Commercial Bank Underwriting of Credit-Enhanced Bonds:

Are there Certification Benefits to the Issuer?[*]

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ABSTRACT

Recent studies have expanded the commercial bank certification hypothesis to include banks acting in an underwriting capacity. This paper further develops that research by focusing on the industrial revenue bond market in which banks have the unique opportunity to simultaneously act as both credit guarantor and underwriter. When explicitly allowing for bank-issued standby letters of credit (guarantees), we find significantly greater yield spreads for those bonds underwritten by commercial banks compared to bonds underwritten by investment banks. Overall, no net benefit appears to accrue to the bond issuer when attempting to achieve joint (or double) certification benefits by employing commercial banks as both credit guarantor and underwriters except in the special case where the <u>same</u> bank acts as both guarantor and underwriter. This limited certification effect is further validated when the credit quality of participating banks is accounted for. This result is consistent with an "economy of scope" in monitoring and reusing information.

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1. Introduction

Regulatory constraints on investment banking activities have severely limited the opportunity for studying the role of commercial banks as security underwriters in the United States. Nevertheless, general findings to date suggest that smaller-sized firms that issue lower quality debt benefit most by having an underwriting relationship with a commercial bank. Specifically, Puri (1996) finds that commercial bank underwritings of corporate bonds, in the pre-Glass-Steagall Act period, resulted in better pricing for smaller and lower credit rated issuers than similar issues underwritten by investment banking firms. Gande, Puri, Saunders and Walter (1997) draw similar conclusions for bond offerings in the post-1987 period, when banks were allowed to use their Section 20 securities subsidiaries to engage in corporate bond underwritings. This study expands on the above research by examining the potential certification benefits, in terms of issuance costs, that (may) occur when commercial banks simultaneously act as both credit guarantor and underwriter in municipal bond financing transactions.

Commercial banks are unique participants in the industrial revenue bond primary market as they frequently issue standby letters of credit, as a means of credit enhancement (or guarantee), and underwrite the actual bond offering itself. Consequently, the issuance of a standby letter of credit backing by a commercial bank might be viewed as a positive signal regarding the quality of the borrower since the bank's issuance of the guarantee can be considered as certification of the borrower's credit quality. Similar certification effects have been found with new loans and loan renewals (i.e. see James, 1987, for example). Indeed, the municipal revenue bond market is well recognized for its high degree of information asymmetry

among issuers and investors.[1] As a result, such certification services may be viewed as highly

valuable. In addition, commercial banks concerned about reputation may also bring certification

benefits to the issuer through the underwriting process (see Puri, 1996, for example).

To examine the benefits of "double" certification, that is to examine the benefit to the

issuer from using commercial banks as both standby letter of credit guarantors and underwriters,

a sample of industrial revenue bond issues offered during the 1987-1998 period were segmented

into a sub-samples containing those bonds with (without) standby letter of credit backing and

underwritten by investment banks, and bonds with (without) standby letter of credit backing and

underwritten by commercial banks. Using these sample partitions, as well as identifying

separate sub-samples where the same bank offered both services (as opposed to different banks

offering the two services separately), the empirical tests focus on the market's response to the

type of underwriting undertaken. The market's response is measured by the size of the tax

adjusted reoffering yields achieved by the issuer relative to matched maturity U.S. Treasury

securities.

Since a standby letter of credit-backed bond is essentially a transaction-based loan in

which a bank's guarantee provision cannot be inferred as indicative of a long-term banking

relationship, and thus a long term monitoring role, any certification benefit may be small.[2]

Indeed, if the market only reacts favorably to the credit provision (contingent or otherwise) via a

long-term lending relationship (and the monitoring role that this implies), there may be little

significant difference between yields on bonds backed by standby letters of credit and those

without such credit enhancement. Of course, the market may still view the guarantee favorably,

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[1] See Robbins, Apostolou and Strawser (1985), and Ingram, Raman and Wilson (1989).
[2] See Berger and Udell (1995).

irrespective of the degree of monitoring of the guarantee provider (the bank), as long as the credit quality of the guarantee provider is superior to that of the bond issuer. In this case, a positive spread saving should be observed between those issues utilizing guarantees and those not utilizing guarantees. In other words, the pure "insurance role" of guarantees would dominate the absence of significant benefits from (any) long term bank monitoring.

In addition to the certification effect inherent in the decision to employ a standby letter of credit, the municipal issuer must also choose among alternative underwriting options. In particular, a municipality's choice-set of underwriter includes both traditional investment banking firms and commercial banks. Controlling for the guarantee effects of letters of credit, we examine the relative degree to which the reputation of the commercial bank and investment banker adds to the value of an issue via reoffering yield spreads. Indeed, in bringing an issue to market, the underwriter (whether an investment bank or commercial bank) will carry out information collection activities. In part, the reputation of the underwriter reflects the quality of this information monitoring and collection function over time.

The remainder of the paper proceeds as follows. Section 2 briefly describes the industrial revenue bond market. Section 3 presents data and the basic empirical model. Section 4 discusses the empirical results. Finally, Section 5 provides a summary and conclusions.

