(AGE)}_i + \beta_4 \mathrm{LN(SYNDICATESIZE)}_i$$

$$+ \beta_5 \mathrm{SECURED}_i + \beta_6 \mathrm{FIRSTISSUE}_i + \beta_7 \mathrm{LONGTERM}_i + \beta_8 \mathrm{INDUSTRY}_i,$$

where the variables are defined as follows.

BANK: A dummy variable that takes the value one if the lead underwriter was a commercial bank, zero if it was an investment house. If there was only one underwriter, it is identified as the lead underwriter. When more than one institution is listed as the underwriter in the *Bond List*, the institution ranked at the top of the list is identified as the lead underwriter. Pairwise comparisons are also made of IBJ vs investment house, and trust firm vs investment house. In the case of IBJ vs investment houses, BANK takes the value one if the lead underwriter was the IBJ, zero if it was an investment house. In the case of trust firm vs investment house, BANK takes the value one if the lead underwriter was a trust firm, zero if it was an investment house.

Table 2
Probit estimations for descriptive statistics[a]

Variable	(1) Commercial bank vs investment house	(2) Ind. Bank of Japan vs investment house	(3) Trust firm vs investment house
CONSTANT	−11	−13***	−5
	(0.00)	(−3.59)	(0.00)
CAPITAL/ASSET	3.59**	4.99	1.74
	(1.72)	(1.46)	(0.58)
LN(AMOUNT)	0.09	0.63***	−0.29
	(0.61)	(2.98)	(−1.44)
LN(AGE)	0.50***	0.02	0.38**
	(3.51)	(0.09)	(2.19)
LN(SYNDICATESIZE)	0.24	0.58***	0.15
	(1.56)	(2.94)	(0.74)
SECURED	−0.62**	1.11***	−0.05
	(−2.30)	(3.25)	(−0.14)
FIRSTISSUE	−0.04	−0.09	0.17
	(−0.19)	(−0.33)	(0.58)
LONGTERM	0.57**	0.47	0.76**
	(2.17)	(1.44)	(2.25)
Observations	197	151	130
Log likelihood	−102	−70	−63
Pseudo R^2	0.23	0.32	0.27

[a] t-ratios are in parentheses. Pseudo R^2 is the likelihood ratio computed as $R^2 = 1 - \log L / \log L_0$ where $\log L$ is the maximized value of the log-likelihood function, and $\log L_0$ is the log likelihood computed with the coefficients of the explanatory variables set at zero.

*** Significant at the 1% level.

** Significant at the 5% level.

CAPITAL/ASSET: The book value of capital divided by total assets. [10]

LN(AMOUNT): The natural log of the amount of the bond issue in thousands of yen.

LN(AGE): The natural log of the age of the issuer.

LN(SYNDICATESIZE): The natural log of the number of underwriters that participated in the underwriting syndicate.

SECURED: A dummy variable that takes the value one if the issue was secured, zero if otherwise.

FIRSTISSUE: A dummy variable that takes the value one if there were no bonds issued by the firm outstanding in the market, and zero if otherwise.

LONGTERM: A dummy variable that takes the value one if the maturity is greater than 5 years, and zero if otherwise.

INDUSTRY: A set of industry dummy variables constructed based on the industrial classifications used in the *Bond List*.

The figures in the tables indicate that the size of bonds underwritten by the IBJ is significantly greater than the size of bonds underwritten by investment houses (9.755 million yen as compared to 4.391 million yen, and significant at 0.01 in the probit regression). Furthermore, the tables show that the mean syndicate size of the IBJ-underwritten issues is greater than that of investment-house-underwritten issues (4.93 as compared to 2.68, and significant at 0.01 in the probit regression). These results indicate that stronger distribution power (i.e. a greater syndicate size) was required for IBJ-underwritten issues than investment-house-underwritten issues since the size of IBJ-underwritten issues was greater than that of investment-house-underwritten issues.

We also see from the tables that the mean age of the issuers whose bonds were underwritten by investment houses is lower than the mean ages of the issuers whose bonds were underwritten by commercial banks, the IBJ, and trust firms. The results indicate that investment houses underwrote bonds issued by young growing firms, while commercial banks, the IBJ, and trust firms underwrote bonds issued by old well-established firms.

The tables also show that a very large proportion of bonds were issued without collateral in the sample period. In particular, 91% were issued without collateral when commercial banks were lead underwriters, which is significantly greater than the proportion of unsecured issues for investment-house-underwritten issues (91% as compared to 68%, and significant at 0.01 in the probit regression). The magnitude of these figures is astonishing, especially because non-collateralized domestic straight bonds were prohibited from the end of World War II until the 1980s.

[10] Leverage was also used instead of capital to asset ratio to control for the creditworthiness of bonds, but the results were qualitatively similar.

Table 3 provides the number and amount (thousand yen) of issues that defaulted in each year (1–7 years after the issuance), and the number and amount (thousand yen) of issues that defaulted by 1–7 years from the date of issuance. The default is defined as any delay in disbursement of interest or principal. The tables show that the default of investment-house-underwritten issues was far more common than the default of issues underwritten by commercial banks, the IBJ and trust firms both in number and amount. For example, the last column of Panel C shows that by 7 years from the date of issuance, 14 out of 81 investment-house-underwritten issues (17.3%) defaulted, while only 3 out of 116 commercial-bank-underwritten issues (2.6%), 4 out of 70 IBJ-underwritten issues (5.7%), and 6 out of 49 trust-firm underwritten issues (12.2%) defaulted. Section 6 examines if these differences are statistically significant.

