How Do Lead Banks Use their Private Information about Loan Quality in the Syndicated Loan Market?

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December 2017

We formulate and test two opposing hypotheses about how lead banks in the syndicated loan market use private information about loan quality, the *Signaling Hypothesis* and *Sophisticated Syndicate Hypothesis*. We use Shared National Credit (SNC) internal loan ratings made comparable using concordance tables to measure private information. We find favorable private information is associated with higher lead bank loan retention and lower interest rate spreads for pure term loans, *ceteris paribus*, supporting the *Signaling Hypothesis*. Neither hypothesis dominates for pure revolvers. The data partially support two conjectures about the circumstances under which the two hypotheses are more likely to hold.

JEL Classification Numbers: G21, G28
Keywords: Lead bank, Private information, Syndication

The views expressed in this paper do not necessarily reflect those of the Federal Reserve Bank of Cleveland or the Federal Reserve System. We thank Rob Cote and Jenny Yam for help with data matters, Nida Davis and Mike Gibson for their guidance, and Xinming Li for help with the literature. We thank Christa Bouwman for in providing suggestions for the paper. We also thank Bolo Enkhtaivan, Matt Gustafson, Joe Haubrich, Rus Irani, Jim Kolari, Loretta Mester, and seminar participants at the Federal Reserve Bank of Cleveland, and conference participants at the Chicago Financial Institutions Conference, the Texas A&M Young Scholars Finance Consortium, the Financial Management Association conference, and the University of South Carolina Fixed Income and Financial Institutions Conference for useful comments.

This research commenced when Lakshmi Balasubramanyan was at the Federal Reserve Bank of Cleveland.

1. Introduction

Private information is the lifeblood of commercial banking. Banks are delegated by their depositors and other stakeholders to collect private information about potential borrowers to make informed credit decisions (e.g., Diamond, 1984; Ramakrishnan and Thakor, 1984). Banks generate private information about their loan customers by screening before loans are made, by monitoring after loans are made, and in some cases, from prior relationships that include lending and other connections. In the traditional originate-to-hold model – in which banks keep loans they originate entirely on their balance sheets until maturity – it is well-known that banks use this private information in their present and future dealings with the borrowers.[1] This model is typically used for small commercial loans.

In contrast, little is known about how private information is used in the alternative originate-to-distribute model, in which part or all of the loans banks originate are distributed through syndication.[2] This model is often used for medium and large commercial loans for which no one bank provides all of the financing in order to reduce credit and/or liquidity risks, comply with capital requirements and/or legal lending limits, reduce funding cost disadvantages, or other reasons.[3] Rather, the lead bank distributes part of the loans to other banks and nonbank institutions through syndication.[4]

The syndicated loan market provides an ideal setting for studying private information for three reasons. First, syndicated loans comprise a multi-trillion-dollar market in which many firms are funded. Second, a broad spectrum of borrowing firms – both public and private firms, with variety of different credit ratings as well as unrated firms, and many different firm sizes – is represented. Third and most

[1] Pioneering contributions that establish that banks can use their private information to resolve informational frictions and increase the surplus generated by the bank-borrower relationship include Greenbaum, Kanatas, and Venezia (1989), Sharpe (1990), Rajan (1992), and Boot and Thakor (1994, 2000). Most studies using U.S. data tend to find benefits for borrowers, including lower cost, lower collateral requirements, and better access to credit (e.g., Petersen and Rajan, 1994; Berger and Udell, 1995; for a review, see Degryse, Kim, and Ongena, 2009), while a more limited literature finds benefits for the banks (e.g., Bharath, Dahiya, Saunders, and Srinivasan, 2007).

[2] We study loan syndication, rather than securitization, the other main form of the originate-to-distribute model. Securitization usually involves residential mortgages, consumer loans, and other credits that typically involve relatively little private information loans. Syndicated loans better fit our focus on private information.

[3] Under legal lending limits, a U.S. bank generally cannot lend or otherwise expose more than 15% of its equity to any one borrower. This can increase to 25% if the addition is fully secured by readily marketable collateral.

[4] There may be multiple lead arrangers, but our analysis focuses on a single lead bank. The Shared National Credit (SNC) database we use has only one self-identified lead bank.

important, direct measures of private information that may be made comparable across lead banks and loans are available, allowing for meaningful econometric analysis.