2. Industrial Revenue Bond Market

Industrial revenue bonds provide a means of tax exempt financing that has been used by a variety of corporations to fund the construction or acquisition of projects. Some form of governmental unit, ranging from a city to an issuing authority, provides the conduit through which the municipality issues the bonds on behalf of the corporation. In turn, the corporation pledges to pay the interest and principal on the bond usually in the form of a lease or loan agreement

between the corporation and the issuing organization. In lease arrangements, rental payments are used to make the required debt interest and principal payments. The lease/purchase format allows the corporation to take advantage of applicable depreciation guidelines (and tax credits) as well as being able to deduct interest payments as a business expense. When bonds are paid off, a corporation may assume title to the project itself for a nominal fee. The underlying legal agreement with the municipality is typically at the corporate level, as opposed to the project (bond) level, which places bondholders in an unsecured position against the revenues of the corporation. Additional security in the form of mortgage liens on the underlying project property or relet provisions under a lease agreement often enhance the bond's structure.[3]

This form of tax exempt debt exhibits certain features. The interest rate may range from a seven-day variable rate to a long-term fixed rate for 15-20 year maturities. Corporate backed issues typically trade at higher taxable equivalent yields than similar unsecured taxable debt of the same corporation. Principal repayment terms are often flexible and are structured to fit the unique cash flows of the company. The bonds are usually not callable for a minimum of three years.

Particularly, when the industrial revenue bonds are publicly traded, a commercial bank may provide credit enhancement via a standby letter of credit. The standby letter of credit provides additional security to the bond investor. The bank substitutes its credit worthiness for that of its client (the issuer) to increase the attractiveness of the offering. The bank issuing the standby letter of credit is committed to paying the interest and principal on the bonds if the issuer

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[3] This study does not explicitly allow for such internal credit enhancements for two reasons. First, such information is not generally available from the sources employed. Second, the specific value of such credit enhancements are difficult to measure because their respective values depend on the economic value of the asset, the transferability of the asset's use and the location of the asset.

fails to do so. With the employment of the standby letter, the issuer agrees, under a

reimbursement agreement, to repay the bank for any draw-downs under the standby letter of

credit agreement. Thus, the issuer expects to lower the interest cost on its borrowings. The bank

may also designate whether additional collateral is required as security. Typically, the

commercial bank issuing the standby letter must be rated investment grade or better. Moreover,

the bank providing the standby letter of credit is often <u>not</u> the underwriter, i.e., the bond may be

underwritten by another bank (investment or commercial).

Table 1 illustrates the relative importance of net issues in the municipal bond market in

the context of all the other forms of public and private debt in the United States over the 1989-

1998 period.[4] Until recently, the Treasury securities market represented the largest segment of

the new issue debt market. However, reflecting, among other things federal budget surpluses,

the net size of the Treasury bond market is actually declining. The average net funds raised in

the municipal bond market totaled $38.55 billion per year over the 1989-1998 period.

(Insert Table 1)

3. Sample and Empirical Methodology

A. Sample of Industrial Revenues Bonds

The sample of industrial revenue and pollution control bonds for this study was selected

from all issues reported by Moody's Bond Record for the period 1987-1998.[5] Before the late

1980's, few industrial revenue or pollution control bonds were supported by standby letters of

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[4] Unfortunately, there is no aggregate data specifically on the volume of industrial revenue bond financing over this same time period.

[5] In 1987, the Federal Reserve specifically allowed Section 20 subsidiaries of commercial bank holding companies to underwrite municipal revenue bonds.

credit and/or underwritten by commercial banks. Development of the sample began by identifying those issues with fixed coupon rates for the life of the bond. Thus, both floating and variable coupon bonds were excluded. We also excluded those issues for which a complete set of variables required for the yield spread tests was unavailable. The required variables included the tax adjusted premium (spread) between the municipal bond reoffering yield and a comparable maturity U.S. Treasury security, issue size, maturity, identification of the lessee, standby letter of credit issuing bank, underwriting firm, the credit rating of the standby letter of credit issuing bank, the maturity of the line of credit, and bond rating. The Appendix to the paper presents the sources of data and the approach used to measure the tax adjusted yield spread or premium. Our premium measure consists of the tax exempt industrial revenue bond reoffering yield, adjusted for both federal and state income taxes, less the U.S. treasury interest rate, adjusted for state income taxes.

The final sample consisted of 1003 issues. Sub-samples include 665 issues which had no standby letter of credit backing and were underwritten by a traditional investment banker, 146 in which a commercial bank had issued the standby letter of credit but a traditional investment banker underwrote the offering, 82 issues in which commercial banks issued the standby letter of credit but also underwrote the issue and finally 110 issues in which there was no line of credit but a commercial bank underwrote the offering. Of the 82 issues in which commercial banks provided both services, a total of thirty-six issues employed the same commercial bank in both functions. Finally, there was no discernable trend over the period of our study in the frequency of commercial bank versus investment bank underwritings or in the proportion of sample bond offerings with standby letter of credit backing.

B. **Empirical Tests and Model Parameters**

Our primary test is to examine whether offering spreads differentiate between those issues underwritten by commercial banks and those by investment banks. This is examined both with and without the standby letter of credit variable in the model. Subsequent tests examine whether a commercial bank and investment banker's reputation has a significant impact on the determination of offering spreads. Finally, employing the sample in which the same bank provided both the standby letter of credit and underwriting services, we explicitly test the tradeoff between joint certification benefits and any possible conflict of interest effects when the same bank provides both services for the issuer.[6] In this case, considering the findings of Billett, Flannery and Garfinkel (1995), we also analyze whether our results may be affected by the quality of the participating bank.