4. Hypotheses

Bank underwriting can have two possible effects on the pricing and long-term performance of industrial bonds. Since banks are better informed about bond issuers than investment houses due to repeated transactions with the issuers via lending activities, there may be a greater certification effect when securities are underwritten by banks than by investment houses. [11] Furthermore, investors may expect banks to keep monitoring the firms' management after the issuance of bonds by observing the daily movement of the firms' payment settlement accounts and sending representatives to the firms' boards. These activities should magnify the certification effect when bonds are underwritten by banks (see Fama, 1985; Aoki et al., 1994 among others). Accordingly, bank-underwritten bonds could be priced higher than investment-house-underwritten bonds, and the default probability of bank-underwritten bonds should be lower than that of investment-house-underwritten bonds.

[11] See Booth and Smith (1986) and Chemmanur and Fulghieri (1994) for the role of underwriters in certifying the pricing of equity and bond issues. In their models, reputation acquisition provides investment houses incentives to mitigate the information asymmetry problem between investors and issuers and credibly certifies the pricing of the issues. Booth and Smith (1986) also provide empirical support for the certification role of investment houses. Puri (1999), on the other hand, shows that commercial banks have better access to information about their customers, and hence have an incentive to certify the pricing of bonds more accurately than investment houses do even in the presence of potential conflicts of interest, especially when the cost of providing information to investment houses is high. Information production by costly monitoring by banks is studied by authors such as Diamond (1991). James (1987), James and Wier (1990), and Lummer and McConnell (1989), among others, who provide evidence that is supportive of the certification role of commercial banks.

Table 3
Marginal and cumulative defaults

Underwriter	Observations	Number of years after issue						
		1	2	3	4	5	6	7
Panel A: The marginal number of defaulted issues 1–7 years after the issuance of bonds								
Commercial bank	116	0	1	0	1	0	0	1
Ind. Bank of Japan	70	0	0	3	0	1	0	0
Trust firm	49	0	0	1	0	4	0	1
Inv. house	81	1	1	7	1	5	0	1
	Amount (1000 yen)	Number of years after issue						
		1	2	3	4	5	6	7
Panel B: The marginal amount of defaulted issues 1–7 years after the issuance of bonds								
Commercial bank	765,274	0	750	0	1,000	0	0	5,000
Ind. Bank of Japan	682,860	0	0	13,300	0	10,000	0	0
Trust firm	236,300	0	0	3,500	0	10,500	0	1,000
Inv. house	368,700	2,000	2,000	34,500	2,000	18,500	0	10,000

	Observations	Number of years after issue						
		1	2	3	4	5	6	7
Panel C: The cumulative number of defaulted issues 1–7 years after the issuance of bonds								
Commercial bank	116	0	1	1	2	2	2	3
Ind. Bank of Japan	70	0	0	3	3	4	4	4
Trust firm	49	0	0	1	1	5	4	6
Inv. house	81	1	2	9	10	13	13	14
	Amount (1000 yen)	Number of years after issue						
		1	2	3	4	5	6	7
Panel D: The cumulative amount of defaulted issues 1–7 years after the issuance of bonds								
Commercial bank	765,274	0	750	750	1,750	1,750	1,750	6,750
Ind. Bank of Japan	682,860	0	0	1,330	1,330	11,330	11,330	11,330
Trust firm	236,300	0	0	3,500	3,500	14,000	14,000	15,000
Inv. house	368,700	2,000	4,000	38,500	40,500	59,000	59,000	69,000

However, when banks are allowed to underwrite bonds, they may possibly induce troubled customers to issue bonds and repay their debt obligations to the underwriting banks. The banks may underwrite the bonds and misrepresent their quality to investors in order to sell them well. If this conflict of interest with investors arises when bonds are underwritten by banks, bank-underwritten issues should be priced lower than investment-house-underwritten issues, and the default probability of bank-underwritten bonds can be higher than that of investment-house-underwritten bonds.

In summary, we test the following null hypotheses:

Hypothesis 1 (H_1). The yields for bank-underwritten bonds do not differ significantly from those for investment-house-underwritten bonds.

Hypothesis 2 (H_2). The default probability of bank-underwritten bonds does not differ significantly from that of investment-house-underwritten bonds.

Hypotheses 1 and 2 are tested in Sections 5 and 6, respectively.

5. Bond pricing analyses

5.1. Methodology

We run the following Ordinary Least Squares (OLS) regression to measure the differences in yield spread between commercial-bank-underwritten issues and investment-house-underwritten issues, controlling for other factors which may affect the yield spread:

$$\begin{aligned}\mathrm{SPREAD}_i = {} & \beta_0 + \beta_1 \mathrm{BANK}_i + \beta_2 \mathrm{CAPITAL/ASSET}_i \\ & + \beta_3 \mathrm{LN(AMOUNT)}_i + \beta_4 \mathrm{LN(AGE)}_i \\ & + \beta_5 \mathrm{LN(SYNDICATESIZE)}_i + \beta_6 \mathrm{SECURED}_i \\ & + \beta_7 \mathrm{FIRSTISSUE}_i + \beta_8 \mathrm{LONGTERM}_i \\ & + \beta_9 \mathrm{INDUSTRY}_i. \end{aligned} \tag{1}$$

The dependent variable SPREAD is the ex ante yield spread of an industrial bond over the ex ante yield of the government bond with the closest maturity issued in the same year. Definitions of the independent variables are given in Section 3. [12]

[12] The underwriting bank's lending exposure to the bond issuer, the purpose of the issue (i.e. whether the purpose is to refinance or not), and the reputation of the underwriter (e.g. the market share of the underwriter) may have significant effect on the yield spread. However, since the data on these variables are not available during the sample period, they are not used as independent variables in the regression.

