# Bank Specialness, Credit Lines, and Loan Structure

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## Abstract

We find strong evidence from multiple tests that credit lines (CLs) play special roles in syndicated loan packages. We find that CLs are associated with lower interest rate spreads on institutional term loans (ITLs) in the same loan packages. CLs also help improve secondary market liquidity of ITLs. Additional tests using Lehman Brothers bankruptcy as a natural experiment confirm our conclusions. These findings support the *Bank Specialness Hypothesis* that banks play valuable roles in alleviating information problems and that CLs are one conduit for this specialness. Findings also suggest that bundling CLs with ITLs has significant benefits for many parties.



**Keywords:** Credit Line, Institutional Term Loan, Syndicated Loan, Bank Specialness, Loan Structure

***JEL* Classification:** G21, G23, G32

## 1. Introduction

A significant share of bank lending has moved from the originate-to-hold (OTH) model to the originate-to-distribute (OTD) syndicated loan model. Over 1996 to 2016, U.S. large public companies raised on average $670.75 billion per year from the syndicated loans market.[1] Syndicated loans constitute 54.67% of all long-term debt financing for large firms that issue long-term debt and syndicated loans. Many institutional investors, such as collateralized loan obligations (CLOs), hedge funds, mutual funds, and insurance companies participate in this market.

The shift from the OTH to the OTD model raises the important issue of whether "bank specialness" continues to prevail on the syndicated loan market. Financial intermediation theory emphasizes the specialness of banks in alleviating asymmetric information problems between informationally opaque borrowers and banks (e.g., Diamond (1984), Fama (1985)). Specifically, under the *Bank Specialness Hypothesis*, banks have comparative advantages in uncovering valuable private information about borrowers through 1) screening before loans are issued, 2) monitoring after credit is disbursed, and 3) accumulating additional information over the course of relationships in which banks may provide additional loan, deposit, and other financial services to the borrowers. Under bank specialness, informationally opaque borrowers may be able to obtain greater quantities of credit at more favorable terms because the private information acquired by the banks helps resolve uncertainty and mitigate agency problems associated with asymmetric information. As discussed below, there are reasons to suspect that such specialness may be less likely to hold in the OTD lending process. In this paper, we devise new tests of bank specialness in the OTD model and shed light on the importance of loan structure to maintain this specialness.

[1] The annual issuance amount is the sum of all credit lines and term loans issued by U.S. non-financial and non-utility firms on Compustat with positive total assets in each calendar year. Loan issuance data comes from DealScan.

Empirical investigations of the *Bank Specialness Hypothesis* typically test whether abnormal stock market returns to bank loan announcements are positive, i.e., whether the market values the private information gathered by the banks. The empirical evidence is mixed, with some supporting specialness (e.g., Mikkelson and Partch (1986), James (1987), Lummer and McConnell (1989), Slovin, Johnson, and Glascock (1992), Gande and Saunders (2012)), and others finding either no specialness or that results differ by borrower type, loan type, or time period (e.g., Billett, Flannery, and Garfinkel (2006), Bailey, Huang, and Yang (2011), Maskara and Mullineaux (2011), Li and Ongena (2015), Saheruddin (2017)). The results of these announcement effect papers may be noisy because the abnormal returns must be estimated. In addition, the findings may be subject to sample selection bias because the choice of which loans the parties choose to announce may be biased (e.g., Maskara and Mullineaux (2011), Saheruddin (2017)).

It is also possible that bank specialness may not apply as much to the modern syndicated loans market for several reasons. First, most syndicated loan borrowers are relatively large and informationally transparent, so there may be little private information to gather. Second, technological advancements may have made it easier for nonbanks to gather and process information, reducing bank comparative advantages. Third, when so many other parties are involved in the OTD lending process, it is questionable whether the lead banks that initiate the loans have sufficient incentives to invest in the private information production that makes banks special. That is, lead banks may not gather much private information because many of the benefits of the information acquisition may go to the syndicate participants that buy most of the credits (e.g., Wang and Xia (2014)). While some syndicated lending research suggests that lead banks do generate private information on the borrowers (e.g., Sufi (2007), Gutierrez-Mangas, Ivanov, Lueck,

Luo, and Nichols (2015), Balasubramanyan, Berger, and Koepke (2017)), this research does not directly address the bank specialness issue.

In this paper, we devise and implement new tests of the *Bank Specialness Hypothesis* in the syndicated loans market. Rather than relying on the measurement of abnormal stock returns to loan announcements that may be noisy and biased by the selection of which loans are announced, we use data on loan interest rate spreads and secondary market liquidity of the loans. We specifically examine institutional term loans (ITLs) – term loans below A (i.e., B, C, D, E., etc.) and those being labeled simply as "term loan" with "bullet" payment schedules (entire loan amount is paid at maturity) – that are usually financed by institutional (i.e., nonbank) investors (e.g., Gatev and Strahan (2009), Ivashina and Sun (2011)). We focus on ITLs rather than other syndicated loans in order to have a clean distinction between the lead banks that originate the loans and the nonbank institutions that participate in these loans. Other syndicated loans more often have other banks as most of the participants.[2] We examine the reaction of the interest rate spreads and the secondary market liquidity of the ITLs to whether revolving credit lines (CLs) – credits that may be drawn down and repaid at the borrowers' discretion – coexist in the same loan packages.[3]

Our tests are motivated by theories and empirical evidence suggesting that CLs provide special value to solve information problems in lending. Specifically, the structure of CLs allows banks to elicit private information to mitigate agency problems (e.g., Boot, Thakor, and Udell (1987, 1991), Holmstrom and Tirole (1998)). CLs also incentivize banks to continue to monitor the borrowers as the bank can revoke or alter the terms of borrowers' access to funding (e.g., using

[2] ITLs are growing much faster than other syndicated loans and are priced at a premium relative to other loans (e.g., Ivashina and Sun (2011), Lim, Minton, and Weisbach (2014), Nini (2016)).

[3] When ITLs and CLs are in the same loan package, it is almost always the case that both loans have the same lead bank. In our sample, 94.1% of ITLs have the same lead bank as in the CLs in the same package.

covenants or material adverse change clauses) when it is exposed to the borrower performance problems or misbehavior (e.g., Rajan and Winton (1995), Sufi (2009), Acharya, Almeida, Ippolito, and Perez (2014)). A lead bank will therefore monitor the borrower and produce information more intensively if it supplies a CL simultaneously with an ITL. CLs can also generate valuable information that banks use in managing their lending relationships (Norden and Weber (2010)). As well, CLs are embodiments of bank-borrower relationships, given that the bank trusts the borrower to decide when future loans are issued. As an illustration of these relationships, it is found that business borrowers tend to cluster their CLs in a single bank much more often than other loan types (Berger and Udell (1995)).

We acknowledge that CLs may also have negative potential consequences, potentially encouraging risky investments (e.g., Acharya, Almeida, Ippolito, and Perez (2014)). CLs may also result in drawdowns in reaction to real or speculated bank distress that create or aggravate bank liquidity problems (e.g., Ivashina and Scharfstein (2010), Ippolito, Peydro, Polo, and Sette (2016)).

We test the *Bank Specialness Hypothesis* by examining whether an ITL with a CL in the same loan package has a lower interest spread in the primary market and better liquidity in the secondary market than a stand-alone ITL, *ceteris paribus*. A lower spread would indicate that syndicate members value the private information generated by the lead bank, and better secondary market liquidity would indicate reduced informational asymmetry about the loan.

Using a sample of over 3,000 ITLs from DealScan matched with information assembled from additional data sources, we find strong evidence consistent with the *Bank Specialness Hypothesis*. We find that institutional investors require statistically and economically significantly lower interest rate spreads on an ITL if there is a CL in the same loan package. All else equal, an attached CL implies a reduction of 27-80 basis points in interest rate spread for an ITL.

The secondary loan trading market evidence also supports the *Bank Specialness Hypothesis*. ITLs bundled with LCs have more liquid secondary markets than stand-alone ITLs with 9-15 basis points lower bid-ask spreads. This implies a reduction in a round-trip trading costs for a $100 million position in a loan of an economically significant $90,000 to $150,000. These two findings – reduced spread and improved secondary market liquidity – are mutually consistent. Existing research suggests that investors require lower interest spreads for loans with better secondary market liquidity as measured by lower bid-ask spreads (Amihud and Mendelson (1986)).

Our results could potentially be biased because the inclusion of a CL in a loan package may be endogenous (e.g., Sufi (2009)), and because important firm characteristics could be omitted. We address such biases in several ways. First, in our baseline results, we use firm-by-year fixed effects to wash out the potential impact of borrower demand factors. The firm-by-year fixed effects essentially allow us to compare the primary market pricing and the secondary market liquidity of an ITL bundled with a CL with a stand-alone ITL by the same borrower during the same year. Thus, the lower spread and lower bid-ask spread are unlikely to be driven by omitted demand factors.[5]

Second, while loan spreads and loan structure could be simultaneously determined at loan inception, the secondary market liquidity of a loan is measured over time after the loan is issued. Our regressions of secondary market liquidity should therefore be less affected by any simultaneity bias. The secondary market liquidity results are also robust when we restrict attention to a subsample of loans that are traded over a hundred days per year, or to the first one or two years of loan trading.

[5] As shown below, the secondary market liquidity results are also robust if we use the firm-by-month fixed effects.