The dependent variable, PREMIUM, is the yield on the municipal bond minus the yield to maturity for a comparable maturity U.S. government bond issued in the same month. The Appendix explains how tax adjustments are made to both securities to present them on a comparable "yield" basis. Determinants of the yield spread are assumed to be those variables specified on the right hand side of equation (1) and described below:

$$PREMIUM = \beta_0 + \beta_1 BANK + \beta_2 LETTER + \beta_3 RATING + \beta_4 SIZE +$$
$$\beta_5 MATURITY + \beta_6 LIST + \beta_7 PREVIOUS + \beta_8 REPUTATION +$$
$$\beta_9 SUPPLY + \beta_{10} TRATE + \varepsilon \qquad (1)$$

in which:

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[6] Such conflicts may be driven by banks seeking to boost their "fee income" and current earnings.

PREMIUM   Stated tax adjusted yield to maturity of the municipal bond minus the yield to maturity on U.S. government bond of nearest maturity issued in the same month. (see Appendix)

BANK   A binary variable that assumes a value of 1 if the bond is underwritten by a commercial bank and 0 if not

LETTER   A binary variable that assumes a value of 1 if the bond is backed by a commercial bank standby letter of credit and 0 if not.

RATING   Moody's credit rating equal to 20 for AAA-rated bonds; 19 for AA1, and so on.

SIZE   The $ size of the issue in millions.

MATURITY   Number of months to maturity.

LIST   A binary variable that assumes a value of 1 for those issuers (lessees) that are listed on a stock exchange and 0 if otherwise.

PREVIOUS   A binary variable equal to 1 if the municipal entity has issued the same type of security before and 0 if otherwise.

REPUTATION   The reputation of the investment banker underwriting the bond based on average level of co-managed or managed underwriting of industrial revenue bond offerings. For commercial banks, the measure is a binary variable that assumes a value of 1 if the issuing entity is a Section 20 subsidiary and 0 if otherwise.

SUPPLY   Volume of revenue bonds sold in same month as sample.

TRATE   U.S. Treasury bond rate for issue comparable in maturity to that of the sample offering.

The first variable, RATING, is the Moody's bond rating measured according to the scale employed by Barclay and Smith (1995) and Billett, Flannery, and Garfinkel (1995).[7] This variable is orthogonalized by employing the residual from the regression of RATING on the LETTER and TRATE variables. Controlling for LETTER allows us to measure the independent credit assessment effect of the rating agencies while controlling for TRATE reflects the findings of Duffee (1998) and Longstaff and Schwartz (1995) that the yield spreads on corporate bonds, over comparable maturity Treasury securities, fall when the Treasury bill rates rise.[8] The LETTER variable is also orthogonalized by using the residual from the regression of LETTER

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[7] These values are 20(AAA), 19(AA1), 18 (AA2), 17(AA3), 16(A1), 15(A2), 14(A3), 13(BBB1), 12(BBB2), 11(BBB3), 10(BB1), and 9(BB2). None of the ratings were below BB.

[8] Longstaff and Schwartz (1995) conclude that such a relationship can be attributed to the negative correlation between firms' asset values and default-free interest rates.

on the issue size, maturity and previous issue variables to recognize the impact that the latter variables may have on the decision of the firm to utilize a standby letter of credit.

Table 2 presents these first stage results. The F statistics are highly significant for both the RATING (Panel A) and LETTER (Panel B) regressions. As expected, the use of the standby letter of credit as a form of credit enhancement raises the bond rating by 2.83 points on the numerical rating scale (see footnote 6). This is a sizeable effect given the average rating of 14.60 for the entire sample. The coefficients for the LETTER regression (Panel B) are also significant with the expected signs. Municipal bonds are less likely to include a standby letter of credit if the issue is relatively large, if the lessee is listed on a major exchange and, finally, if the same type of bond had been issued previously by the current issuer.

(Insert Table 2)

The PREMIUM model employs the size of the offering, SIZE, as a measure of marketability and potential scale economies in the underwriting process. The coefficient for MATURITY, the natural log of bond years to maturity, is expected to be positive due to the typically positive yield curve for municipal bond yields. Puri (1996) included a binary variable to recognize whether the offering was considered a new issue. Thus, the variable, PREVIOUS, is set equal to one if, according to Moody's Bond Record, no other offering was made by the issuer in the past with the same characteristics and zero otherwise. This distinction is based on a review of Moodys Bond Record for the 25 years prior to each offering in the sample. The variable, SUPPLY, measures the volume of revenue bond offerings in the same month as the sample debt offering according to the *Federal Reserve Bulletin*. The level of the U.S. Treasury security rate is included based on the findings of both Duffee (1998) and Longstaff and Scwartz (1995). We employ the variable, LIST, as a proxy for the degree of public information regarding

the borrowers, which is equal to one if the lessee is a publicly traded company and zero otherwise.