The effect of commercial bank underwriting on pricing is measured by the significance of the coefficient of BANK, a dummy variable that assigns one if a bond was underwritten by a commercial bank, and zero if a bond was underwritten by an investment house. Pairwise comparisons are also made of IBJ vs investment house and trust firm vs investment house. In the case of IBJ vs investment houses, BANK takes the value one if the lead underwriter was the IBJ, zero if it was an investment house. In the case of trust firm vs investment house, BANK takes the value one if the lead underwriter was a trust firm, zero if it was an investment house. If the coefficient BANK is positive and statistically significant, it implies that the conflict-of-interest effect dominates the certification effect.

The capital to asset ratio based on book values is used as an independent variable to measure the credibility of bond issuers. We expect that issues with a higher capital to asset ratio would have lower yield spreads over government bonds than those with lower capital to asset ratios. [13] Since larger issues can be associated with less uncertainty, we expect yield spreads to be lower when the issue size is larger. Issuers' age is also an important factor. Issues by older firms are less uncertain, hence, yield spreads should be lower when bonds are issued by older firms than when issued by younger firms. Practitioners say that secured bonds are less risky than unsecured bonds, hence, we expect lower yield spreads when bonds are issued with collateral than when issued without collateral. If issues with collateral are interpreted as signaling that the issuers are risky, yield spreads would be higher when bonds are issued with collateral than when without collateral. If a similar bond issued by the same firm is outstanding in the market, that may reduce the uncertainty of the new issue. Therefore, issues with similar bonds outstanding in the market should result in lower yield spreads.

In the multivariate tests, it is assumed that the bank dummy, BANK, is an exogenous variable. However, the bank's decision whether or not to underwrite may be endogenous in the sense that the decision depends on the bank's private information about the issuer's characteristics. In such a case, coefficient estimators in a regression model are known to be inconsistent (see Maddala, 1983 for example). To resolve the statistical problem, we use Heckman's (1979) two-stage method for selectivity bias adjustment. In particular, the following equation is estimated:

[13] Puri (1996) uses credit rating to measure the credibility of bonds. Capital to asset ratio is used as a proxy for credit rating in the current analysis since credit rating did not exist in the sample period. It was not until the 1980s when bonds were issued with credit ratings in Japan.

$$\begin{aligned}\mathrm{SPREAD}_i = {} & \beta_0 + \beta_1 \mathrm{BANKINFO}_i + \beta_2 \mathrm{CAPITAL/ASSET}_i \\ & + \beta_3 \mathrm{LN(AMOUNT)}_i + \beta_4 \mathrm{LN(AGE)}_i \\ & + \beta_5 \mathrm{LN(SYNDICATESIZE)}_i + \beta_6 \mathrm{SECURED}_i \\ & + \beta_7 \mathrm{FIRSTISSUE}_i + \beta_8 \mathrm{LONGTERM}_i \\ & + \beta_9 \mathrm{INDUSTRY}_i, \end{aligned} \tag{2}$$

where BANKINFO is the conditional expectation of the residual given the bank's underwriting decision. In particular, we estimate the following equation as a probit regression and then use the inverse Mill's ratio as BANKINFO.

$$\begin{aligned}\mathrm{BANK}_i = {} & \beta_0 + \beta_1 \mathrm{CAPITAL/ASSET}_i + \beta_2 \mathrm{LN(AMOUNT)}_i \\ & + \beta_3 \mathrm{LN(AGE)}_i + \beta_4 \mathrm{LN(SYNDICATESIZE)}_i \\ & + \beta_5 \mathrm{SECURED}_i + \beta_6 \mathrm{FIRSTISSUE}_i + \beta_7 \mathrm{LONGTERM}_i \\ & + \beta_8 \mathrm{INDUSTRY}_i. \end{aligned}$$

BANKINFO can be considered to be additional information revealed to investors by a bank's underwriting. Therefore, if the coefficient is positive and statistically significant, it implies that the conflict-of-interest effect is greater than the certification effect. [14]

5.2. Results

Table 4 presents the OLS estimates of Eqs. (1) and (2). Column 1 presents the OLS estimates for Eq. (1) when the pricing of issues underwritten by commercial banks is compared with that of issues underwritten by investment houses. It shows that the coefficient of the BANK dummy is positive, which is consistent with the net conflict-of-interest effect. However, the *t*-ratio indicates that the coefficient of the BANK dummy is not statistically significant, hence, it is concluded that there is no evidence of conflicts of interest when bonds were underwritten by commercial banks.

Column 3 presents the OLS estimates for Eq. (1), except that here BANK is defined as a dummy variable which assigns the value one if the lead underwriter is the IBJ, and zero if it is an investment house. Column 5 also presents the OLS estimates of Eq. (1), except here BANK is defined as a dummy variable that assigns the value one if the lead underwriter is a trust firm, and zero if it is an investment house. In Column 3, the coefficient of BANK is negative, which is consistent with the net certification effect. In Column 5, the coefficient of BANK is positive, which suggests that the certification effect dominates the

[14] See Puri (1996) for the exact derivation of BANKINFO.