Third, we use the collapse of Lehman Brothers in 2008 as a natural experiment or exogenous shock to a firm's access to its CL in a difference-in-difference (DiD) setting. We find that ITLs bundled with Lehman CLs exhibit significant increases in secondary market bid-ask spreads after the Lehman collapse relative to ITLs bundled with CLs provided by other banks, providing additional support for the *Bank Specialness Hypothesis*.

Our paper makes several contributions to the literature. First, while we are not the first to test the *Bank Specialness Hypothesis*, we are the first to test it specifically for part of the OTD model. That is, while others test whether bank loan announcements generate positive abnormal returns in general, none to our knowledge focuses on syndicated loans. We argue that this corner of the market is of particular interest to study, since lead bank incentives to collect private information may be blunted as syndicate participants may capture many of the benefits of information acquired.

Second, we devise new methods for testing the *Bank Specialness Hypothesis* that avoid introducing noise from estimating abnormal stock returns and potential sample selection bias from announcement choices. These methods use the presence of a bundled CL with an ITL and specifically test the hypothesis that CLs create specialness by generating valuable private information. Specifically, we test the effects of CLs on ITL spreads, the effects of CLs on secondary market liquidity ITLs, and we gather corroborating evidence from the natural experiment of the Lehman Brothers bankruptcy to show that specialness ends with the demise of the bank issuing the CL. All three of these methodologies provide support for the hypothesis.

Third, we show that CLs serve as one conduit for banks to perform their special information production roles. We provide evidence on the distinctive qualities of CLs as information-gathering

devices, monitoring tools, and bank-borrower relationship enhancers. This adds to the theoretical and empirical work cited above about the key roles of CLs in solving information problems.

Finally, our results inform the loan contracting literature. Including CLs in loan packages with ITLs has benefits for several economic agents. Borrowers achieve lower loan spreads on their ITLs, gain sources of liquidity through the CLs, and may attain additional future relationship advantages in terms of improved credit availability, lower spreads, and reduced collateral requirements (e.g., Petersen and Rajan (1994), Berger and Udell (1995)). Lead banks may reap rewards from reduced agency problems associated with asymmetric information. Syndicated loan market participants may gain from greater secondary market liquidity and lower trading costs.

The remainder of the paper is organized as follows. Section 2 summarizes the data and sample characteristics. Sections 3, 4, and 5 show the primary market spread test results, secondary market liquidity findings, and the Lehman bankruptcy natural experiment outcomes, respectively. Section 6 provides conclusions.

## 2. Data and Sample Characteristics

We extract data from the LPC DealScan dataset between 1994 and 2016. As described above, an ITL is a term loan B or below or a general term loan with a "bullet" payment schedule. (e.g., Nadauld and Weisbach (2012)). There are 24,509 such ITLs, although we only use some of these, as discussed below.

A loan may belong to a package of multiple credits. Loans in the same package may differ in pricing, amount, type, maturity, and covenants. For each ITL, we identify whether there is a CL in the package, labeled as "364-Day Facility," "Revolver/Line < 1 Yr.," or "Revolver/Line >= 1

Yr." The *CL Indicator* dummy is set to 1 if there is a CL in the ITL's package, and 0 otherwise. As an alternative measure for CL presence in the loan package, we also use *CL Portion*, the CL amount divided by the total package amount.

We match the ITL sample to Compustat using the link in Chava and Roberts (2008), which we manually update to January 2017. We match each loan to its borrower's financial data from Compustat as of the most recent fiscal year end, and exclude 18,419 observations of private firms that are not covered in Compustat.[7] Our focus on credits to public firms likely creates a bias against finding bank specialness, as asymmetric information problems addressed by bank specialness are generally more severe for private firms. To have a more homogeneous sample, we also exclude borrowers in the financial (SIC=6000-6999) and utility (SIC=4900-4999) industries (587 observations), firms with headquarters outside the U.S. and being labelled as foreign borrowers in Compustat (696 observations). This brings the number of observations to 4,807. After deleting 1,800 observations with missing regression variables, we have a final sample of 3,007 ITLs.[8] Among them, 709 (24%) do not have a bundled CL, and 2,298 do.

We report names, definitions, and data sources of all variables in Table 1. Table 2 Panel A reports summary statistics of loan characteristics of the stand-alone and bundled ITLs. The means of *All-in-Drawn Spread* are 378.97 and 321.23 basis points (bps), respectively, for stand-alone and bundled ITLs, and the difference of 57.94 bps is statistically significant at the 1% level. Although there are no control variables in this univariate comparison, the lower average spread for bundled ITLs is consistent with the *Bank Specialness Hypothesis* prediction that an attached CL reduces

[7] This exclusion is necessary because we need to use Compustat information to control for firm nationality, industry, firm characteristics related to riskiness, and credit demand when estimating our regressions discussed below.
[8] Consistent with the literature (e.g., Ivashina and Sun (2011), Lim, Minton, and Weisbach (2014)), the majority (2,472 out of 3,007) of ITLs in our sample were issued after 2000. Our baseline results are very similar if we focus only on the subsample of post-2000 ITLs.

informational opacity problems, allowing for lower spreads. In the functional form of our regression analysis below, we use Log (*All-in-Drawn Spread*), rather than the level. The differences in the logs between stand-alone and bundled ITLs is also statistically significant at the 1% level. We also use the logs of firm assets and maturity in the regressions.

On average, stand-alone ITLs are larger than bundled ITLs, but tend to have shorter maturity. Stand-alone ITLs are also less likely to have a performance pricing grid and have fewer financial covenants. Borrowers of stand-alone ITLs also tend to have stronger prior lending relationships with their lead banks than borrowers of bundled ITLs.

Table 2 Panel B reports summary statistics of borrower characteristics at the firm-year level. Some firms have multiple loan packages in the same year, so there are fewer observations than in Panel A. As noted, these borrowing firm characteristics are important controls for our regression analysis because they are critical determinants of interest rate spreads. These variables may also be related to loan structure decisions and thus would be helpful to isolate the marginal impact of the CL indicator on loan spreads and liquidity. On average, borrowers of stand-alone ITLs are significantly larger, have more tangible assets, are more likely to have S&P long term credit ratings, and are less profitable than borrowers of bundled ITLs.

Table 2 Panel C provides summary statistics on secondary market data for traded ITLs. We use secondary market loan quote information from Thomson Reuter to construct our secondary market liquidity measures. The database includes daily averages of bid prices, ask prices, and number of quotes for each loan for which financial institutions provide quotes to Thomson. We match DealScan loans with those in the secondary market database using the Loan Identification Number (LIN) in the Thomson database. The secondary market data start in 2000. Among the

2,472 ITLs from 2000 and after, 1,676 loans appear in the secondary market database. After excluding observations with missing regression variables, we have data on 1,614 traded ITLs.

For each traded loan, we follow the literature and calculate its annual average bid-ask spread as the average of daily bid-ask spreads over a year (e.g., Wittenberg-Moerman (2008), Santos and Shao (2017)). Because a loan can be traded for multiple years, these 1,614 traded ITLs correspond to 4,861 loan-year observations, of which 973 correspond to stand-alone ITLs and 3,888 correspond to bundled ITLs. The mean annual bid-ask spread is 1.01 for stand-alone ITLs and 0.96 for bundled ITLs, where bid and ask prices are expressed as percentages of par value. The difference of bid-ask spread between these two loan types is statistically significant at the 5% level, consistent with the *Bank Specialness Hypothesis* prediction that the existence of CL in a package improves loan liquidity.

We also report the primary market characteristics of traded loans in Table 2 Panel C. Compared with the sample of 3,007 ITLs in Table 2 Panel A, the traded loans tend to be larger in size, longer in maturity, and more investors at the time of closing. It is not surprising that larger loans with more investors are more likely to be traded on the secondary market. However, sample selection bias is not likely a significant concern for our analysis. Traded stand-alone and bundled ITLs have mean all-in-drawn spreads of 370.73 and 310.20 bps, close to the 378.87 and 321.03 bps for originated ITLs. As well, the percentage of ITLs that are bundled is almost the same, 22.30% for traded ITLs versus 23.58% for originated ITLs. As demonstrated later, there is no significant difference in the likelihood of being traded between stand-alone and bundled ITLs, as *CL Indicator* has no association with the likelihood of a loan being traded.

## 3. Primary Market Tests of the *Bank Specialness Hypothesis*

We present a number of tests to determine if interest rate spreads of ITLs in the primary market are lower when they are bundled with CLs, controlling for other factors, as predicted by the *Bank Specialness Hypothesis*. We show baseline regressions of these spreads on a CL indicator (Subsection 3.1), test whether the effects are stronger when there is greater information asymmetry between the borrower and the lender and greater need for information production (Subsection 3.2), provide additional tests with different specifications and samples (Subsection 3.3), and test whether the effects are driven by alternative explanations (Subsection 3.4). In all cases, the results are consistent with the hypothesis, and are statistically and economically significant.