In previous research, different measures of reputation have been employed. Carter and Manaster (1990) used the relative placement of underwriters in (stock offering) tombstone announcements. In contrast, Megginson and Weiss (1991) used the relative market share of managing underwriters as their reputation measure. This study employs the latter approach for the subsample of bonds underwritten by investment banks. Using the *Securities Industry Yearbook*, the underwriting firms are ranked according to the percentage of yearly volume of municipal debt offerings in which the investment banker either sole or co-managed the offering. Following the approach of Carter, Dark, and Singh (1997), the reputation measure is averaged over the measurement period. Similar information is not readily available to gauge the reputation of commercial banks as municipal bond underwriting firms. We use, as a proxy measure of reputation, the cumulative number of months that the bank's parent holding company operated a Section 20 subsidiary with the power to underwrite municipal revenue securities. This variable is formed by the interaction between the dichotomous variable equal to one if the holding company has a Section 20 subsidiary and zero if not times the number of months between the date it was established and the month of the revenue bond offering.

4. Empirical Results

Table 3 presents the mean values for PREMIUM and the explanatory variables from Equation 1. Specifically, Table 3 shows that the yield spread for the industrial revenue bonds underwritten by commercial banks was on average 1.71 basis points higher than those for investment bank offerings (i.e., 33.15 basis points versus 31.44 basis points). Consistent with the evidence from corporate bond underwritings (see Gande et. al., 1997), issues underwritten by

commercial banks were much smaller in size. The average bond rating was also higher for

bonds underwritten by banks. The difference in the LIST variable suggests that investment

banks were more likely to underwrite the revenue bonds of publicly traded firms. Overall,

irrespective of the underwriter, standby letter of credit backing lowered spreads by 4.93 basis

points (27.89 versus 32.82). Similar to those issues underwritten by commercial banks, issues

with bank standby letters of credit tended to be smaller, with shorter maturities and a higher

credit rating. The results for PREVIOUS suggest that issuers in this market for the first time

were more inclined to use a standby letter of credit as well as employ a commercial bank as the

underwriting firm. Finally, both commercial banks as underwriters and investment banks were

more likely to use a standby letter of credit for those issues in which the lessee was unlisted and

there had been no previous issues (i.e., those issues in which the greatest information asymmetry

existed between issuers and underwriters).

<div align="center">(Insert Table 3)</div>

These univariate comparisons raise important questions regarding the net benefit of

merely employing commercial banks as both credit guarantors and underwriters. Indeed, those

issuers utilizing commercial banks in both functions appear to have the highest average yield

spreads. However, such a conclusion is suspect given the differences in the subsamples as

shown in Table 3. Those issues which employed commercial banks in both functions were also

the smallest ($3.27 million) and had the shortest average maturity (127.51 months). The shorter

maturity suggest a lower yield as municipal bonds typically exhibit an upward sloping yield

curve. Further, this subsample of issues was most susceptible to asymmetric information effects

in that none involved exchange-listed lessees and only five were similar to previous issues.

Therefore, controlling for these effects using the multivariate approach, as shown in Equation 1,

is essential for drawing firm conclusions regarding the benefits or costs of relying exclusively on a commercial bank for both functions.

Table 4 presents OLS regression results for the yield premium model employed in Equation (1). The positive coefficient for maturity reflects a rising yield spread with maturity for municipal bonds. Similar to Gande, et al. (1997) and Puri (1996), the regression results show that the orthogonalized credit rating variable has a significant impact on yield premia – the higher the rating the lower the yield spread. The sign for the Treasury security rate is also negative and significant as might be expected given previous studies showing the credit yield spread to be negatively related to the level of rates. Interestingly, a month of high supply (SUPPLY) of municipal offerings doesn't lead to a crowding out effect in that yield spreads are marginally lower in high issue months. Finally, the LIST and PREVIOUS variables have statistically insignificant effects in the regressions in Table 4.

(Insert Table 4)

With respect to the effect of commercial bank underwriting and overall certification, the variable BANK1 is unity if a commercial bank provides a standby letter of credit but the bond is underwritten by an investment bank, and zero if not. BANK2 is unity if a commercial bank provides both a standby letter of credit and underwrites the issue. The coefficient for BANK1 is significantly negative and implies a 5.77 basis point reduction in spreads compared to those offerings in which there was no standby letter of credit backing of issues underwritten by investment banks. Moreover, the significantly positive coefficient for BANK2 implies a net increase in yield spreads of 3.83 basis points when the issuer elects to employ a commercial bank as the underwriter of bonds and commercial banks are providers of standby letter of credit backing. These results suggest that the certification effect, emanating from an investment bank

as underwriter, strongly dominates the certification effect from commercial bank underwritings, even in the presence of standby letters of credit issued by commercial banks.

Table 5 splits the total sample according to bond maturity and issue size. Previous studies (i.e. see Gande et. al., 1999, for example) have shown that commercial banking relationships are particularly important for smaller firms. The samples were split according to the median issue size and maturity, respectively. In Table 5, while the negative coefficient of BANK1 for the smaller issues is less than that for the large issues, both large and small firms benefit from the employment of the standby letter of credit along with the choice of an investment banker as the underwriter. The reductions in yield premiums of 7.71 and 5.32 basis points respectively for large and smaller firms, are both highly significant. By contrast, the coefficients for BANK2 show that, while large issuer yield spreads are negatively, but insignificantly, impacted by commercial banks supplying both letter of credit and underwriting services, the opposite is true for small firms whose yield spreads appear to be significantly affected in the positive direction when banks are underwriters. This increase of 6.15 basis points more than offsets the yield spread reduction caused by the use of the bank standby letter of credit. Regarding issue maturity, the BANK1 coefficient is only significant for the long maturities while BANK2 is only significant for short maturities.