Table 4
Multivariate tests for bank and investment house underwritings[a]

Variable	Commercial bank vs investment house		Ind. Bank of Japan vs investment house		Trust firm vs investment house	
	(1) Without selectivity bias adjustment	(2) With selectivity bias adjustment	(3) Without selectivity bias adjustment	(4) With selectivity bias adjustment	(5) Without selectivity bias adjustment	(6) With selectivity bias adjustment
CONSTANT	0.042*** (2.62)	−0.022 (−0.31)	0.054*** (3.43)	0.071* (1.87)	0.036* (1.95)	0.001 (0.02)
BANK	0.000 (0.33)	0.007 (0.92)	−0.001 (−0.78)	−0.002 (−0.41)	0.000 (0.20)	0.007 (0.62)
CAPITAL/ASSET	0.003 (0.23)	0.015 (0.88)	0.002 (0.16)	−0.002 (−0.13)	−0.002 (−0.15)	0.005 (0.25)
LN(AMOUNT)	−0.002* (−1.79)	−0.001 (−1.39)	−0.003** (−2.47)	−0.003* (−1.71)	−0.002 (−1.48)	−0.003 (−1.26)
LN(AGE)	−0.002* (−1.86)	0.000 (0.21)	−0.002* (−1.88)	−0.002* (−1.88)	−0.001 (−0.91)	0.001 (0.30)
LN(SYNDICATESIZE)	0.000 (0.30)	0.001 (0.93)	0.000 (0.15)	−0.001 (−0.35)	0.002** (2.08)	0.003* (1.86)
SECURED	0.003* (1.95)	0.000 (0.11)	0.002 (1.45)	0.001 (0.22)	0.004* (1.94)	0.003 (1.81)*
FIRSTISSUE	0.003*** (2.58)	0.003*** (2.64)	0.004*** (3.33)	0.005*** (3.35)	0.004*** (2.76)	0.005** (2.55)
LONGTERM	−0.002 (−1.49)	−0.001 (−0.21)	−0.003 (−1.58)	−0.003* (−1.69)	−0.004* (−1.89)	0.000 (−0.08)
Observations	197	197	151	151	130	130
Adjusted R^2	0.28	0.28	0.38	0.38	0.31	0.31

[a] *t*-ratios are in parentheses.
* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

conflict-of-interest effect. The results indicate that the coefficients of the bank dummies are not statistically significant. Therefore, one can conclude that there is no evidence of a conflict of interest when bonds were underwritten by the IBJ and trust firms.

In all three regressions, the majority of coefficients on other independent variables have the expected signs and are statistically significant or marginally significant. As for SECURED, the coefficient is positive and statistically significant at 0.05 when the pricing of commercial-bank-underwritten issues is compared with investment-house-underwritten issues, and significant at 0.1 when the pricing of trust-firm-underwritten issues is compared with investment-house-underwritten issues. When the pricing of the IBJ-underwritten-issues and investment-house-underwritten issues is compared, the coefficient of SECURED is positive and marginally significant. These results indicate that

a collateralized bond was perceived by investors as a risky issue. It was the conventional view among financial authorities in the late 1920s and early 1930s that collateralized bonds were riskier than uncollateralized bonds. [15] Based on this view, the Law on the Collateralization of Securities and Trusts of 1905 was revised in 1933 to encourage issuance of collateralized bonds. The current results reject any concern about the riskiness of uncollateralized bonds.

Columns 2, 4 and 6 provide the OLS estimates for Eq. (2) where the selectivity bias is adjusted using Heckman's (1979) two-stage method. Columns 2 and 6 show that the coefficients of BANKINFO are positive, but not statistically significant, suggesting that there is no evidence of a conflict of interest when bonds were underwritten by commercial banks or trust firms. Column 4 shows that the coefficient of BANKINFO is negative, but not statistically significant, implying that there is also no evidence of conflict of interest when bonds were underwritten by the IBJ.

In sum, the empirical results do not support the concern about conflicts of interest when bonds were underwritten by commercial banks, the IBJ and trust firms. Note that in the pre-war period, commercial banks as well as the IBJ and trust firms engaged directly in securities activities rather than via separate securities subsidiaries. Therefore, the current results indicate that conflicts of interest were not a problem even in an organization structure where potential conflicts of interest are high. Hence, we conclude that allowing commercial banks to operate securities businesses via securities subsidiaries as legislated by the Financial System Reform Law of Japan should not cause conflicts of interest. [16]

6. Default performance analyses

6.1. Methodology

Firstly, we test for differences in mortality rates of bonds underwritten by banks and investment houses. This paper defines two kinds of mortality rates;

[15] For example, Jun'nosuke Inoue, the Governor of the Bank of Japan at the time, argued at a lecture given in February 1927 that financial institutions engaged in securities businesses should not underwrite uncollateralized industrial bonds (see Matsuo, 1999, p. 37).