The syndicated loan literature in some cases constructs indirect proxies for the *amount* of private information using publicly-available data, such as borrower's public listing status and public debt rating availability. Lead banks likely have more private information about borrowers that are not publicly listed and/or do not have public debt ratings. Using such proxies, Sufi (2007) finds that lead bank loan retention is greater when the lead bank has more private information.

It is now possible to go further by using direct comparable measures of the *favorability* of private information on individual loans made by a number of large lead banks using data provided to the Federal Reserve. These data indicate the lead banks' private evaluations of the quality of the loans.

In this paper, we address how lead banks use their private information about loan quality in the syndicated loan market. In particular, we address how the favorability of the private information about loan quality affects the lead banks' retention and pricing of the loans. The private information belongs to the lead banks, which generally do most of the screening and monitoring and often have prior relationships with the borrowers. Thus, lead banks are likely the main repositories of private information about syndicated loans, and these are the banks for which we have the private information.

A key issue for the syndicated loan market concerns the incentives of lead banks to invest in producing private information about the borrowers. From a social perspective, there may be incentives to underinvest in private information production because the lead banks receive only a portion of the loan income, and therefore may earn less than the full return on investing in private information. As shown below, our hypotheses about how the private information is used have different implications for how the lead banks may derive additional benefits from the private information and therefore have implications for this underinvestment issue.

We formulate and test two hypotheses about how the private information is used – the *Signaling Hypothesis* and *Sophisticated Syndicate Hypothesis*. Under the *Signaling Hypothesis*, lead banks retain

higher proportions of loans with more favorable private information to signal the information to potential syndicate participants that are otherwise too uninformed about loan quality to participate. Intuitively, this is similar to Leland and Pyle's (1977) separating equilibrium in which entrepreneurs with private information about project quality invest more of their own funds in projects with higher quality.[5] Signaling may be costly to the lead bank in terms of tying up funds, reducing bank liquidity, and increasing required regulatory capital, but it allows the market to clear in the presence of asymmetric information.[6] Lead banks may also signal private information through loan pricing. They may charge lower interest rate spreads to borrowers on loans with more favorable private information. This signal is costly in terms of foregone interest income, but it may effectively communicate the quality to potential syndicate members that might otherwise not participate. Thus, the *Signaling Hypothesis* predicts that lead banks with more favorable private information retain *higher proportions* and/or charge *lower spreads* to the borrowers at origination, *ceteris paribus*.

Under the *Sophisticated Syndicate Hypothesis*, signaling is unnecessary because syndicate participants are relatively sophisticated and independently divine the private information. The lead bank need not retain more of the higher quality loans, as there is no need to signal loan quality. The syndicate members demand greater shares of the higher quality loans, resulting in *lower proportions* of these loans retained by the lead banks. Additionally, under the *Sophisticated Syndicate Hypothesis*, the private information is not incorporated into the spreads because there is no need to signal it.

These hypotheses have different implications for the incentives of lead banks to invest in private information. To the extent that the *Signaling Hypothesis* holds, lead banks have more incentives to garner private information because it helps them to sell parts of the loans to participants. With no private information, it would not be possible to signal uninformed potential investors about the quality of the

[5] The *Signaling Hypothesis* is also analogous to some theories of collateral in which borrowers with favorable private information pledge collateral to signal their quality to differentiate themselves from lower-quality borrowers (e.g., Bester, 1985, 1987; Besanko and Thakor, 1987a, 1987b; Chan and Thakor, 1987; and Boot, Thakor, and Udell, 1991).
[6] Regulatory capital requirements on all commercial loans are equal, regardless of their risks.

loans and they would remain unsold. Notably, lead banks do not reap all of the benefits of the private information under the *Signaling Hypothesis* – part accrues to the syndicate participants who become more informed from the signal and part accrues to borrowers that receive lower spreads on their loans. To the extent that the *Sophisticated Syndicate Hypothesis* holds, there is less incentive for the lead banks to invest in private information because the syndicate members divine the information and purchase larger portions of the higher quality loans, taking greater shares of the returns to the private information.

The two hypotheses are not mutually exclusive – each may dominate for different sets of syndicates. We first test which of the two hypotheses empirically dominate overall by regressing the proportions of the loans retained and their interest rate spreads on variables representing the favorability of the lead banks' private information and numerous control variables. Under the *Signaling Hypothesis*, more favorable private information is associated with higher lead bank loan retention and lower interest rate spreads, while under the *Sophisticated Syndicate Hypothesis*, retention is lower and there are reductions in spreads for more favorable private information.