### *3.1 Baseline Results*

To test the hypothesis, we estimate versions of the following model:

$$Log(\textit{All-in-Drawn Spread})_{ijkt} = \alpha_0 + \alpha_1 \times \textit{CL Indicator}_{ijkt} + \alpha_2 \times \textit{Controls}_{ijkt} + \textit{Fixed Effects} + \varepsilon_{ijkt} \quad (1)$$

where *i* indexes the ITL, *j* indexes the borrowing firm, *k* indexes the lead bank, and *t* indexes the year the ITL is issued. Each observation is an individual ITL. The key independent variable is *CL Indicator*, which equals one if the ITL has a CL in the same package and zero otherwise. We control for a variety of borrower and loan characteristics. For ITLs for which the lead bank can be matched with the Call Reports, we also control for the lead bank characteristics.[9] In different specifications, we control various fixed effects, including firm, year, firm-by-year, loan purpose,

[9] We follow Ivashina (2009) to identify the lead bank of a facility. Specifically, if an administrative agent of a facility is identified, it is defined as the lead bank. If the syndicate does not have an administrative agent, lenders carrying the titles of agent, arranger, book-runner, lead arranger, lead bank, or lead manager are defined as the lead bank. In case there are multiple defined lead banks, we assign the lead role to the one with largest loan share.

and lead bank fixed effects. Heteroscedasticity-robust standard errors are clustered at the borrower level.

We report baseline results in Table 3. In Column (1), we estimate a firm and year fixed effects model with borrower and loan characteristics as controls. The estimated coefficient on *CL Indicator* is negative and statistically significant at the 1% level, consistent with the *Bank Specialness Hypothesis*. The estimate suggests that having a CL in the package is associated with a 7% lower spread, about 27 basis points lower interest premium evaluated at the sample mean of stand-alone ITLs (379 bps). The coefficients on the controls are generally consistent with findings in the literature, but are not discussed here in the interest of brevity.

It is possible that *CL Indicator* may be related to time-varying unobserved firm risk variables that are also correlated with the spread. For example, Sufi (2009) documents that firms with positive cash flows are more likely to have a CL, and investors may demand lower spreads for firms with positive cash flows. Although our summary statistics indicate that firms that have stand-alone ITLs appear to have better credit profiles in that they are larger, have more tangible assets, and are more likely to have credit ratings, to mitigate any bias from time-varying unobserved factors, we estimate firm-by-year fixed effects models, similar to the treatment in Jimenez, Ongena, Peydro, and Saurina (2012), Paligorova and Santos (2016), and Beck, Ioannidou, and Schafer (2017). Essentially, we compare the outcomes of different ITLs taken by the same firm during the same year, effectively washing out borrower heterogeneity.

Table 3 Columns (2) to (5) report the firm-by-year fixed effects model estimation results.[10] Firm characteristics drop out of these regressions because they do not vary for the same firm in

[10] Effectively, the firm-by-year fixed effects model estimation relies on borrowers who issue at least another loan in the same fiscal year. In Appendix A1, we report summary statistics of firm characteristics of these frequent borrowers

the same year. Column (2) shows a parsimonious model in which other loan contract terms are excluded since they could be simultaneously determined with the spread. *CL Indicator* again carries a negative sign and is statistically significant at the 1% level. Column (3) includes the other loan characteristics, and the *CL Indicator* coefficient remains negative and is statistically significant at the 5% level. In both models, the point estimates and the economic magnitudes of the coefficients on *CL Indicator* are larger than in Column (1), implying reductions of 80 bps and 38 bps, respectively, in the loan spread when a CL is bundled with an ITL.

We next deal with lender heterogeneity, which can also affect spreads. For example, banks with stronger balance sheets tend to charge lower rates (e.g., Santos (2011)). Column (4) includes lead bank fixed effects. The coefficient on *CL Indicator* still has a negative sign and is statistically significant, suggesting that our findings are unlikely to be driven by time-invariant lead bank heterogeneity. In Column (5), we saturate our model by additionally controlling for time-varying lead bank characteristics, *Bank Leverage Ratio*, *Bank Loan Loss Allowance*, and *Bank Size*. We have a smaller sample size because we cannot match some lead banks with Call Reports.[11] The estimated coefficient on *CL Indicator* remains negative and statistically significant. The magnitudes of the estimated coefficients on *CL Indicator* in Columns (4) and (5) are also in line with the other results.

Taken together, the baseline results in Table 3 suggest that an ITL bundled with a CL has a statistically significant lower all-in drawn spread than a stand-alone ITL, all else equal.

and show that they are similar to infrequent borrowers, suggesting that selection issues do not likely explain our baseline finding.

[11] More specifically, we cannot match some lead bank characteristics because we only focus on U.S. domestic commercial banks while some loans in our sample are originated by foreign banks or non-commercial banks.

Economically, the inclusion of a CL implies a reduction of 27 – 80 bps of the spread. These results strongly support the *Bank Specialness Hypothesis*.

*3.2 Differential Effects of CLs with Different Information Environments*

To the extent the *Bank Specialness Hypothesis* holds – and CLs are associated with more lead bank information production – the effects of CLs in reducing *All-in-Drawn Spread* of bundled ITLs should be greater when the need for information production by the lead banks is more important. We test this implication of the hypothesis using five information proxies. In each case, we rerun the *All-in-Drawn Spread* regressions adding on the right hand side *Information Problem Proxy* and its interaction with the *CL Indicato*r, where *Information Problem Proxy* is a dummy for a loan in which information problems are likely to be relatively servere. Thus, we estimate regressions of the form:

We use five proxies for information problems. The first two capture the informational opacity of the borrowing firm – more opaque borrowers require more information production. The last three proxies indicate information deficits that the lead bank must overcome in producing information on the borrower.

Table 4 shows regression results when we include these information proxies as well as their interaction effects with *CL Indicator*. For each proxy, we report two regressions, one with firm and year fixed effects and one with firm-by-year fixed effects. When firm-by-year fixed effects are included, the un-interacted information proxy is excluded because it would be absorbed by the fixed effects.

In Table Columns (1) and (2), the proxy is for firms without a public debt rating, taken from Compustat. The literature suggests that non-rated borrowers are subject to greater asymmetric

information and agency problems (e.g., Sufi (2007), Chava and Roberts (2008)). In both columns, the interaction term between *CL Indicator* and *Non-Rated Firm Dummy* is negative and statistically significant at the 1% level, supporting the *Bank Specialness Hypothesis*.

We next differentiate between small and large firms. Small firms tend be more informationally opaque (e.g., Hadlock and Pierce (2010)). Columns (3) and (4) report estimation results with interactions of *CL Indicator* with *Small Firm Dummy*, which equals one if its total assets are below median. Consistent with the *Bank Specialness Hypothesis*, the coefficients on the interaction terms in both Columns (3) and (4) are negative and statistically significant.

In Columns (5) and (6), we differentiate firms by whether they have prior lending relationships with the lead bank, which are found in the literature to help reduce informational asymmetries between the bank and borrower (e.g., Petersen and Rajan (1994), Berger and Udell (1995)). *No Prior Lending Relationship Dummy* equals one if the borrower has not borrowed from the lead bank in the past five years and zero otherwise. The interaction terms between *No Prior Lending Relationship Dummy* and *CL Indicator* are negative and statistically significant, again supporting the hypothesis.

We next proxy for lead bank reputation. A lender's concern for its reputation may provide it with strong incentives to monitor. Following the literature (e.g., Sufi (2007), Ross (2010)), we use the lead bank's market share as a proxy for its reputation and set the *Less Reputable Lead Bank Dummy* to be one if the lead bank's market share is out of top ten based on value of credits issued in the prior year in the DealScan dataset. The *Less Reputable Lead Bank Dummy* interactions with *Credit Line Indicator* in both Columns (7) and (8) are negative and statistically significant, again supporting the *Bank Specialness Hypothesis*.

Finally, we test how the effects of CLs vary with syndicate size. Syndicate members help produce information in securities offerings (Corwin and Schultz (2005)). We therefore expect the lead bank to have to work harder to produce information in the case of a small syndicate. *Small Syndicate Dummy* equals 1 if syndicate size is below the sample median. As shown in Columns (9) and (10), we find a stronger effect of CLs for small syndicates.

*3.3 Robustness Tests for the Primary Market Results*

We report several robustness tests on the impact of bundled CLs in the primary market in Table 5. In Column (1), we include two additional controls for loan characteristics: *Sponsored Loan* and *Refinancing Loan*, indicating if the loan has a financial sponsor and is a refinancing deal, respectively. The results are robust to including these controls.

In Column (2), we control for the bundling of a Term Loan A (TLA) in a loan package. TLAs are amortizing term loans that are often syndicated to banks instead of non-bank institutional investors. To ensure the documented effect of CLs on ITL interest spreads is not driven by another bank term loan in the same package, we include a dummy variable *TLA Indicator*, indicating if a deal also has a TLA. The results remain intact.

In Column (3), we test an alternative specification of our key independent variable, replacing *CL Indicator* with a continuous measure, *CL Portion of Package*. Consistent with the *Bank Specialness Hypothesis*, this continuous measure is significantly negatively associated with ITL spreads.

In Column (4), we use a broader sample. In addition to the 3,007 observations of Term Loan B/below and those unranked "bullet" term loans, we include other unranked term loans that

do not have bullet payment schedules. For this larger sample of 5,910 ITLs, the coefficient on *CL Indicator* is still negative and statistically significant at the 1% level with a similar magnitude.

In Column (5), we use the *All-in-Drawn Spread* level instead of its natural log as the dependent variable. The coefficient on the *CL Indicator* is again negative and economically and statistically significant, suggesting that our results are robust to the functional form of the dependent variable.