[16] Empirical results on the way bank's securities activities should be organized are mixed in the US. Kroszner and Rajan (1997) found that issues underwritten directly by commercial banks were priced lower than those underwritten by their affiliates during the pre-Glass–Steagall era, indicating that the separate securities subsidiaries lowered potential conflicts of interest. Alternatively, Puri (1996) found that ex ante yields on bonds underwritten by affiliates did not differ from the yields on similar issues underwritten by investment houses, but yields on bonds underwritten directly by commercial banks were significantly lower than those underwritten by investment houses. This indicates that affiliate underwriting might have been subject to greater conflicts of interest than direct underwriting by commercial banks.

marginal mortality rate and cumulative mortality rate. These measures are introduced in Altman (1989) to calculate the default rates of bonds that have been outstanding for equal periods of time, controlling the size of the denominator by accounting for maturities and past defaults.

The marginal mortality rate for the year t (MMR_t) is the value weighted default rate for the tth year after bond issuance, which is defined as the total value of defaulting bonds in the year t divided by the total value of the population of bonds at the beginning of year t. Default herein is defined as any delay in disbursement of interest or principal. The population of each year is adjusted for defaults and maturities. There are no callable bonds in the sample, so the denominator is not adjusted for calls. The cumulative mortality rate for the year T is defined as follows:

$$\mathrm{CMR}_T = 1 - \prod_{t=1}^{T} \mathrm{SR}_t,$$

where SR_t is the survival rate in period t, which is equal to $1 - \mathrm{MMR}_t$. The marginal mortality rates and cumulative mortality rates are presented in Table 5.

We create groups of commercial bank-, IBJ-, trust-firm- and investment-house-underwritten issues. To examine whether the data are consistent with the presence of conflicts of interest, the marginal mortality rate and the cumulative mortality rate for each group are calculated for 1–7 years from the date of issuance. For each year, we examine whether the difference in cumulative mortality rates between bank-underwritten issues and investment-house-underwritten issues (i.e. commercial banks vs investment houses, the IBJ vs investment houses, and trust firms vs investment houses) is significant, using the t-test of differences in proportion.

Secondly, we examine the impact of bank underwriting of industrial bonds on the default probability using probit regressions. The probit regressions are used to control for other factors that could influence the default probability of bonds. In particular, the following equation is estimated:

$$\begin{aligned} D_i = {} & \beta_0 + \beta_1 \mathrm{BANK}_i + \beta_2 \mathrm{CAPITAL/ASSET}_i \\ & + \beta_3 \mathrm{LN(AMOUNT)}_i + \beta_4 \mathrm{LN(AGE)}_i \\ & + \beta_5 \mathrm{LN(SYNDICATESIZE)}_i + \beta_6 \mathrm{SECURED}_i \\ & + \beta_7 \mathrm{FIRSTISSUE}_i. \end{aligned} \tag{3}$$

The dependent variable, D_i, is a dummy variable that takes the value one if a bond defaults, and zero otherwise. BANK_i is a dummy variable that takes the value one if the lead underwriter is a commercial bank, and zero if it is an investment house. The rest of the independent variables are defined in Section 3. Pairwise comparisons are also made of IBJ vs investment house and trust

Table 5
Marginal and cumulative mortality rates[a]

Underwriter	Marginal mortality rates						
	1	2	3	4	5	6	7
Panel A: Marginal mortality for 1–7 years after the issuance of bonds							
Commercial bank	0	0.001	0	0.002	0	0	0.017
The Ind. Bank of Japan	0	0.019	0	0	0.019	0	0
Trust firm	0	0	0.015	0	0.050	0	0.011
Investment house	0.006	0.006	0.106	0.008	0.096	0	0.120
	Cumulative mortality rates						
	1	2	3	4	5	6	7
Panel B: Cumulative mortality rates for 1–7 years after the issuance of bonds							
Commercial bank	0	0.001	0.001***	0.003**	0.003***	0.003*	0.019**
	(−0.68)	(−0.85)	(−3.01)	(−2.50)	(−3.14)	(−1.82)	(−2.02)
Ind. Bank of Japan	0	0.019	0.019**	0.019**	0.038**	0.038	0.038*
	(−0.68)	(0.42)	(−2.32)	(−2.01)	(−2.40)	(−1.43)	(−1.83)
Trust firm	0	0	0.015**	0.015**	0.064**	0.064	0.075
	(−0.68)	(−0.96)	(−2.43)	(−2.11)	(−1.90)	(−1.13)	(−1.46)
Investment house	0.006	0.011	0.116	0.123	0.207	0.207	0.303

[a] *t*-ratios are in parentheses. *t*-ratios are results of *t*-tests of the differences in the cumulative mortality rates for commercial banks, the IBJ, trust firms vs investment houses.

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

firm vs investment house. In the case of IBJ vs investment houses, BANK takes the value one if the lead underwriter was the IBJ, zero if it was an investment house. In the case of trust firm vs investment house, BANK takes the value one if the lead underwriter was a trust firm, zero if it was an investment house. The impact of bank underwriting is measured by the magnitude and significance of the coefficient of BANK. If the coefficient of BANK is positive and statistically significant, the data suggest the presence of conflicts of interest.

6.2. Results

Panel B of Table 5 presents the cumulative mortality rates of bonds underwritten by commercial banks, the IBJ, trust firms, and investment houses. It shows that the differences in the cumulative mortality rates of bank-underwritten issues and investment house-underwritten issues are economically significant in most cases. For example, by 7 years from the date of issuance, 30.3% of investment house-underwritten issues defaulted, while only 1.9% of commercial bank-underwritten issues, 3.8% of IBJ-underwritten issues, and 7.5% of trust firm-underwritten issues defaulted during the sample period.