We also test two conjectures about which hypothesis is more likely to dominate for different syndicate types. First, we expect that the data are likely to adhere more strongly to the *Signaling Hypothesis* for "pure" term loans (loans of fixed amounts with fixed maturities) and to align relatively more with the *Sophisticated Syndicate Hypothesis* for "pure" revolvers (credits for which the borrower may draw down and repay any amount up to a fixed maximum as often as desired until maturity).[7] This is because the syndicate participants for pure revolvers are expected to be generally more sophisticated investors than those for pure term loans. Revolvers involve significant liquidity risk because it is not known when loans will be drawn down, and very large banks have comparative advantages over other loan investors in bearing such risk. They carry significant portfolios of liquid assets, they already have substantial portfolios of revolvers that they have experience in managing, and they generally create more

[7] As discussed further below, we delete "impure" loan types such as revolvers converting to term loans in order to have relatively clean samples of comparable loans.

liquidity on both absolute terms and relative to assets than smaller banks (Berger and Bouwman, 2016). As shown below, the syndicates of pure revolvers generally have much more representation of banks that are ranked highly on the Bloomberg league tables of lead banks on other loans than are the syndicates of pure term loans. This indicates more expertise in evaluating syndicated loans, which likely makes them relatively sophisticated investors. We therefore expect generally less lead bank retention and smaller interest rate spreads on pure revolvers than on pure term loans. To evaluate this, we apply the empirical tests separately to pure term loans and pure revolvers.

Our second related conjecture is that for both pure term loans and pure revolvers, the data are likely to hold more closely to the *Signaling Hypothesis* for syndicates with low proportions of banks that are ranked highly on the Bloomberg league tables, and to be relatively more consistent with the *Sophisticated Syndicate Hypothesis* for syndicates with high proportions. These expectations are based on the same logic as above – banks with high Bloomberg league table ranks are more likely to be sophisticated investors. We therefore expect generally less lead bank retention and smaller interest rate spreads on both pure term loans and pure revolvers for syndicates with high Bloomberg league table ranks. To evaluate this, for both pure term loans and pure revolvers, we use interaction terms of the private information variables with dummies for high and low syndicate proportions of banks with Bloomberg league table ranks from the prior year in the Top 3 or Top 30, with medium proportions as the excluded base case.

Our main tests are performed separately for pure term loans and pure revolvers. These loans and have very different properties and, as discussed above, very different syndicates that differ in their degree of sophistication. Our separate treatment of term loans and revolvers contrasts with most of the syndicated loan literature, which either includes term loans and revolvers in the same regressions or analyzes credits at the deal level (which may include both loan types). In either case, the studies often include a dummy for loan type, but generally do not allow the slope coefficients to differ. Our empirical

results differ substantially for the two loan types, and we obtain potentially misleading results when we experiment with combining them, justifying our separate treatment.

The data requirements to test these hypotheses are challenging. It is necessary to access lead banks' private information about loan quality. These data must also be made comparable across lead banks, which often use different internal rating scales. Fortunately, our dataset meets both requirements. We use syndicated loan data from the Shared National Credit (SNC) program. Banks participating in SNC provide regulators with "raw" internal loan ratings that reflect their private information about loan quality. Internal ratings practices differ across lead banks, and may reflect expert-based judgment, model-based assessments, or some combination of both. Most of these banks provide internal ratings on an annual basis, but a subset of 18 "expanded reporters" (described in Section 2) provide this information quarterly. Since 2011:Q1, a total of 32 SNC banks – including most Comprehensive Capital Analysis and Review (CCAR) stress test banks plus a small number of other lead banks – also provide concordance tables to the Federal Reserve (along with their Y14 reports).[8] We use these tables to map the "raw" internal loan ratings to the commonly-used Standard and Poor's (S&P) rating scale. To clarify, the concordance-mapped loan ratings are not S&P ratings, they simply use the same AAA, AA+, AA, AA-,… scale as S&P. We use the concordance-mapped internal loan ratings as lead banks' private information measures. This is validated by evidence that these concordance-mapped ratings strongly predict loan default (Gutierrez-Mangas, Ivanov, Lueck, Luo, and Nichols, 2015). Importantly, these ratings are reported by lead banks to regulators, but are not shared with syndicate participants.