*3.4 Credit Line Bundling and Investor Demand*

A potential concern is that if investor demand for an ITL simply differs due to CL bundling, the *CL Indicator* can capture investor demand instead of bank specialness. Recent studies suggest that syndicated loan pricing responds to shocks to investor capital and demand for loans (e.g., Ivashina and Sun (2011), Lim, Minton, and Weisbach (2014), Nadauld and Weisbach (2012)). We next present several tests that suggest that the demand-side factors are not related to CL bundling and thus are unlikely to explain our results.

We test whether bundled ITLs experience higher investor demand than stand-alone ITLs on average. Following Ivashina and Sun (2011), we first use time-on-market (TOM), the number of days that a loan remains unsubscribed after launch, as a proxy for investor demand.[12] Columns (1) and (2) of Table 6 report regression results using *Log (TOM)* as the dependent variable.[13] We find that the coefficient on *CL Indicator* is insignificant under both model specifications,

[12] We extract this information from DealScan. Our regression sample becomes smaller due to the availability of this data item. On average, the time-on-market in our sample is 26.28 days. This is in line with Ivashina and Sun (2011), whose sample mean is 26.41 days.

[13] The Secured Loan dummy is dropped from Column (2) of Table 6 because all of the loans with TOM information are secured.

suggesting that there is no significant difference between investor's demand for stand-alone ITLs and bundled ITLs.

Our second measure of investor demand is the probability of being traded on the secondary market. We estimate conditional logit models in Columns (3) and (4) (i.e. fixed-effects logit models that include firm-by-year fixed effects). Because these estimations are subject to the incidental parameters problem, in Column (5) and (6), we also estimate a logit model without fixed effects and a linear probability model with fixed effects, respectively. All models yield similar results: The *CL Indicator* does not exhibit any statistical significance, suggesting that there exist no significant differences in the likelihood of being traded between bundled and stand-alone ITLs. Nonetheless, we caution against drawing overly strong conclusions from insignificant results such as those in Table 6 because they could alternatively reflect a lack of test power.

## 4. Secondary Market Tests of the *Bank Specialness Hypothesis*

We next provide novel evidence on bank specialness from the secondary loan market by examining how bundling an ITL with a CLs affects trading liquidity. We use the bid-ask spread of a traded ITL to measure its liquidity. This is consistent with the literature that suggests that a reduction in information asymmetry leads to lower bid-ask spreads for a traded security (Kyle (1985), Easley and O'Hara (1987)), and the literature that suggests that information environment affects the bid-ask spread of a loan (e.g., Wittenberg-Moerman (2008), Santos and Shao (2017)). The *Bank Specialness Hypothesis* predicts that an ITL bundled with a CL has a smaller bid-ask spread than a stand-alone ITL, reflecting the reduced informational asymmetry due to CL bundling.

Specifically, we estimate the following regression using the secondary market bid-ask spread as the dependent variable:

$$Bid\text{-}Ask\ Spread_{ijkt} = \beta_0 + \beta_1 \times CL\ Indicator_{ijkt} + \beta_2 \times Controls_{ijkt} + Fixed\ Effects + \varepsilon_{ijkt} \quad (2)$$

In the above equation, *i* indexes the ITL, *j* indexes the borrowing firm, *k* indexes the lead bank, and *t* indexes the trading year or month.[14] Table 7 reports the estimated effects of a bundled CL secondary market liquidity of ITL loan. We first estimate a firm fixed effects model in Column (1). In Columns (2) to (5), we employ the firm-by-year fixed effects regression model to compare secondary market trading characteristics of ITLs with and without bundled CLs, holding borrower characteristics constant. In Columns (1) and (2), we include all ITL-trading year observations. In Column (3), we use only data from the first trading year of all loans because of the possibility that loans traded for a long time may be inherently different. In Column (4), we use all ITL-trading year observations and control for the lead bank fixed effects, and in Column (5), we further control for some time-varying bank characteristics. The coefficients on the *CL Indicator* in Columns (1) through (5) are all negative, and are statistically significant for all but Column (1). As above, we have more confidence in the results in the latter columns that have firm-by-year fixed effects to control for borrower differences. In Column (6), we use an even tighter firm-by-month fixed effects model and obtain similar estimation results. This specification controls even more tightly for borrower characteristics, which are unlikely to change much within a one-month period.

[14] In addition to all the control variables used in the primary market regressions in Table 3, we further include loan age to control for the "on-the-run" liquidity phenomenon in fixed income markets. In an unreported test, we also use *Log* (1+bid-ask spread) as the dependent variable and the results are similar.

The negative coefficients in Columns (1) through (6) suggest that, all else equal, an ITL with a bundled CL trades in a narrower bid-ask spread than a stand-alone ITL. The range of coefficients from -0.08 to -0.15 suggests that the bid-ask spread of a loan with a bundled CL is on average 8 to 15 bps lower, which implies an economically significant saving of $80,000 to $150,000 in round-trip trading costs for a $100 million position.[16]

The results in Table 7 lend further support to the *Bank Specialness Hypothesis*. The findings also suggest that informed investors/traders tend to improve information efficiency in the secondary loan market overall. Our results add to recent findings by Bushman, Smith, and Wittenberg-Moerman (2011), who document that secondary loan market price discovery is faster when investors gain access to private borrower information.

Finally, we deal with the possibility that our results could potentially be driven by different characteristics of traded and non-traded ITLs. In unreported tests, we use Heckman's two-step method to test the extent of potential selection bias and find our results are robust.[17]

## 5. Lehman Brothers Bankruptcy as a Quasi-Natural Experiment

We next exploit the Lehman Brothers bankruptcy in 2008 as an unanticipated exogenous shock to borrowers' access to CLs to confirm our findings. The literature documents that after the bankruptcy, firms' access to CLs in which Lehman was a lender became impaired as Lehman was no longer able to fulfill its funding commitments. Remaining lenders in the CLs, if any, were only

[16] The average size of bundled ITL with secondary market information is $455.75 million (Table 2 Panel C).

[17] Specifically, we draw on evidence from Shivdasani and Wang (2011) and use whether an ITL is sponsored by private equity investors as an instrument for the likelihood of an ITL being traded. Shivdasani and Wang (2011) report that sponsored loans attract more securitization investors such as collateralized debt obligations (CDOs). CDOs trade often in the secondary loan market. Consistently, this sponsored loan dummy is significantly positively related to the likelihood of loan trading in the first stage Probit regression. The detailed results are available upon request.

responsible for their shares of the credit (Ivashina and Scharfstein (2010)). Thus, under the *Bank Specialness Hypothesis*, the affected borrowers suffered a loss of valuable monitoring.[18]

We examine the impact of the Lehman collapse on the secondary market bid-ask spread of ITLs with bundled Lehman CLs using a difference-in-difference (DiD) framework. The *Bank Specialness Hypothesis* predicts an increase in the bid-ask spreads of the ITLs with bundled Lehman CLs after the event relative to the other ITLs. The DiD model is specified as:

$$\begin{aligned} Bid\text{-}Ask\ Spread_{ijkt} = {} & \gamma_0 + \gamma_1 \times Lehman\ CL_{ijkt} + \gamma_2 \times Post\ 2008 \times Lehman\ CL_{ijkt} \\ & + \gamma_3 \times Controls_{ijkt} + Fixed\ Effects + \varepsilon_{ijkt} \end{aligned} \tag{3}$$

where each observation is a loan-trade year combination. *Lehman CL* is a dummy variable that equals to one if the credit line in the ITL's package has *Lehman* as a lender.[19] The un-interacted *Lehman CL* term captures any time-invariant difference between ITLs with and without Lehman CLs. *Post 2008* is a dummy equal to one if the trade year is after 2008, and *Post 2008*Lehman CL* is the DiD term that captures the treatment effect. The sample period for this test is between 2006 and 2012 so that we have an equal three year span before and after the event. Our results are qualitatively similar if we instead use a narrower window from 2007 to 2011. The *Bank Specialness Hypothesis* predicts a positive coefficient on the DiD term – the removal of monitoring caused by the CL cancelation increases the bid-ask spread of the bundled ITL. In addition to loan and borrower characteristics controls used in prior regressions, we include loan purpose and borrower industry fixed effects.

[18] While Lehman Brothers was not a pure commercial bank, it acted much like one with an active lending presence in the syndicated loan market (e.g., Ivashina and Scharfstein (2010)).

[19] We rely on DealScan to identify whether a CL or ITL has Lehman Brothers as a lender. Our results are robust if we define Lehman Brothers as a substantial lender as in Ivashina and Scharfstein (2010, pp. 333).

The estimation results are reported in Table 8. In Column (1), the coefficient on the DiD estimator, *Post 2008*Lehman CL*, is positive and statistically significant at the 10% level, suggesting that there is an increase of the bid-ask spread of ITLs with bundled CLs that were adversely affected by Lehman bankruptcy relative to other ITLs.[20]

In Column (2), we adjust our model specification to account for having a Lehman ITL in the same package. Specifically, we include two additional control variables: *Lehman ITL* and *Post 2008*Lehman ITL*. *Lehman ITL* equals one if the ITL also has Lehman Brothers as a lender and zero otherwise. In this column, our original DiD estimator, *Post 2008*Lehman CL*, now captures the *incremental* effect of Lehman bankruptcy on other ITLs. The coefficient on *Post 2008*Lehman CL* is not materially affected by this treatment.