Panel B also presents the results of the *t*-test of differences in the cumulative mortality rates of commercial-bank- and investment-house-underwritten issues; in those of the IBJ- and investment-house-underwritten issues; and in those of trust-firm- and investment-house-underwritten issues. The results indicate that the cumulative mortality rates for commercial-bank-underwritten issues are lower than those for investment-house-underwritten issues for 3, 4, 5, 6, and 7 years after issuance, and that the differences are statistically significant at 0.01, 0.05, 0.01, 0.1, and 0.05, respectively, using the two-tailed test. The cumulative mortality rates for commercial-bank-underwritten issues are also lower than those for investment-house-underwritten issues for 1 and 2 years, but are not statistically significant. The results show that the cumulative mortality rates for the IBJ-underwritten issues are lower than those for investment-house-underwritten issues for 3, 4, 5, and 7 years, and are statistically significant at 0.05, 0.05, 0.05, and 0.1, respectively. The cumulative mortality rates for IBJ-underwritten issues for 1 and 6 years are also lower than those for investment-house-underwritten issues, but are not statistically significant. The results also show that the cumulative mortality rates for trust-firm-underwritten issues are lower than those for investment-house-underwritten issues for 3, 4, and 5 years after issuance, and that the differences are all statistically significant at 0.05. The cumulative mortality rates for trust-firm-underwritten issues for 1, 2, 6, and 7 years after issuance are also lower than those for investment-house-underwritten issues, but the differences are not statistically significant.

Table 6 provides the results of the probit regressions. Column 1 presents the test results when the default performance of commercial-bank-underwritten

Table 6
Probit estimations for default performance[a]

Variable	(1) Commercial bank vs investment house	(2) Ind. Bank of Japan vs investment house	(3) Trust firm vs investment house
CONSTANT	−3	−4	−4
	(0.00)	(0.00)	(0.00)
BANK	−0.89**	−1.34**	0.00
	(−2.31)	(−2.15)	(−0.01)
CAPITAL/ASSET	−2.99	−8.68	−4.66
	(−0.57)	(−0.71)	(−0.49)
LN(AMOUNT)	−0.18	−0.04	−0.09
	(−0.63)	(−0.12)	(−0.28)
LN(AGE)	0.14	−0.17	0.05
	(0.53)	(−0.64)	(0.17)
LN(SYNDICATESIZE)	−0.20	0.50	0.00
	(−0.78)	(1.58)	(0.00)
SECURED	0.13	0.41	1.00**
	(0.35)	(0.84)	(2.28)
FIRSTISSUE	−0.05	−0.36	0.20
	(−0.15)	(−0.94)	(0.52)
LONGTERM	−0.48	−1.76	−1.45**
	(−1.02)	(−2.28)**	(−2.24)
Observations	197	151	130
Log likelihood	−37	−32	−34
Pseudo R^2	0.32	0.39	0.40

[a] t-ratios are in parentheses. Pseudo R^2 is the likelihood ratio computed as $R^2 = 1 - \log L / \log L_0$ where $\log L$ is the maximized value of the log-likelihood function, and $\log L_0$ is the log likelihood computed with the coefficients of the explanatory variables set at zero.

** Significant at the 5% level.

issues is compared with that of investment-house-underwritten issues. The coefficient of the bank dummy is −0.89, and is statistically significant at 0.05. Column 2 presents the test results when the default performance of the IBJ-underwritten issues is compared with that of investment-house-underwritten issues. The coefficient of the bank dummy is −1.34, and is statistically significant at 0.05. Column 3 presents the test results when the default performance of trust-firm-underwritten issues is compared with that of investment-house-underwritten issues. The coefficient of the dummy variable is negative as in the previous two probit regressions, but is not statistically significant even at 0.1. The results indicate that bank underwriting of industrial bonds reduced the probability of default, especially when bonds were underwritten by commercial banks or the IBJ.

In sum, the evidence suggests that the long-term performance of industrial bonds underwritten by commercial banks and the IBJ is significantly better, and the long-term performance of trust-firms-underwritten issues is marginally

better than that of investment-house-underwritten issues. This indicates that concerns about conflicts of interest are not justified by the data.

Recall that in the previous section, no statistically significant difference was found when the pricing of bank-underwritten issues and investment-house-underwritten issues was compared. One way to interpret the discrepancy between the results of the bond pricing analyses and the default performance analyses is that the certification effect of investment house underwriting was overestimated at the time of issuance. Though banks were allowed to underwrite stocks during the pre-war period, investment houses dominated banks with their share of stock underwriting. [17] Reputation as an experienced underwriter of stocks might have strengthened the certification effect when bonds were underwritten by investment houses. However, the results obtained from default performance analyses suggest this perception was inaccurate. An alternative interpretation of the discrepancy is that the certification effect of bank underwriting was underestimated by the investors at the time of issue, and the perception of the investors was incorrect. Since economic theory suggests that rational investors should not make systematic mistakes, it would be interesting in future research to examine the pricing of bonds underwritten by commercial banks and investment banks using bonds issued after the default performance of bonds used in the current analysis was revealed to the public.