The 18 expanded reporters also provide detailed quarterly information on lead bank loan retention and syndicate structure for all the SNC loans for which these banks are either lead banks or participants. Thus, our sample includes comparable lead bank private information for all syndicates in which the lead bank is one of the 32 concordance banks and at least one of the 18 expanded reporters is

[8] The Federal Reserve's CCAR assesses the capital adequacy of large, complex U.S. bank holding companies, and the practices used to manage their capital. The number of CCAR banks has generally increased over time. As of the early part of each year, there were 19 CCAR banks in 2011 and 2012, 18 in 2013, 30 in 2014, and 31 in 2015.

either the lead bank or a participant. The corresponding loan pricing information is obtained from DealScan. Our sample runs from 2011:Q1 through 2014:Q4.

We regress the proportion of the loan retained by the lead bank on the favorability of its private information about loan quality and a large number of controls and fixed effects separately for pure term loans and pure revolvers. We use a strong set of controls because the concordance-mapped loan ratings are likely highly correlated with public information about loan quality, and we want the coefficients on the concordance-mapped ratings to reflect only the effects of private information. Our control variables include reported loss given default; regulatory risk ratings; loan characteristics; the market rank and condition of the lead bank; the strength of the lead bank-borrower relationship; borrower characteristics; and borrower public bond ratings. We also include fixed effects for borrower industry and time. For our pricing analysis, we calculate interest rate spreads over LIBOR from DealScan data. The exogenous variables are identical to those for the retention regressions except that we exclude other loan characteristics, which may co-determined with the loan spreads. In a robustness check, we confirm that the results also hold when the other loan characteristics are included.

By way of preview, we find that for pure term loans, favorable private information is associated with higher loan retention and lower spreads by lead banks, consistent with the *Signaling Hypothesis*, while for pure revolvers, neither hypothesis empirically dominates. The data also provide some support for our two conjectures about differences between pure term loans and revolvers and between syndicates with less and more sophisticated participants for both credit types.

Our hypotheses and conjectures have not been investigated in the extant literature. Loan quality cannot be addressed using only DealScan dataset, which most studies of the syndicated loan market use, since DealScan contains only publicly available loan quality information (e.g., Dennis and Mullineaux, 2000; Bosch and Steffen, 2007; Champagne and Kryzanowski, 2007; Sufi, 2007; Chava and Roberts, 2008; Berndt and Gupta, 2009; Drucker and Puri, 2009; Haselmann and Wachtel, 2011; Maskara and

Mullineaux 2011, Bharath, Dahiya, and Hallak, 2013; Firestone and Rezende, 2016; Bradley and Roberts, 2015).

Other studies use the SNC dataset, but study issues other than lead bank loan retention, such as examiner-based loan ratings (Jones, Lang, and Nigro, 2005), the quality of loan monitoring (Avery, Gaul, Nakamura, and Robertson, 2012), the rise of the originate-to-distribute model (Bord and Santos, 2012), firms' propensity to refinance (Mian and Santos, 2012), the liquidity risk of banks (e.g., Bord and Santos, 2014), banks' incentives to bias internally-generated risk estimates (Plosser and Santos, 2014), the effects of monetary policy on loan risk (Aramonte, Lee, and Stebunovs, 2015), banks' use of credit default swaps versus loan sales (Hasan and Wu, 2015), and the effect of non-bank lenders on loan renegotiations (Paligorova and Santos, 2015).

The remainder of the paper is organized as follows. Section 2 describes the methodology, data, and variables. Section 3 presents the empirical results, and Section 4 concludes.

2. Methodology, Data, and Variables

2.1 Methodology for Loan Retention

To examine how the favorability of the lead bank's private information affects the proportion of the loan it retains, we use the following regression setup:

$$PROPRETAIN_{i,j,k,t} = \beta_0 + B_1\ Bank\ private\ info\ favorability_{i,j,k,t} + B_2\ Loss\ given\ default_{i,j,k,t}$$
$$+ B_3\ Regulatory\ loan\ risk\ ratings_{i,j,k,t} + B_4\ Loan\ Characteristics_{i,j,k,t}$$
$$+ B_5\ Bank\ reputation_{j,MostRecent} + B_6\ Bank\ condition_{j,t-1} + \beta_7\ Relationship\ strength_{j,k,t-1}$$
$$+ B_8\ Borrower\ characteristics_{k,t} + B_9\ Borrower\ Industry\ FE_{k,t}$$
$$+ B_{10}\ Borrower\ Public\ Ratings_{k,t} + B_{11}\ Time\ FE_t + e1_{i,j,k,t} \qquad (1)$$