In Columns (3) and (4), we use a subsample of traded ITLs that all have a bundled CLs. Doing so ensures that traded ITLs are more homogenous. The coefficients on *Post 2008*Lehman CL* are still positive and become statistically significant at the 5% level. In Column (4), *Post 2008*Lehman ITL* also has a positive coefficient and is statistically significant at the 1% level, indicating an additional adverse liquidity effect in Lehman-originated ITLs.[21]

Economically, Lehman bankruptcy leads to a sizable increase of bid-ask spread of affected ITLs by 20 to 27 basis points, which are more than 20% of the average bid-ask spread (0.96% for bundled ITLs, as reported in Panel C of Table 2).

[20] In unreported tests, we leave out firm characteristics controls since the borrower itself could be affected by Lehman bankruptcy and the associated loss of CL (Fernando, May, and Megginson (2012), Roberts and Whited (2013)). We obtain similar findings.

[21] The additional adverse effect of Lehman bankruptcy on ITL liquidity could stem from the aggravated counterparty risk. For example, Lehman Commercial Paper Inc. (LCPI) is a subsidiary entity of Lehman which, among other things, traded syndicated loans in the secondary market. When Lehman filed for bankruptcy, LCPI had hundreds of unsettled loan trades, leaving its counterparties in the precarious position. For more details, see *Debtor's Motion for an Order Pursuant to Section 365 of the Bankruptcy Code Approving the Assumption or Rejection of Open Trade Confirmations*, November 14, 2008, Case No. 08-13555, Docket No. 1541 (the "LCPI Assumption Motion").

## 6. Conclusions

We create new tests of the *Bank Specialness Hypothesis* using primary and secondary market data on credit lines (CLs) and institutional term loans (ITLs) from the syndicated loan market. We test whether the inclusion of a credit line (CL) in the same loan package as an ITL reduces the ITL interest rate spread and improves its secondary market liquidity. The findings are strongly consistent with the hypothesis, and are robust to an additional test using the Lehman Brothers bankruptcy as a natural experiment. In addition to supporting bank specialness, the findings also suggest that CLs are one conduit through which this specialness is implemented.

The primary market tests have advantages over the usual tests of bank specialness in the literature that test for abnormal stock market returns around the times of bank announcements. The interest rate spreads do not have to be estimated, eliminating the noise associated with estimating abnormal stock returns. We are also able to avoid any sample selection bias associated with whether the loans are announced. The secondary market tests of loan liquidity and the natural experiment of the Lehman bankruptcy are novel and do not have analogs in the literature. The finding that all three of our test methodologies consistently and robustly support the *Bank Specialness Hypothesis* is also a strength of the paper.

Our tests also extend the literature on the distinctive value of CLs in the lending process. These types of loans are associated with strong monitoring incentives. They are also embodiments of bank-borrower relationships that are associated with reduced informational asymmetries.

Finally, our findings may have implications for optimal loan contracting. The inclusion of a CL in a loan package with an ITL benefits the borrower with lower loan spreads and greater liquidity, and with possible future benefits in terms of improved credit availability and better terms

on subsequent loans. Such arrangements may also reward the lead banks with fewer agency problems from informational asymmetries. Finally, the secondary market participants in these loans may gain from greater liquidity and lower trading costs of the loans.

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**Table 1**

**Key Variable Names, Definitions, and Sources**

| Variable Name | Definition | Source |
|---|---|---|
| | *Key Dependent Variables* | |
| *All-in-Drawn Spread* | The spread over LIBOR in basis points for each dollar drawn down | DealScan |
| *Log (All-in-Drawn Spread)* | The natural log of *All-in-Drawn Spread* | DealScan |
| *Annual Average Bid-Ask Spread* | The annual average of daily bid-ask spread, where bid/ask price is quoted as the percentage of par value | Thomson Reuter |
| | *Key Independent Variables* | |
| *CL Indicator* | A dummy variable that equals to 1 if there is a bank credit line (CL) in the same package of the institutional term loan (ITL), zero otherwise | DealScan |
| *Lead Bank Market Share* | A dummy variable that equals to 1 if the lead arranger's U.S. market share is within top ten of the previous year, zero otherwise. A lead arranger's market share is calculated as the total dollar amount of loans it arranges over the total dollar amount of all loans to U.S. company | DealScan |
| *Facility Amount ($ million)* | The total amount of the loan facility in millions of dollars | DealScan |
| *Performance Pricing Indicator* | A dummy variable that equals to 1 if the loan facility has a pricing grid, zero otherwise | DealScan |
| *Prior Lending Relationship* | A borrower's prior lending relationship with the lead arranger. The lending relationship is calculated as the ratio of the total dollar amount of loans borrowed by the firm and arranged by the lead arranger in the past five years scaled by the total dollar amount of loans borrowed by the firm (regardless of lead arrangers) | DealScan |
| *Number of Lenders* | The total number of different lenders in the loan facility | DealScan |
| *Number of Financial Covenants* | The total number of financial covenants in the package | DealScan |
| *Facility Maturity* | The stated maturity of the loan facility in months | DealScan |
| *Secured Loan* | A dummy variable that equals to 1 if the loan facility is secured by collateral | DealScan |
| *Sponsored Loan* | A dummy variable that equals to 1 if the loan facility has a financial sponsor | DealScan |
| *Refinancing Loan* | A dummy variable that equals to 1 if the loan facility is a refinancing deal | DealScan |

**Table 1 continued:**

| Variable Name | Definition | Source |
|---|---|---|
| | *Key Independent Variables* | |
| *Firm Assets* | A firm's total assets in millions of dollars (at) | Compustat |
| *Leverage* | A firm's book leverage ratio, defined as the sum of total debt in current liabilities (dlc) and total long-term debt (dltt) over the firm's total assets (at) | Compustat |
| *Cash Holdings* | A firm's total cash and short-term investments (che) over the firm's total assets (at) | Compustat |
| *Tangibility* | A firm's total property, plant and equipment (ppent) over the firm's total assets (at) | Compustat |
| *ROA* | A firm's net income (ni) over the firm's total assets (at) | Compustat |
| *Rated Dummy* | A dummy variable that equals to 1 if the borrower has a S&P long-term credit rating, zero otherwise | Compustat |
| *Bank Leverage Ratio* | Bank Tier1 capital (RCFD8274) over total assets (RCFD2170) | Call Report |
| *Bank Loan Loss Allowance* | Bank loan loss allowance (RCFD3123) over total assets (RCFD2170) | Call Report |
| *Bank Size* | Natural log of bank total assets (RCFD2170) in thousands of dollars | Call Report |

**Table 2**

**Summary Statistics and Univariate Tests**

We report the summary statistics for institutional term loans (ITLs) and borrowing firms in our sample and the univariate tests of the differences between stand-alone and bundled ITLs. In Panel A we report the summary statistics and the univariate tests of the differences of loan characteristics between stand-alone and bundled ITLs. The definition of ITL encompasses, based on DealScan, Term Loan B or below (C, D, E, etc.) and term loans with a bullet payment schedule. Our ITL sample consists of 3,007 loans issued between 1994 and 2016 by U.S. non-financial and non-utility firms with non-missing regression variables. In Panel B, we report the summary statistics and the univariate tests of the differences of borrowing firm characteristics of these 3,007 loans. In Panel C we report the summary statistics and the univariate tests of the differences of characteristics of 1,614 ITLs (as a subsample of the all 3,007 ITLs) that are subsequently traded on the secondary market. The observation is loan-trade year for bid-ask spread as a loan can be traded in multiple years. In all panels, we report the differences of the mean values in the last column. *, **, and *** indicate a 10%, 5%, and 1% statistical significance for a two-sample t-test assuming unequal variance. The variable names are self-explanatory, and see detailed variable definitions in Table 1.

**Panel A: Institutional Term Loan (ITL) Characteristics**

| | **Stand-alone ITLs** | | | **Bundled ITLs** | | | |
|---|---|---|---|---|---|---|---|
| Variable Name | N | Mean | Median | N | Mean | Median | Diff-in-Mean |
| *All-in-Drawn Spread (bps)* | 709 | 378.97 | 305.00 | 2,298 | 321.03 | 300.00 | 57.94*** |
| *Log (All-in-Drawn Spread)* | 709 | 5.80 | 5.72 | 2,298 | 5.69 | 5.70 | 0.11*** |
| *Lead Bank Market Share* | 709 | 0.82 | 1.00 | 2,298 | 0.81 | 1.00 | 0.01 |
| *Facility Amount ($ million)* | 709 | 543.78 | 300.00 | 2,298 | 387.78 | 200.00 | 156.00*** |
| *Log (Facility Amount)* | 709 | 5.66 | 5.70 | 2,298 | 5.10 | 5.30 | 0.56*** |
| *Performance Pricing* | 709 | 0.23 | 0.00 | 2,298 | 0.36 | 0.00 | -0.13*** |
| *Bank Relationship* | 709 | 0.32 | 0.14 | 2,298 | 0.28 | 0.00 | 0.05*** |
| *Number of Lenders* | 709 | 8.35 | 4.00 | 2,298 | 9.49 | 6.00 | -1.14 |
| *Number of Financial Covenants* | 709 | 1.85 | 2.00 | 2,298 | 2.98 | 3.00 | -1.13*** |
| *Facility Maturity (Months)* | 709 | 64.27 | 69.00 | 2,298 | 72.33 | 78.00 | -8.07*** |
| *Log (Maturity)* | 709 | 4.07 | 4.23 | 2,298 | 4.22 | 4.36 | -0.15*** |