6.3. Commercial banks vs the IBJ and trust firms

This subsection examines the long-term default performance of bonds underwritten by commercial banks as compared to those underwritten by the IBJ and trust firms. Since firms' payment settlement accounts were usually held at a commercial bank, commercial banks may have been better informed about issuers than the IBJ and trust firms were. If so, the certification effect might have been greater when bonds were underwritten by commercial banks than when they were underwritten by the IBJ and trust firms. In this case, it can be expected that the default probability of commercial-bank-underwritten issues would be lower than that of IBJ- and tust-firm-underwritten issues.

To assess whether the default probability of commercial-bank-underwritten issues is lower, we examine the cumulative mortality rates of commercial-bank-underwritten issues as compared to IBJ- and trust-firm-underwritten issues for 2–7 years after the bond issuance.

Table 7 presents the results of the *t*-test of differences in the cumulative mortality rates of commercial-bank- and IBJ-underwritten issues; and in those of trust-firm- and investment-house-underwritten issues. The results show that the

[17] In 1920, 95 out of 121 public offerings, or 93.1%, were underwritten by "genbutsu-dan's" (underwriting syndicates that mainly consisted of investment houses) (Shimura, 1969, p. 275).

Table 7
Cumulative mortality rates for 1–7 years after the issuance of bonds: Commercial bank vs the IBJ, trust firm[a]

Underwriter	Cumulative mortality rates						
	1	2	3	4	5	6	7
Ind. Bank of Japan	0	0.019	0.019	0.019	0.038*	0.038	0.038
	(N/A)	(1.39)	(−1.36)	(−1.08)	(−1.66)	(−1.16)	(−0.43)
Trust firm	0	0	0.015	0.015	0.064**	0.064	0.075
	(N/A)	(0.22)	(−1.12)	(−0.84)	(−2.27)	(−1.57)	(−0.97)
Commercial bank	0	0.001	0.001	0.003	0.003	0.003	0.019

[a] *t*-ratios are in parentheses. *t*-ratios are results of *t*-tests of the differences in the cumulative mortality rates for commercial banks, the IBJ, trust firms vs investment houses.
* Significant at the 10% level.
** Significant at the 5% level.

cumulative mortality rates for commercial-bank-underwritten issues are lower than the IBJ-underwritten issues in all cases. The difference is statistically significant in the 5th year at 0.1 using the two-tailed test. Furthermore, there are marginally significant differences in the 2nd and the 3rd years. The results also show that the cumulative mortality rates for commercial-bank-underwritten issues are lower than those of trust-firm-underwritten issues in all years except the 2nd year. The difference is statistically significant in the 5th year at 0.05 using the two-tailed test. There is also a marginally significant difference in the 6th year.

Finally, we estimate Eq. (3) to control for other factors that could influence the default probability. Column 1 of Table 8 shows the results of the probit regression when the independent variable BANK is defined as a dummy variable that takes the value 1 if the lead underwriter is a commercial bank, and zero if it is the IBJ. Column 2 of Table 8 shows the results of the probit regression when the independent variable BANK is defined as a dummy variable that takes the value 1 if the lead underwriter is a commercial bank, and zero if it is a trust firm. In the probit regressions, if the coefficient of BANK is negative and significant, it indicates that commercial banks were better informed about bond issuers than the IBJ and trust firms were. Column 1 shows that the coefficient of BANK is negative but not significant. Conversely, Column 2 shows that the coefficient of BANK is negative and significant at 0.1.

In summary, the results indicate that commercial banks were better informed about bond issuers than trust firms were, but that they were not better informed than the IBJ. [18]

[18] Pricing of bonds underwritten by commercial banks as compared to those underwritten by the IBJ and trust firms was also examined. If commercial banks had a greater certification role than the IBJ and trust firms did, commercial-bank-underwritten bonds could have been priced lower than the IBJ- and trust-firm-underwritten bonds. The empirical results, however, were not supportive of the claim that commercial banks had a greater certification role.

Table 8
Probit estimations for default performance: Commercial bank vs the IBJ, trust firm[a]

Variable	(1) Commercial bank vs Ind. Bank of Japan	(2) Commercial bank vs trust firm
CONSTANT	15	6
	(0.00)	(1.44)
BANK	−0.59	−0.86*
	(−0.54)	(−1.72)
CAPITAL/ASSET	−15.56	−15.42
	(−0.72)	(−0.88)
LN(AMOUNT)	−0.40	−0.37
	(−1.00)	(−1.26)
LN(AGE)	−0.79	−0.08
	(−1.61)	(−0.26)
LN(SYNDICATESIZE)	−0.11	0.01
	(−0.18)	(0.03)
SECURED	−5.95	0.42
	(0.00)	(0.77)
FIRSTISSUE	−0.90	−0.40
	(−1.23)	(−0.79)
LONGTERM	0.12	0.16
	(−0.16)	(0.29)
Observations	186	165
Log likelihood	−14	−22
Pseudo R^2	0.54	0.42

[a] t-ratios are in parentheses. Pseudo R^2 is the likelihood ratio computed as $R^2 = 1 - \log L / \log L_0$ where $\log L$ is the maximized value of the log-likelihood function, and $\log L_0$ is the log likelihood computed with the coefficients of the explanatory variables set at zero.

* Significant at the 10% level.

7. Concluding remarks

This paper examined the pricing and long-term default performance of industrial bonds underwritten by commercial banks, the IBJ and trust firms as compared to those underwritten by investment houses. The data were collected from the pre-war period in Japan (January 1919–December 1927) when commercial banks as well as the IBJ and trust firms were allowed to underwrite securities.