The dependent variable is the proportion of loan *i* retained by lead bank *j* to borrower *k* in quarter *t* in which the loan is originated. The key independent variables capture the bank's private information favorability and are measured by concordance-mapped internal loan ratings, discussed further in Section 2.4.3. Because such ratings are likely highly correlated with publicly-available loan quality information,

we include a strong set of controls to try to ensure that the coefficients on the internal ratings reflect as closely as possible only the effects of the private information. Equation (1) includes several sets of controls (described in Section 2.4.4): loss given default, regulatory loan risk ratings, loan characteristics, bank reputation, bank condition, relationship strength, borrower characteristics, borrower industry fixed effects, borrower public ratings, and time fixed effects.

Our focus is on B_1, the net effect of the two competing hypotheses. Under the *Signaling Hypothesis*, the B_1 coefficients are more positive for more favorable ratings (lead banks keep more when they have more favorable private information to signal), while under the *Sophisticated Syndicate Hypothesis*, the B_1 coefficients are more negative for more favorable ratings (lead banks keep less when they have more favorable private information because of greater demand from participants).

2.2 Methodology for Loan Pricing

To examine how the favorability of the lead bank's private information affects the loan spread, we use the following regression setup:

$$SPREAD_{i,j,k,t} = \gamma_0 + G_1\ Bank\ private\ info\ favorability_{i,j,k,t} + G_2\ Loss\ given\ default_{i,j,k,t}$$
$$+ G_3\ Regulatory\ loan\ risk\ ratings_{i,j,k,t} + G_5\ Bank\ reputation_{j,MostRecent}$$
$$+ G_6\ Bank\ condition_{j,t-1} + G_7\ Relationship\ strength_{j,k,t-1}$$
$$+ G_8\ Borrower\ characteristics_{k,t} + G_9\ Borrower\ Industry\ FE_{k,t}$$
$$+ G_{10}\ Borrower\ Public\ Ratings_{k,t} + G_{11}\ Time\ FE_t + e2_{i,j,k,t} \qquad (2)$$

The dependent variable is the interest rate spread relative to LIBOR of loan *i* retained by lead bank *j* to borrower *k* in quarter *t* in which the loan is originated. Again, the key independent variables capture the bank's private information and are measured by the bank's internal loan ratings. Equation (2) includes the same set of control variables as Equation (1), with the exception of the loan characteristics, although as noted, the findings are robust to inclusion of these characteristics. Our focus is on G_1, which reflects whether and how private information is priced into the loan. Under the *Signaling*

Hypothesis, the G_1 coefficients are more negative for more favorable ratings (lead banks signal higher quality with lower spreads when they have more favorable private information), while these coefficients are zero under the *Sophisticated Syndicate Hypothesis* (lead banks need not signal).

2.3 Methodology for Second Conjecture – Loan Retention

$$PROPRETAIN_{i,j,k,t} = \mu_0 + M_{11}\ Bank\ private\ info\ favorability_{i,j,k,t} * League\ Table\ Proportion\ HIGH$$
$$+ M_{12}\ Bank\ private\ info\ favorability_{i,j,k,t} * League\ Table\ Proportion\ LOW$$
$$+ M_{13}\ League\ Table\ Proportion\ HIGH + M_{14}\ League\ Table\ Proportion\ LOW$$
$$+ M_2\ Loss\ given\ default_{i,j,k,t} + M_3\ Regulatory\ loan\ risk\ ratings_{i,j,k,t}$$
$$+ M_4\ Loan\ Characteristics_{i,j,k,t} + M_5\ Bank\ reputation_{j,MostRecent} + M_6\ Bank\ condition_{j,t-1}$$
$$+ M_7\ Relationship\ strength_{j,k,t-1} + M_8\ Borrower\ characteristics_{k,t} + M_9\ Borrower\ Industry\ FE_{k,t}$$
$$+ M_{10}\ Borrower\ Public\ Ratings_{k,t} + M_{11}\ Time\ FE_t + e3_{i,j,k,t} \qquad (3)$$

To test the impact the presence of sophisticated investors may have on loan retention, we create dummies *League Table Proportion HIGH* and *League Table Proportion LOW* indicating if the syndicate has a high or low proportion of sophisticated investors, respectively. The cutoffs for high and low are based on syndicate proportions of banks with Bloomberg league table ranks from the prior year in the Top 3 or Top 30. The exact cutoffs are discussed in Subsection 2.6.4 below. We regress the proportion retained against our internal loan rating variables interacted with these high and low sophisticated syndicate proportion dummies (with medium excluded), these dummies uninteracted, and our full set of control variables.