<div align="center">(Insert Table 5)</div>

Table 6 presents regressions where the total sample is segmented according to whether the issue was underwritten by a commercial bank or a traditional investment bank while separating those issues backed and not backed by standby letters of credit. As can be seen, the need for a commercial bank to issue a standby letter of credit to back a commercial bank underwriting is viewed adversely rather than favorably by the market. While the coefficient is

marginally significant, a higher spread is demanded by investors on such issues. This is consistent with the bank needing to credit-enhance weaker issues, with this enhancement appearing to signal a lower quality issue to investors. Indeed, the issues underwritten by a commercial bank without a standby letter of credit are received more favorably by the market (i.e., have lower spreads). Note that, in contrast, a commercial bank-supplied standby letter of credit to back an investment bank underwriting is viewed as a favorable signal of quality and spreads are lower with standby letter of credit backing than without by 6.13 basis points.

(Insert Table 6)

Previous research (i.e., Carter and Manaster, 1990; Megginson and Weiss, 1991) has examined the role of the underwriting firm reputation in the pricing of security offerings. With respect to the industrial revenue bond market, the reputation of the investment banker appears to have an insignificant effect on spreads, given the presence of the standby letter of credit. The opposite is true in the commercial bank sample. The coefficient for the variable reputation for commercial banks is significantly negative, indicating that the better the reputation of the commercial bank the stronger the certification emanating from the standby letter of credit is likely to be. That is, the results for high reputation commercial banks (i.e., those banks with Section 20 subsidiaries in the sample period) more closely conform to those of investment banks.[9]

Thus far, we have not distinguished between the cases when the same commercial bank supplies both standby letter of credit and underwriting services as opposed to different commercial banks. However, using the subsample of eighty two issues that received standby

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[9] Following the passage of the Financial Services Modernization Act in late 1999, municipal securities underwriting could be undertaken by the investment banking subsidiaries of newly established Financial Service Holding Companies once they were established.

letter of credit backing and underwriting services by commercial banks, it is possible to analyze independently the benefits and costs of <u>joint</u> certification by the same bank. Table 7 presents the results of a regression analysis similar to those in Tables 4-6. The LIST variable is excluded because none of the firms involved in these financings were exchange listed. A new variable, SAMEBANK, is equal to one when both services are provided by the same bank and zero otherwise. As noted earlier, thirty six of the eighty two issues employed the same bank to provide both services. The significantly negative coefficient for SAMEBANK in Table 7 suggests that employing a single bank to provide both services reduces the yield premium by 6.59 basis points. Thus, the evidence favors the presence of joint certification benefits. That is, any perceived conflicts of interest arising from the joint provision of these services are considered to be small compared to the strength of the positive certification signal that emanates from joint (double) certification by the same bank. This result is particularly relevant given that Table 3 shows that employing any combination of commercial banks, irrespective of their identity, for both functions was the most expensive option.

<center>(Insert Table 7)</center>

Billett, Flannery and Garfinkel (1995) found that the identity of the lending institution, as evidenced by the credit rating on its subordinated debt, influenced the market response to a loan announcement. This raises the question as to whether the significance of the SAMEBANK variable is confirmation of a "double" certification effect or merely reflects the credit quality of the participating bank. To examine this issue, we identify the Moody's credit rating for each bank's unsecured debt at the time of the revenue bond issue. Each rating is converted to the same 20 point scale used in our RATING variable. We used two approaches to measure this potential

credit quality effect.[10] First, we added BANKRATING as a new explanatory variable in tests of Equation 1 in Table 4. The coefficient is significantly negative thus illustrating there is a legitimate reduction in the bond yield PREMIUM caused by the credit reputation of the bank. More importantly for our study, this inclusion of BANKRATING does not alter the significance of the SAMEBANK variable. An alternative approach to measuring this credit effect is to include BANKRATING in the first stage equation for estimating the orthogonalized RATING variable on the premise that using higher quality banks as underwriters leads to a higher rating for the revenue bond. BANKRATING has a significantly positive effect on the issue rating. Nevertheless, even when using this revised rating variable in Table 7, SAMEBANK remained statistically significant.

A final robustness check of the SAMEBANK finding of a cost saving (in terms of yield spread) for issuers that use the same bank to both issue the standby letter of credit and to underwrite the debt is to examine the effects on yield premia of first time municipal debt offerings. Datta, Iskandar-Datta and Patel (1999) found that bank monitoring has a unique effect on the yield premia of first time public debt offerings by helping to lower the agency costs of public debt. In our study, those issues with no previous issuance by the municipal entity/lessee (PREVIOUS = 0) may exhibit a unique "IPO" type spread premium. We examined the PREMIUM/SAMEBANK model for the subsample in which PREVIOUS = 0 to test for this possible effect. Interestingly, the SAMEBANK coefficient remained negative and significant, further confirming the existence of a joint, or double, certifying effect when the same commercial bank is employed to both provide the standby letter of credit and underwrite the bond issue.