**Panel B: Borrower Characteristics**

| | Stand-alone ITLs | | | Bundled ITLs | | | |
|---|---|---|---|---|---|---|---|
| Variable Name | N | Mean | Median | N | Mean | Median | Diff-in-Mean |
| *Total Assets ($ million)* | 554 | 4438.78 | 1821.54 | 1,850 | 2223.03 | 795.45 | 2215.75*** |
| *Log (Total Assets)* | 554 | 7.49 | 7.51 | 1,850 | 6.70 | 6.68 | 0.79*** |
| *Leverage* | 554 | 0.49 | 0.45 | 1,850 | 0.47 | 0.45 | 0.02 |
| *Cash Holdings* | 554 | 0.08 | 0.05 | 1,850 | 0.07 | 0.04 | 0.00 |
| *Tangibility* | 554 | 0.33 | 0.29 | 1,850 | 0.30 | 0.25 | 0.02** |
| *ROA* | 554 | -0.01 | 0.01 | 1,850 | 0.01 | 0.02 | -0.02*** |
| *Rated Dummy* | 554 | 0.75 | 1.00 | 1,850 | 0.58 | 1.00 | 0.17*** |

**Panel C: Traded ITL Characteristics**

| | Stand-alone ITLs | | | Bundled ITLs | | | |
|---|---|---|---|---|---|---|---|
| Variable Name | N | Mean | Median | N | Mean | Median | Diff-in-Mean |
| *Annual Mean of Daily Bid-Ask Spread* | 973 | 1.01 | 0.64 | 3,888 | 0.96 | 0.62 | 0.05** |
| *All-in-Drawn Spread (bps)* | 360 | 370.73 | 325.00 | 1,254 | 310.20 | 300.00 | 60.53*** |
| *Log (All-in-Drawn Spread)* | 360 | 5.83 | 5.78 | 1,254 | 5.68 | 5.70 | 0.15*** |
| *Lead Bank Market Share* | 360 | 0.93 | 1.00 | 1,254 | 0.85 | 1.00 | 0.08*** |
| *Facility Amount ($ million)* | 360 | 634.08 | 362.50 | 1,254 | 455.75 | 250.00 | |
| *Log (Facility Amount)* | 360 | 5.98 | 5.89 | 1,254 | 5.54 | 5.52 | 0.44*** |
| *Performance Pricing* | 360 | 0.19 | 0.00 | 1,254 | 0.37 | 0.00 | -0.18*** |
| *Bank Relationship* | 360 | 0.36 | 0.25 | 1,254 | 0.27 | 0.00 | 0.09*** |
| *Number of Lenders* | 360 | 8.67 | 4.00 | 1,254 | 11.15 | 7.00 | -2.47** |
| *Number of Financial Covenants* | 360 | 1.56 | 1.00 | 1,254 | 2.99 | 3.00 | -1.43*** |
| *Facility Maturity (Months)* | 360 | 69.65 | 72.00 | 1,254 | 77.95 | 84.00 | |
| *Log (Maturity)* | 360 | 4.20 | 4.28 | 1,254 | 4.33 | 4.43 | -0.12*** |

**Table 3**

**The Impact of Bank Credit Line on ITL Interest Spread: Baseline Results**

This table reports the baseline regression results on the effect of bundled credit line on ITL interest spread. The dependent variable in all columns is *Log (All-in-Drawn Spread)*. The key independent variable in all columns is *CL Indicator*, which equals to one for a bundled ITL and zero for a stand-alone ITL. We include the firm (borrower) and year fixed effects in Column (1), and the firm-by-year fixed effects from Columns (2) to (5). In Columns (4) and (5), the lead bank fixed effects or bank characteristics are also added. Loan purpose fixed effects are included in all models. The sample used in Columns (1) to (4) contains 3,007 ITLs. The sample used in Column (5) contains 1,611 ITLs whose lead bank can be matched to the Call Report. Note that borrowing firm characteristics, which are measured annually, drop out in Columns (2) to (5) because of the inclusion of the firm-by-year fixed effects. Robust standard errors are clustered at the firm level, and t-statistics are reported in the parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

**Dependent Variable: *Log (All-in-Drawn Spread)***

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| ***CL Indicator*** | **-0.07*** ** | **-0.21*** ** | **-0.10** ** | **-0.09** ** | **-0.14*** ** |
| | **(-3.42)** | **(-4.30)** | **(-2.47)** | **(-2.14)** | **(-2.65)** |
| *Lead Bank Market Share* | -0.10*** | -0.25*** | -0.27*** | -0.09 | 0.01 |
| | (-3.36) | (-3.17) | (-3.06) | (-1.63) | (0.34) |
| *Bank Relationship* | -0.11*** | -0.10 | -0.06 | -0.09 | -0.15** |
| | (-4.38) | (-1.38) | (-0.92) | (-1.63) | (-2.10) |
| *Number of Lenders* | -0.00** | -0.00 | -0.00 | -0.00 | -0.00 |
| | (-2.19) | (-1.56) | (-1.07) | (-0.91) | (-1.16) |
| *Log (Facility Amount)* | -0.04*** | | -0.05*** | -0.05*** | -0.04*** |
| | (-4.50) | | (-4.77) | (-4.72) | (-3.45) |
| *Performance Pricing* | -0.07*** | | -0.13*** | -0.11*** | -0.16*** |
| | (-3.61) | | (-3.39) | (-3.03) | (-3.48) |
| *Number of Financial Covenants* | -0.02** | | -0.12*** | -0.13*** | -0.14*** |
| | (-2.56) | | (-5.12) | (-4.77) | (-3.60) |
| *Log (Loan Maturity)* | 0.04 | | 0.21*** | 0.20*** | 0.13*** |
| | (1.24) | | (4.48) | (4.33) | (3.09) |
| *Secured Loan* | 0.28*** | | -0.29 | -0.12 | -0.06 |
| | (3.21) | | (-1.55) | (-0.82) | (-0.59) |
| *Log (Firm Assets)* | -0.07*** | | | | |
| | (-3.85) | | | | |
| *Leverage* | -0.01 | | | | |
| | (-0.27) | | | | |
| *Cash Holdings* | -0.13 | | | | |
| | (-0.88) | | | | |
| *Tangibility* | -0.02 | | | | |
| | (-0.11) | | | | |
| *ROA* | -0.83*** | | | | |
| | (-6.89) | | | | |
| *Rated Dummy* | 0.00 | | | | |
| | (0.18) | | | | |
| *Bank Leverage Ratio* | | | | | -0.11*** |
| | | | | | (-3.95) |
| *Bank Loan Loss Allowance* | | | | | 0.61** |
| | | | | | (2.49) |
| *Bank Size* | | | | | -0.89*** |
| | | | | | (-3.57) |
| *Firm FEs* | Yes | No | No | No | No |
| *Year FEs* | Yes | No | No | No | No |
| *Firm-by-Year FEs* | No | Yes | Yes | Yes | Yes |
| *Loan Purpose FEs* | Yes | Yes | Yes | Yes | Yes |
| *Lead Bank FEs* | No | No | No | Yes | Yes |
| Observations | 3,007 | 3,007 | 3,007 | 3,007 | 1,611 |
| Adj. R-squared | 0.38 | 0.15 | 0.32 | 0.45 | 0.47 |

**Table 4**

**Information Environment and Credit Line's Impact on ITL Spreads**

Regressions in this table examine how the impact of a credit line on ITL interest spread varies with different information environments due to borrower information opacity and the lead bank information production efficiency. The dependent variable in all columns is *Log (All-in-Drawn Spread)*. The key independent variable in all columns is *CL Indicator*Info Problem Proxy*. *CL Indicator* equals to one for a bundled ITL and zero for a stand-alone ITL. *Info Problem Proxy* is indicated by the column title. Columns (1), (3), (5), (7), and (9) include the firm and year fixed effects. Columns (2), (4), (6), (8), and (10) include the firm-by-year fixed effects. All models include loan purpose fixed effects. The sample used in all columns contains 3,007 ITLs. For brevity, only coefficients and t-statistics (in parenthesis) of the key independent variables are reported. Robust standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