The test results suggest that industrial bonds underwritten by commercial banks, the IBJ and trust firms were not priced lower at the time of issue than those underwritten by investment houses. This implies that the conflict-of-interest effect does not dominate the certification effect. Furthermore, the evidence suggests that the mortality rates as well as the default probability of bonds underwritten by commercial banks, the IBJ and trust firms were significantly or marginally lower than those underwritten by investment houses.

Therefore, it is concluded that the evidence rejects the concern about potential conflicts of interest when banks are permitted to underwrite industrial bonds. The results indicate that there is little support for the separation of banking and securities businesses as legislated by the Glass–Steagall Act of the US and the Article 65 of Securities and Exchange Law of Japan.

Acknowledgements

I am grateful to two anonymous referees, Junsuke Matsuo, Hideaki Miyajima, Seishi Nakamura, Toshinori Sugimoto and Kazky Yokoyama for helpful comments. I have also benefited from comments received from seminar participants at Hitotsubashi University, Yokohama National University, the 1999 Japan Society of Monetary Economics Meeting, the 2000 Japan Finance Association Meeting, the Finance Forum and Bankers Associations of Japan. Any remaining errors are mine.

References

Altman, E., 1989. Measuring corporate bond mortality and performance. Journal of Finance 44, 909–922.

Ang, J., Richardson, T., 1994. The underwriting experience of commercial bank affiliates prior to the Glass–Steagall Act: A re-examination of evidence for passage of the act. Journal of Banking and Finance 18, 351–395.

Aoki, M., Patrick, H., Sheard, P., 1994. The Japanese main bank system: An introductory overview. In: Aoki, M., Patrick, H. (Eds.), The Japanese Main Bank System. Oxford University Press, Oxford, pp. 1–50.

Benston, G., 1990. The Separation of Commercial and Investment Banking. Oxford University Press, Oxford.

Booth, J., Smith, R., 1986. Capital raising, underwriting and the certification hypothesis. Journal of Financial Economics 15, 261–281.

Chemmanur, T., Fulghieri, P., 1994. Investment bank reputation, information production, and financial intermediaries. Journal of Finance 49, 57–79.

Diamond, D., 1991. Monitoring and reputation: The choice between bank loans and directly placed debt. Journal of Political Economy 99, 689–721.

Fama, E., 1985. What's different about banks? Journal of Monetary Economics 15, 29–40.

Federation of Bankers Associations of Japan, 1994. The Banking System in Japan. Federation of Bankers Associations of Japan.

Gande, A., Puri, M., Saunders, A., Walter, I., 1997. Bank underwriting of debt securities: Modern evidence. Review of Financial Studies 10, 1175–1202.

Hamao, Y., Hoshi, T., 1998. Bank underwriting of corporate bonds: Evidence from Japan after 1994, unpublished manuscript.

Heckman, J., 1979. Sample selection bias as a specification error. Econometrica 47, 153–161.

Ito, A., Konishi, M., 2000. Ginko-kei syoken-kogaisya niyoru syasai-hikiuke to rieki-sohan (Bank Underwriting of Industrial Bonds and Conflicts of Interest). In: Matsuura, K., Yoshino, N.,

Yonezawa, Y. (Eds.), Henkakuki no Kinyu Shihon Shijyo (Financial Markets in Transition), Nihon Hyoron Sya, pp. 73–100.
James, C., 1987. Some evidence on the uniqueness of bank loans. Journal of Financial Economics 19, 217–235.
James, C., Wier, P., 1990. Borrowing relationships, intermediation, and the cost of issuing public securities. Journal of Financial Economics 28, 149–171.
Kroszner, R., Rajan, R., 1994. Is the Glass–Steagall Act justified? A study of the US experience with universal banking before 1933. American Economic Review 84, 810–832.
Kroszner, R., Rajan, R., 1997. Organization structure and credibility: Evidence from commercial bank securities activities before the Glass–Steagall Act. Journal of Monetary Economics 39, 475–516.
Litan, R., 1987. What should banks do? The Brookings Institution.
Lummer, S., McConnell, J., 1989. Further evidence on the bank lending process and the capital-market response to bank loan agreements. Journal of Financial Economics 25, 99–122.
Maddala, G., 1983. Limited Dependent and Qualitative Variables in Econometrics. Econometric Society Monograph, vol. 3, Cambridge University Press, Cambridge.
Matsuo, J., 1999. Nihon no Shasai Shijo (Industrial Bond Markets in Japan), Toyo Keizai.
Puri, M., 1994. The long-term default performance of bank underwritten security issues. Journal of Banking and Finance 18, 398–418.
Puri, M., 1996. Commercial banks in investment banking: Conflict of interest or certification effect? Journal of Financial Economics 40, 373–401.
Puri, M., 1999. Commercial banks as underwriters: Implications for the going public process. Journal of Financial Economics 54, 133–163.
Shimura, K., 1969. Nihon Shihon Shijo Bunseki (An Analysis of Capital Market in Japan). Tokyo University Press.
Shimura, K. (Ed.), 1980. Nihon Kousyasai Shijo Shi (History of Industrial and Government Bonds Markets in Japan). Tokyo University Press.
Tamaki, N., 1995. Japanese Banking. Cambridge University Press, Cambridge.
Yabushita, S., Inoue, A., 1993. The stability of the Japanese banking system: A historical perspective. Journal of the Japanese and International Economies 7, 387–407.