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[10] These regression results, excluded for space reasons, are available from the authors.

5. **Summary and Conclusions**

      The preponderance of literature examining the role of the credit markets in the U.S. financial system has focused on bank loan and corporate debt markets. However, as shown in Table 1, the municipal debt market is close to rivaling each of these markets in terms of new issue volume. A major component of the municipal debt market consists of industrial revenue bond financing that uniquely combines the credit granting function of commercial banks with the underwriting function of both investment banks and commercial banks.

      Specifically, this paper has employed data from the industrial revenue bond new issue market to examine the size and value, in terms of offering spreads, of using commercial banks as both underwriters and suppliers of contingent credit guarantees. In theory, both activities have certification value for the issuer. The value of these services is benchmarked against a sample of issues that have been underwritten by investment banks, both with and without standby letter of credit backing.

      The results suggest that the use of commercial banks, as both underwriters and credit guarantors, might actually be harmful (result in higher spreads) to issuers except in the special case where the <u>same</u> bank offers both services jointly. This latter result is consistent with the gains from double certification dominating any potential conflicts of interest that may arise when the same bank jointly offers both services. Overall, however, those issues underwritten by investment banks (with or without credit guarantees) are most favorably received – suggesting the continuing importance (in terms of value) of traditional investment banker certification on issuer spreads and new issue costs.

Appendix

The yield premium used in this analysis must recognize the respective tax effects on both the industrial revenue bonds and matched maturity treasury bonds. That premium, PREMIUM, can be illustrated as follows:

$$\text{PREMIUM} = (Y_m / 1\text{-} Fr - Sr) - (Y_t / 1 - Sr)$$

In which Y_m and Y_t are the reoffering yield on the industrial revenue bond and yield on comparable maturity U.S. Treasury bond. Fr and Sr are the federal and state income tax rates.

We employed the maximum federal income tax rate as reported for the years of the study. For state tax rates, we used the maximum income tax rate for head of family and married persons filling separate returns. The source for the state tax rates was the published list by the management consulting firm Grant Thorton.

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Table 1
Public and Private Credit Market Borrowing in the United States, 1989-1998
(in $ billions)

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
U.S. Treasury securities	144.7	230.7	292	303.8	248.3	155.7	142.9	146.6	23.2	-47.4
Corporate bonds	73.8	47.1	78.8	67.6	75.2	23.3	73.3	72.5	90.7	135.3
Bank loans	41.5	5.5	-31.8	-8.9	-7.2	62.9	114.7	92.1	129.3	118.6
Municipal securities and loans	52.9	49.3	87.8	30.5	74.8	-35.9	-48.2	2.6	71.4	100.3

Source: Board of Governors of Federal Reserve System

Table 2
First Stage Results for Standby Letter of Credit and Bond Rating Determination

LETTER is one if the bond issue has a standby letter of credit and zero if not. Issue size is in millions of dollars. List equals one if the lessee involved in the bond offering is listed on a major exchange, zero if not. Previous is one if the same bond configuration was previously offered, zero if not. Treasury rate is the interest rate on a comparable maturity Treasury bond at the date of the bond offering.

Panel A: Bond Rating

Variable	Coefficient	T-ratio	P-value
Intercept	16.994	30.16	.001
Letter of credit	2.832	14.89	.001
Treasury rate	-0.047	5.47	.001

Adjusted R^2 .203
F-statistic 128.67
P-value .001
N = 1003

Panel B: Letter of Credit (LETTER) Usage

Variable	Coefficient	T-ratio	P-value
Intercept	0.587	35.98	.001
Issue size+	-0.797	2.82	.005
LIST	-0.395	18.43	.001
Previous	-0.265	12.54	.001

Adjusted R^2 .436
F-statistic 259.19
P-value .001
N = 1003
+ $x10^7$

Table 3
Sample Characteristics of Industrial Revenue and Pollution Control Bonds

Sample consists of 1003 issues over period 1987-1998 for which the interest rate on each bond was fixed and data was available. PREMIUM is the reoffering yield less the rate on a comparable maturity US government bond which has been adjusted for differences in state tax policy in terms of basis points. Both yields are adjusted for federal and state taxes. ISSUE SIZE and MATURITY are the size in millions of dollars and maturity in years, respectively; RATING is the Moody's bond rating for each issue based on the numerical scale (20-AAA, 19-Aa, etc.). SUPPLY is the dollar amount of industrial revenue bond issues sold in the same month. LIST equals one if lessee is listed on major exchange, zero if not. PREVIOUS is one if the same bond configuration was previously offered, zero if not. The mean comparison first tests for equal/unequal variances and then use the appropriate t-test.