**Dependent Variable:** ***Log (All-in-Drawn Spread)***

| | **Information Problem Proxy** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Non-Rated Firm Dummy** | | **Small Firm Dummy** | | **No Prior Lending Relationship Dummy** | | **Less Reputable Lead Arranger Dummy** | | **Small Syndicate Dummy** | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| *CL Indicator* | -0.04 | -0.04 | -0.03 | -0.02 | -0.04* | -0.04 | -0.05** | -0.08* | -0.01 | -0.02 |
| | (-1.54) | (-0.95) | (-1.16) | (-0.28) | (-1.93) | (-0.90) | (-2.36) | (-1.90) | (-0.20) | (-0.35) |
| ***CL Indicator*Info. Problem Proxy*** | **-0.17*** ** | **-0.15** ** | **-0.10** ** | **-0.13* ** | **-0.08** ** | **-0.10* ** | **-0.16** ** | **-0.17** ** | **-0.09** ** | **-0.12* ** |
| | **(-3.12)** | **(-1.99)** | **(-2.44)** | **-1.90)** | **(-2.08)** | **(-1.78)** | **(-2.38)** | **(-2.15)** | **(-2.24)** | **(-1.96)** |
| *Info. Problem Proxy* | 0.14** | | 0.11** | | 0.15*** | 0.11*** | 0.22*** | 0.37*** | 0.15*** | 0.15*** |
| | (2.45) | | (2.47) | | (4.12) | (2.38) | (3.83) | (3.53) | (3.68) | (3.14) |
| *Other Loan Controls* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| *Firm-by-Year FEs* | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes |
| *Firm FEs* | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| *Year FEs* | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| *Loan Purpose FEs* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 3,007 | 3,007 | 3,007 | 3,007 | 3,007 | 3,007 | 3,007 | 3,007 | 3,007 | 3,007 |
| Adj. R-squared | 0.38 | 0.33 | 0.37 | 0.33 | 0.38 | 0.33 | 0.38 | 0.33 | 0.38 | 0.33 |

**Table 5**

**Robustness Tests of Credit Line's Impact on ITL Interest Spread**

This table reports robustness tests of the impact of a bundled bank credit line on ITL spreads. In Columns (1) to (4), the dependent variable is *Log (All-in-Drawn Spread)*. In Column (5), the dependent variable is *All-in-Drawn Spread* in basis points above LIBOR. In Column (1), we include two additional loan characteristics control variables: *Sponsored Loan* (=1 if a loan is sponsored; =0 otherwise), *Refinance Loan* (=1 if a loan is a refinancing loan; =0 otherwise). In Column (2), we include an additional control variable: *TLA Indicator* (=1 if there is also a Term Loan A in the same package of an ITL; =0 otherwise). In Column (3), the independent variable is the portion of credit line in a package ($ amount). In Column (4), the sample is all non-bank term loans (including ITLs and other non-bank term loans with no specific ranking). All models include the firm-by-year fixed effects and the loan purpose fixed effects. For brevity, only coefficients and t-statistics (in parenthesis) of the key independent variables are reported. Robust standard errors are clustered at the firm level. T-statistics are reported in the parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

| **Dependent Variable:** | ***Log (All-in-Drawn Spread)*** | | | | ***All-in-Drawn Spread (bps)*** |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| ***CL Indicator*** | **-0.10**** | **-0.11**** | | **-0.13***** | **-48.26***** |
| | **(-2.41)** | **(-2.57)** | | **(-3.24)** | **(-3.08)** |
| ***CL Portion of Package*** | | | **-0.23**** | | |
| | | | **(-2.13)** | | |
| *TLA Indicator* | | 0.06 | | | |
| | | (0.89) | | | |
| *Sponsored Loan* | -0.01 | | | | |
| | (-0.35) | | | | |
| *Refinancing Loan* | -0.08* | | | | |
| | (-1.84) | | | | |
| *Loan Characteristics Controls* | Yes | Yes | Yes | Yes | Yes |
| *Firm-by-Year FEs* | Yes | Yes | Yes | Yes | Yes |
| *Loan Purpose FEs* | Yes | Yes | Yes | Yes | Yes |
| Observations | 3,007 | 3,007 | 3,007 | 5,910 | 3,007 |
| Adj. R-squared | 0.33 | 0.32 | 0.32 | 0.15 | 0.33 |

**Table 6**

***CL Indicator* and Investor Demand**

This table reports tests to show that the impact of CL Indicator is not driven by investor demand. In Columns (1) and (2), the dependent variable is *Log (Time-On-Market) (Log (TOM))*. In Columns (3) to (6), the dependent variable is a dummy variable that is equal to 1 if a loan is traded in the secondary market and is equal to 0 otherwise. Columns (3) to (5) estimate Logit models. Column (6) estimates a linear probability model. All columns except Column (5) include the firm-by-year fixed effects and the loan purpose fixed effects. The sample size in Columns (3) and (4) drops because Logit estimation drops an observation when the inclusion of the fixed effects perfectly predicts the outcome in the dependent variable. Robust standard errors are clustered at the firm level, and t-statistics are reported in the parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

| **Dependent Variable:** | ***Log (TOM)*** | | ***Prob. of Trade on Secondary Market*** | | | |
|---|---|---|---|---|---|---|
| | **OLS** | **OLS** | **Logit with FEs** | **Logit with FEs** | **Logit without FEs** | **Linear Prob. Model** |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| ***CL Indicator*** | **0.19** | **0.28** | **0.45** | **0.23** | **0.10** | **0.05** |
| | **(1.33)** | **(1.49)** | **(1.22)** | **(0.58)** | **(0.91)** | **(0.69)** |
| *Lead Bank Market Share* | 0.01 | -0.06 | -0.50 | -1.02 | 0.43*** | -0.06 |
| | (0.11) | (-0.68) | (-0.50) | (-0.92) | (3.90) | (-0.71) |
| *Log (Facility Amount)* | 0.02 | 0.02 | 0.55*** | 0.55*** | 0.48*** | 0.07*** |
| | (1.20) | (0.96) | (3.24) | (2.99) | (9.23) | (3.10) |
| *Bank Relationship* | -0.40** | -0.34* | -1.17** | -1.17** | -0.10 | -0.25** |
| | (-2.21) | (-1.80) | (-2.13) | (-2.06) | (-0.86) | (-2.20) |
| *Number of Lenders* | 0.01 | 0.01 | 0.01 | 0.01 | 0.01* | 0.00* |
| | (0.90) | (1.02) | (0.92) | (0.73) | (1.68) | (1.94) |
| *Performance Pricing Indicator* | | 0.06 | | -0.42 | -0.12 | -0.04 |
| | | (0.64) | | (-0.97) | (-1.31) | (-0.69) |
| *Number of Financial Covenants* | | -0.11 | | 1.29*** | 0.06* | 0.07** |
| | | (-1.51) | | (2.92) | (1.89) | (2.03) |
| *Log (Loan Maturity)* | | 0.10 | | 1.72* | 1.09*** | 0.10** |
| | | (1.50) | | (1.72) | (8.10) | (2.17) |
| *Secured Loan* | | | | 14.34 | 0.96*** | 0.29** |
| | | | | (0.01) | (3.33) | (2.36) |
| *Firm-by-Year FE* | Yes | Yes | Yes | Yes | No | Yes |
| *Loan Purpose FE* | Yes | Yes | Yes | Yes | No | Yes |
| Observations | 1,038 | 1,038 | 323 | 323 | 3,007 | 3,007 |
| Adj./Pseudo R-Squared | 0.19 | 0.21 | 0.13 | 0.19 | 0.12 | 0.08 |

## Table 7

### The Effect of Bank Credit Line on Secondary Market Liquidity of ITL

This table reports regression results on the effect of having a bundled credit line on the secondary market bid-ask spread of traded ITLs. The dependent variable in Columns (1) to (5) is the *Annual Average Bid-Ask Spread* of traded ITLs. The dependent variable in Column (6) is the *Monthly Average Bid-Ask Spread* of traded ITLs. The key independent variable in all columns is *CL Indicator*, which is equal to one if there is a credit line in the package of the ITL and zero otherwise. The sample used in Columns (1) to (5) contains loan-trading year combinations of traded ITLs. The sample used in Column (6) contains loan-trading month combinations of traded ITLs. Column (1) reports the firm and year fixed effects model estimation results. Column (2) reports the firm-by-year fixed effects model estimation results. Column (3) uses a subsample of the first loan-trading year combinations after loan inception of traded ITLs. The sample used in Columns (4) and (5) contains the loan-trading year combinations after loan inception of a subsample of traded ITLs whose lead bank can be matched to the Call Report. Column (6) reports the firm-by-month fixed effects model estimation results. All models include the loan purpose fixed effects. In Column (4) and (5), the lead bank fixed effects or bank characteristics are also included. For brevity, firm characteristics controls are included but their coefficient are not reported in Column (1). Robust standard errors are clustered at the firm level, and t-statistics are reported in the parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