2.4 Methodology for Second Conjecture – Loan Pricing

$$SPREAD_{i,j,k,t} = \theta_0 + T_{11}\ Bank\ private\ info\ favorability_{i,j,k,t} * League\ Table\ Proportion\ HIGH$$
$$+ T_{12}\ Bank\ private\ info\ favorability_{i,j,k,t} * League\ Table\ Proportion\ LOW$$
$$+ T_{13}\ League\ Table\ Proportion\ HIGH + T_{14}\ League\ Table\ Proportion\ LOW$$
$$+ T_2\ Loss\ given\ default_{i,j,k,t} + T_3\ Regulatory\ loan\ risk\ ratings_{i,j,k,t} + T_5\ Bank\ reputation_{j,MostRecent}$$
$$+ T_6\ Bank\ condition_{j,t-1} + T_7\ Relationship\ strength_{j,k,t-1}$$
$$+ T_8\ Borrower\ characteristics_{k,t} + T_9\ Borrower\ Industry\ FE_{k,t}$$
$$+ T_{10}\ Borrower\ Public\ Ratings_{k,t} + T_{11}\ Time\ FE_t + e4_{i,j,k,t} \qquad (4)$$

To test the impact of the presence sophisticated investors may have on the interest rate spread, we regress the spread on dummies indicating if the syndicate has a high or low proportion of sophisticated investors and interactions of these dummies with the internal loan ratings. We again base the high and low cutoffs on the syndicate proportions of banks with Bloomberg league table ranks from the prior year in the Top 3 or Top 30, this time using statistics from the pricing sample.

2.5 Sample Banks and Loans

Our primary data source is the Shared National Credit (SNC) data. The SNC program was set up by bank regulators in 1977 to provide an efficient and consistent review of the largest syndicated loans.[9] The lead bank reports detailed information on loans that meet certain criteria. The rules changed considerably in December 2009 for 18 banks transitioning to adopt Basel II.[10] These banks were designated as "expanded reporters," and have since been required to report more information on a quarterly basis. Table 1 highlights differences in reporting requirements of basic reporters and expanded reporters. Important for our purposes, the expanded reporter information contains data on all SNC syndicates for which these expanded reporters are either lead banks or participants.

From 2011:Q1 onward, 32 lead banks have been required to submit concordance tables along with their Y14 reports. These tables can be used to convert "raw" internal loan ratings to ratings that are comparable across lead banks. Because our tests require information on the syndicates from the SNC expanded reporters dataset and internal loan ratings which are standardized using the concordance tables, our sample contains loan syndicates for which the lead bank is one of the 32 concordance banks and at least one of the 18 expanded reporters is either the lead bank or a participant.

The SNC database includes information on different types of term loans, lines of credit (revolvers and non-revolving credit lines), and other loans. To facilitate apples-to-apples comparisons, we focus

[9] The SNC program is governed jointly by the three federal banking agencies, the Federal Reserve System, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency.

[10] Basel II was never fully implemented in the U.S. The larger, internationally active U.S. banks were transitioning to Basel II when the subprime lending crisis hit. Basel II was essentially rendered inactive in the U.S. by the Dodd-Frank Act, which forbids the use of credit ratings in U.S. regulations.

on pure term loans (3,056 cases) and pure revolvers (6,477 cases) in our main regressions and eliminate other types of term loans, revolvers, and other loans.[11] As shown below, when all the syndicated loans are pooled, as is common in the literature, potentially misleading findings occur.[12]

Since the SNC data does not contain loan pricing information, we merge pricing information from Thomson Reuters' DealScan database into our sample to test the loan spread implications of the hypotheses. Because the SNC and DealScan databases lack a common identifier, we use a Levenshtein algorithm to match borrower names in SNC to borrower names in DealScan. Any unmatched borrowers in our SNC sample are hand-checked against the DealScan database. For matched borrowers, we merge loan pricing information from DealScan into our SNC sample based on loan origination date, maturity date, commitment value, and loan type. Of our SNC samples, we match 1,624 pure term loans and 3,720 pure revolvers to DealScan to form our pricing equation samples.