	Total Sample Mean	Underwriter Commercial Bank (192)	Underwriter Investment Bank (811)	Underwriter Commercial Bank Letter of Credit (82)	Underwriter Commercial Bank No Letter of Credit (110)	Underwriter Investment Bank Letter of Credit (146)	Underwriter Investment Bank No Letter of Credit (665)	Standby Letter of Credit Yes (228)	Standby Letter of Credit No (775)	t-Statistics 1, 2	3, 4	3, 5	4, 6	5, 6	7, 8
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)						
PREMIUM (Basis points)	31.77	33.15	31.44	35.35	29.97	22.49	32.90	27.89	32.82	2.16**	2.51**	5.25***	0.69	4.35***	2.33**
ISSUE SIZE ($millions)	22.31	7.43	22.40	3.27	9.29	4.20	26.19	4.35	24.43	6.77**	3.22***	0.20	4.70***	13.57***	14.00***
MATURITY (months)	249.65	180.46	255.27	127.51	213.97	177.03	270.08	163.16	264.14	8.60***	7.26***	4.32***	4.32***	8.98***	13.40***
RATING[1]	14.60	15.05	14.22	16.57	13.90	16.65	13.66	16.67	13.75	4.95***	9.50***	1.13	1.84*	18.97***	22.55***
SUPPLY ($millions)	9982	9505	9673	8852	9560	9193	9664	9281	9746	0.53	1.23	0.32	1.01	0.28	0.76
LIST Yes	560	96	464	0	96	6	458	6	554						
No	443	96	347	82	14	140	207	222	221	3.28*	143.13***	3.46*	15.68***	205.12***	338.68***
PREVIOUS Yes	460	54	405	5	49	1	405	6	454						
No	543	138	406	77	61	145	260	222	321	30.09***	34.35***	6.00**	10.41***	173.64***	222.11***

*** Significant at 1% level; ** significant at 5% level; * significant at 10% level.
[1]See scale in footnote 6.

Table 4
Effect on Yield Premium of Commercial Bank as
Providers of Standby Letter of Credit and Underwriting Services

_____

Premium = $\beta_0 + \beta_1$ Bank1 + β_2 Bank2 + β_3 Supply + β_4 Issue Size + β_5 Maturity + β_6 Rating + β_7 List
 + β_8 Previous + β_9 Treasury Bond Rate

Premium in terms of basis points is the yield difference between the new issue industrial revenue bond
and the equivalent maturity US Treasury security bond adjusted for state and federal taxes. Bank1 is a
variable which is a one when there is a standby letter of credit but the issue is underwritten by an
investment bank, and zero if not. Bank2 is a variable which is a one when the commercial bank both
provides the standby letter of credit and serves as the lead underwriter. ISSUE SIZE and MATURITY
are the size in millions of dollars and maturity in months, respectively; RATING is the Moody's bond
rating for each issue based on the numerical scale (20-AAA, 19-Aa, etc.). SUPPLY is the dollar amount
of industrial revenue bond issues sold in the same month. LIST equals one if lessee is listed on major
exchange, zero if not. PREVIOUS is one if the same bond configuration was previously offered, zero if
not. Treasury rate is the interest rate on the Treasury bond at the time of offering. All are White's
adjusted.

Variable	Coefficient	*T*-ratio	*P*-value
Intercept	65.113	11.60	.000
Bank1	-5.769	3.35***	.005
Bank2	3.828	1.84**	.049
Supply[+]	-0.737	4.75***	.001
Issue size	0.001	0.47	.701
Maturity	0.015	2.87***	.006
Rating	-1.641	8.57***	.001
List	-0.956	0.79	.412
Previous	0.986	0.89	.323
Treasury rate	-0.377	6.04***	.001

Observations 1003
Adjusted R^2 0.129
F-value 17.46 (*p* = .001)
[+] $x10^3$

_____

*** Significant at 1% level; ** significant at 5% level; * significant at 10% level.

Table 5
Effects of Issue Size and Maturity on the Bank Variable Determinants of the Yield Premium

_____

Premium = $\beta_0 + \beta_1$ Bank1 + β_2 Bank2 + β_3 Supply + β_4 Issue Size + β_5 Maturity + β_6 Rating + β_7 List
    + β_8 Previous + β_9 Treasury Bond Rate

Premium in terms of basis points is the yield difference between the new issue industrial revenue bond and the equivalent maturity US Treasury security bond adjusted for state and federal taxes. Bank1 is a variable which is a one when there is a standby letter of credit but the issue is underwritten by an investment bank, and zero if not. Bank2 is a variable which is a one when the commercial bank both provides the standby letter of credit and serves as the lead underwriter. ISSUE SIZE and MATURITY are the size in millions of dollars and maturity in months, respectively; RATING is the Moody's bond rating for each issue based on the numerical scale (20-AAA, 19-Aa, etc.). SUPPLY is the dollar amount of industrial revenue bond issues sold in the same month. LIST equals one if lessee is listed on major exchange, zero if not. PREVIOUS is one if the same bond configuration was previously offered, zero if not. Treasury rate is the interest rate on the Treasury bond at the time of offering. P-values are in parentheses. All are White's adjusted.