**Dependent Variable:** ***Secondary Market Bid-Ask Spread***

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| ***CL Indicator*** | **-0.08** | **-0.09*** ** | **-0.11*** | **-0.09**** | **-0.15**** | **-0.13**** |
| | **(-1.43)** | **(-2.65)** | **(-1.77)** | **(-2.31)** | **(-2.35)** | **(-1.98)** |
| *Lead Bank Market Share* | -0.02 | -0.11** | -0.17 | -0.09 | -0.26 | -0.12** |
| | (-0.29) | (-2.31) | (-1.38) | (-1.11) | (-1.19) | (-2.01) |
| *Bank Relationship* | -0.05 | -0.05*** | -0.08*** | -0.05*** | -0.00 | -0.07*** |
| | (-1.59) | (-2.99) | (-3.82) | (-2.92) | (-0.20) | (-2.86) |
| *Number of Lenders* | 0.09* | -0.00 | 0.21 | -0.01 | -0.07 | 0.01 |
| | (1.69) | (-0.03) | (1.25) | (-0.12) | (-1.03) | (0.24) |
| *Log (Facility Amount)* | 0.00** | -0.00 | 0.00 | -0.00 | -0.00 | -0.00** |
| | (2.12) | (-0.66) | (0.61) | (-0.65) | (-1.09) | (-2.01) |
| *Performance Pricing* | -0.06 | -0.06** | -0.10 | -0.05 | -0.05 | -0.03 |
| | (-0.82) | (-2.17) | (-1.48) | (-1.57) | (-0.92) | (-0.70) |
| *Number of Financial Covenants* | -0.05 | -0.04** | -0.01 | -0.04 | -0.05 | -0.11** |
| | (-1.62) | (-2.17) | (-0.24) | (-1.46) | (-1.48) | (-2.44) |
| *Log (Loan Maturity)* | 0.20** | 0.20*** | 0.09 | 0.21*** | 0.26** | 0.19*** |
| | (2.08) | (4.04) | (1.19) | (3.20) | (2.19) | (2.76) |
| *Secured Loan* | 0.12 | 0.13 | -0.02 | 0.39 | 0.43 | 0.15* |
| | (0.99) | (0.64) | (-0.23) | (1.21) | (1.09) | (1.66) |
| *Loan Age* | 0.05*** | 0.03*** | 0.01 | 0.02** | 0.03** | 0.03*** |
| | (3.30) | (4.57) | (0.09) | (2.36) | (2.12) | (3.45) |
| *Bank Leverage Ratio* | | | | | 4.34 | |
| | | | | | (1.57) | |
| *Bank Loan Loss Allowance* | | | | | 0.16 | |
| | | | | | (0.01) | |
| *Bank Size* | | | | | 0.55*** | |
| | | | | | (2.63) | |
| *Firm FEs* | Yes | No | No | No | No | No |
| *Year FEs* | Yes | No | No | No | No | No |
| *Firm-by-Year FEs* | No | Yes | Yes | Yes | Yes | No |
| *Firm-by-Month FEs* | No | No | No | No | No | Yes |
| *Loan Purpose FEs* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Lead Bank FEs* | No | No | No | Yes | Yes | No |
| Observations | 4,861 | 4,861 | 1,409 | 4,861 | 2,549 | 35,594 |
| Adj. R-squared | 0.22 | 0.11 | 0.24 | 0.16 | 0.14 | 0.09 |

**Table 8**

**Lehman Bankruptcy as a Quasi-Natural Experiment**

This table reports regression results on the effect of having a bundled credit line on the secondary market bid-ask spread of traded ITLs, using Lehman bankruptcy as a natural experiment. The dependent variable in all columns is the *Annual Average Bid-Ask Spread* of traded ITLs. *Lehman CL* is a dummy variable that equals to one if the credit line in the package had Lehman as a lender and zero otherwise. *Post 2008* is a dummy variable that equals to one if the year of trading is on or after 2009. *Lehman ITL* is a dummy variable that equals to one if the ITL also had Lehman as a lender and zero otherwise. The sample period is between 2006 and 2012. The sample used in Columns (1) and (2) consists both bundled and stand-alone ITLs. The sample used in Columns (3) and (4) consists only bundled ITLs. For brevity, only coefficients and t-statistics on the key independent variables are reported. Robust standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

| **Dependent Variable: *Annual Average Bid-Ask Spread*** | | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Lehman CL* | -0.13** | -0.12** | -0.13** | -0.12** |
| | (-2.48) | (-2.29) | (-2.29) | (-2.13) |
| ***Post 2008*Lehman CL*** | **0.20*** | **0.22*** | **0.24**** | **0.27**** |
| | **(1.81)** | **(1.88)** | **(2.07)** | **(2.23)** |
| *Lehman ITL* | | 0.13 | | 0.04 |
| | | (1.33) | | (0.24) |
| *Post 2008*Lehman ITL* | | 0.20 | | 0.47*** |
| | | (1.24) | | (3.36) |
| *Loan Characteristics Controls* | Yes | Yes | Yes | Yes |
| *Firm Characteristics Controls* | Yes | Yes | Yes | Yes |
| *Year FEs* | Yes | Yes | Yes | Yes |
| *Borrower Industry FEs* | Yes | Yes | Yes | Yes |
| *Loan Purpose FEs* | Yes | Yes | Yes | Yes |
| Observations | 1,607 | 1,607 | 1,243 | 1,243 |
| Adj. R-Squared | 0.55 | 0.55 | 0.61 | 0.61 |

## Appendix A1

### Summary Statistics of Characteristics of Loans by Frequent Borrowers

This table reports the summary statistics of loan characteristics of stand-alone ITLs and bundled ITLs issued by frequent borrowers. Frequent borrowers are firms that take out two or more different loan packages in the same year in at least one year during our sample period. The definition of ITL encompasses, based on DealScan, term loan B or below and term loan with bullet payment schedule. The sample consists of 1,082 institutional term loans issued between 1994 and 2016 by U.S. non-financial and non-utility firms with non-missing regression variables. Variable definitions are in Table 1.

**Panel A: Stand-alone ITLs**

| Variable Name | N | Mean | Median |
|---|---|---|---|
| *All-in-Drawn Spread (bps)* | 286 | 390.99 | 325.00 |
| *Log (All-in-Drawn Spread)* | 286 | 5.85 | 5.78 |
| *Lead Bank Market Share* | 286 | 0.86 | 1.00 |
| *Facility Amount ($ million)* | 286 | 569.65 | 300.00 |
| *Log (Facility Amount)* | 286 | 5.63 | 5.70 |
| *Performance Pricing* | 286 | 0.21 | 0.00 |
| *Bank Relationship* | 286 | 0.38 | 0.3 |
| *Number of Lenders* | 286 | 9.42 | 4.00 |
| *Number of Financial Covenants* | 286 | 1.89 | 2.00 |
| *Facility Maturity (Months)* | 286 | 66.04 | 70.50 |
| *Log (Maturity)* | 286 | 4.11 | 4.26 |

**Panel B: Bundled ITLs**

| Variable Name | N | Mean | Median |
|---|---|---|---|
| *All-in-Drawn Spread (bps)* | 796 | 328.23 | 300.00 |
| *Log (All-in-Drawn Spread)* | 796 | 5.72 | 5.70 |
| *Lead Bank Market Share* | 796 | 0.85 | 1.00 |
| *Facility Amount ($ million)* | 796 | 417.70 | 175.00 |
| *Log (Facility Amount)* | 796 | 5.14 | 5.17 |
| *Performance Pricing* | 796 | 0.36 | 0.00 |
| *Bank Relationship* | 796 | 0.31 | 0.00 |
| *Number of Lenders* | 796 | 10.38 | 6.00 |
| *Number of Financial Covenants* | 796 | 3.00 | 3.00 |
| *Facility Maturity (Months)* | 796 | 74.77 | 80.00 |
| *Log (Maturity)* | 796 | 4.25 | 4.38 |

## Appendix A2

### Summary Statistics of Firm Characteristics of Frequent Borrowers

This table reports summary statistics of firm characteristics of stand-alone ITLs and bundled ITLs by frequent borrower and non-frequent borrower. Frequent borrowers are firms that take out two or more different packages in the same year in at least one year during our sample period. The definition of ITL encompasses, based on DealScan, term loan B or below and term loan with bullet payment schedule. The sample consists of 1,082 institutional term loans issued between 1994 and 2016 by U.S. non-financial and non-utility firms with non-missing regression variables. Variable definitions are in Table 1.

**Panel A: Stand-alone ITLs**

| | Frequent Borrower | | | Non-Frequent Borrower | | |
|---|---|---|---|---|---|---|
| Variable Name | N | Mean | Median | N | Mean | Median |
| *Total Assets ($ million)* | 140 | 5568.04 | 1929.09 | 423 | 4170.75 | 1821.32 |
| *Log (Total Assets)* | 140 | 7.53 | 7.56 | 423 | 7.5 | 7.51 |
| *Leverage* | 140 | 0.52 | 0.49 | 423 | 0.48 | 0.44 |
| *Cash Holdings* | 140 | 0.08 | 0.04 | 423 | 0.08 | 0.05 |
| *Tangibility* | 140 | 0.29 | 0.23 | 423 | 0.34 | 0.30 |
| *ROA* | 140 | -0.02 | 0.00 | 423 | -0.01 | 0.01 |
| *Rated Dummy* | 140 | 0.76 | 1.00 | 423 | 0.73 | 1.00 |

**Panel B: Bundled ITLs**

| | Frequent Borrower | | | Non-Frequent Borrower | | |
|---|---|---|---|---|---|---|
| Variable Name | N | Mean | Median | N | Mean | Median |
| *Total Assets ($ million)* | 339 | 2730.99 | 901.91 | 1,502 | 2065.33 | 759.83 |
| *Log (Total Assets)* | 339 | 6.95 | 6.81 | 1,502 | 6.63 | 6.63 |
| *Leverage* | 339 | 0.52 | 0.50 | 1,502 | 0.46 | 0.43 |
| *Cash Holdings* | 339 | 0.06 | 0.03 | 1,502 | 0.07 | 0.04 |
| *Tangibility* | 339 | 0.29 | 0.22 | 1,502 | 0.31 | 0.26 |
| *ROA* | 339 | 0.00 | 0.02 | 1,502 | 0.01 | 0.02 |
| *Rated Dummy* | 339 | 0.68 | 1.00 | 1,502 | 0.56 | 1.00 |