	Large Size	Small Size	Long Maturity	Short Maturity
Intercept	70.178	66.521	82.845	62.789
	(.001)	(.001)	(.001)	(.001)
Bank1	-7.712**	-5.322**	-11.945***	-3.535
	(.038)	(.021)	(.005)	(.129)
Bank2	-5.149	6.147**	1.021	4.678**
	(.169)	(.011)	(.816)	(.035)
Supply[+]	-0.748***	-0.774***	-0.845***	-0.797***
	(.001)	(.001)	(.001)	(.001)
Issue size	0.001	0.001**	-0.001	0.001**
	(.861)	(.023)	(.387)	(.021)
Maturity	0.009	0.024***	-0.001	0.006
	(.264)	(.005)	(.955)	(.684)
Rating	-1.769***	-1.431***	-1.583***	-1.749***
	(.001)	(.001)	(.001)	(.001)
List	-0.339	-0.976	-2.117	0.550
	(.793)	(.638)	(.219)	(.756)
Previous	2.195*	.031	3.552***	-3.004*
	(.060)	(.987)	(.002)	(.062)
Treasury rate	-0.424***	-0.385***	-0.512***	-0.330***
	(.001)	(.001)	(.001)	(.001)
Adjusted R^2	0.151	0.119	0.182	0.113
F-Statistic	10.83	8.51	13.22	8.17
N	499	503	495	508

*** Significant at 1% level; ** significant at 5% level; * significant at 10% level.
[+] $\times 10^3$

Table 6

Examination of Interaction between Standby Letter of
Credit Issuance and Underwriter Reputation on Yield Premium

_____

Premium = $\beta_0 + \beta_1$ Letter 1 + β_2 Reputation 2 + β_3 Supply + β_4 Issue Size + β_5 Maturity + β_6 Rating + β_7 List + β_8 Previous + β_9 Treasury Bond Rate

PREMIUM is the reoffering yield less the rate on a comparable maturity US government bond which has been adjusted for differences in state tax policy in terms of basis points. Both yields are adjusted for federal and state taxes. LETTER is one if the issue has a standby letter of credit and zero if not. REPUTATION refers the reputation of the commercial banks and investment bank as specified in the text. ISSUE SIZE and MATURITY are the size in millions of dollars and maturity in years, respectively; RATING is the Moody's bond rating for each issue based on the numerical scale (20-AAA, 19-Aa, etc.). SUPPLY is the dollar amount of industrial revenue bond issues sold in the same month. LIST equals one if lessee is listed on major exchange, zero if not. PREVIOUS is one if the same bond configuration was previously offered, zero if not. P-values are in parentheses. All values are White's adjusted.

	Commercial Bank Underwriter			Investment Bank Underwriter		
Intercept	77.753	75.301	74.538	59.436	60.427	60.067
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Letter of credit	4.971	—	2.551	-6.128***	—	-6.586***
	(.209)		(0.511)	(.003)		(.003)
Reputation	—	-8.255***	-8.031***	—	0.115	-0.125
		(.001)	(.001)		(.515)	(.509)
Supply	-0.750***	-0.457**	-0.464*	-0.716***	-0.731***	0.731***
	(.001)	(.047)	(.054)	(.001)	(.001)	(.001)
Issue size	0.006**	0.007***	0.001***	0.001	0.001	0.001
	(.041)	(.004)	(.004)	(.576)	(.996)	(.517)
Maturity	0.024*	0.022*	0.023*	0.014**	0.016***	0.015**
	(.084)	(.087)	(.082)	(.018)	(.007)	(.015)
Rating	-1.718***	-1.578***	-1.542***	-1.603***	-1.652***	-1.606***
	(.001)	(.002)	(.002)	(.001)	(.001)	(.001)
List	-1.777	-3.513	-1.592	-0.550	1.084	0.549
	(.614)	(.156)	(.673)	(.656)	(.372)	(.656)
Previous	-0.072	1.720	.0985	2.940**	2.094*	3.137***
	(.978)	(.445)	(.692)	(.012)	(.054)	(.010)
Treasury rate	-0.567***	-0.515***	-0.523***	-0.333***	-0.361***	-3.332***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Adjusted R^2	0.177	0.223	0.220	0.114	0.101	0.113
F-Statistic	6.12	7.84	6.98	14.00	12.43	12.48
N	192	192	192	811	811	811

*** Significant at 1% level; ** significant at 5% level; * significant at 10% level.

Table 7
Effect on Yield Premium with the Same Commercial Bank
Providing Both Standby Letter of Credit and Underwriting Services

_____

Premium in terms of basis points is the yield difference between the new issue industrial revenue bond
and the equivalent maturity US Treasury security bond adjusted for state and federal taxes. SAMEBANK
is a dummy variable equal to one if the same bank provides the standby letter of credit and the issue
underwriting and zero if otherwise. ISSUE SIZE and MATURITY are the size in millions of dollars and
maturity in months, respectively; RATING is the Moody's bond rating for each issue based on the
numerical scale (20-AAA, 19-Aa, etc.). SUPPLY is the dollar amount of industrial revenue bond issues
sold in the same month. PREVIOUS is one if the same bond configuration was previously offered, zero if
not. Treasury rate is the interest rate on the Treasury bond at the time of offering. All are White's
adjusted.

Variable	Coefficient	T-ratio	P-value
Intercept	112.152	5.63	.001
SAMEBANK	-6.597	2.50**	.012
Supply	-0.002	4.66***	.001
Issue size[+]	0.318	1.42	.155
Maturity	0.012	0.56	.575
Rating	3.987	2.25**	.025
Previous	-0.263	0.00	.973
Treasury rate	-0.738	4.99***	.001

Observations 82
Adjusted R^2 0.219
F-value 4.29 ($p = .001$)
[+] x10

*** Significant at 1% level; ** significant at 5% level; * significant at 10% level.