2.6 Regression Variables

Table 2 Panel A provides definitions, mnemonics, and data sources for the regression variables. Table 2, Panels B through E relate to the retention equations. Panel B displays the summary statistics for all the variables used in the retention equations separately for pure term loans and pure revolvers. Panel C shows the proportions retained by coarse internal loan rating (explained below) and Panel D shows the proportions retained over time. Panel E shows the numbers of distinct borrowers, total number of loans, and the number of distinct lead agents for the retention equations.

[11] We remove several types of term loans: Term Loan A tranches (generally amortizing loans that are largely syndicated to banks: 149 cases); Term Loan B tranches (typically loans with longer maturities than Term Loan A tranches, with bullet payments, and syndicated to institutional investors: 191 cases); Term Loan C tranches (similar to Term Loan B tranches but with longer maturities: 14 cases); bridge term loans (temporary financing for up to one year: 7 cases); asset-based term loans (loans secured by assets: 5 cases); and debtor-in-possession term loans (financing arranged while going through the Chapter 11 bankruptcy process: 1 case). We also discard various types of credit lines: asset-based revolvers (546 cases); revolvers converting to term loans (208 cases); debtor-in-possession revolvers (3 cases); non-revolving lines of credit (737); and non-revolving lines of credit that convert to term loans (133 cases). Finally, we delete other loans (487 cases). These other loan types are removed because they may have different retention rates and pricing for reasons independent of private information,

[12] Exceptions in the literature are Berger and Udell (1995), Shockley and Thakor (1997), and Sufi (2009), who examine lines of credit, which include both pure revolvers and other lines of credit.

Table 2, Panel F through I relate to the pricing equations. Panel F displays the summary statistics for all the variables used in the pricing regressions separately for pure term loans and pure revolvers. Panel G shows the interest rate spread by coarse internal loan rating, and Panel H shows the interest rate spread over time. Finally, Panel I shows the number of distinct borrowers, the number of loans, and the number of distinct lead agents for the pricing equations.

2.6.1 Dependent Variables

The first dependent variable is the proportion of the loan retained by the lead bank at the end of the quarter of origination. Since sample banks are required to report data on a consolidated basis, we aggregate each bank's loan proportion up to the highest holder in the bank holding company (BHC) and assign that as the lead bank's total exposure for that loan. This avoids artificial changes in loan retention that might arise if one entity formally acts as the lead arranger while another entity in the same BHC takes part of the loan on its books.[13] The mean proportion retained for pure term loans is 24.7 percent while that for pure revolvers is 25 percent. The second dependent variable is the basis point spread relative to LIBOR. The mean interest rate spread for pure term loans is 3.3 percent while that for revolvers is 2.2 percent.

2.6.2 Key Independent Variables

The key independent variables capture the lead bank's private information favorability about the loan. As discussed above, we use concordance-mapped ratings – the bank's raw internal ratings converted to the S&P scale using the bank's concordance table. Three hypothetical concordance tables are given in Table 3 Panels A, B, and C, illustrating some of the variation in the raw ratings scales and how they map into the S&P scale. In reality, there are many more different scales. The bank in Panel A uses an alphanumeric scale for its raw internal ratings, and the banks in Panels B and C use purely numeric and purely alphabetic raw internal ratings, respectively. The bank in Panel A has only an 11-point scale and

[13] To ensure there are no aggregation errors, we drop loans from the sample if the sum of the dollar amounts held by all syndicate members combined differs from the total loan amount by more than $500.

its concordance mapping only matches the main letters of the S&P scale, with no pluses or minuses. Comparatively, the bank in Panel B has an 18-point scale and its corresponding mapping includes both the main letters of the S&P scale and includes pluses and minuses. Finally, the bank in Panel C uses a 26-point scale that maps into all the S&P ratings.

The main regressions use five coarse categories for the concordance-mapped loan ratings: high investment grade ("HIG:" internal rating of A- to AAA), low investment grade ("LIG:" BBB- to BBB+), high sub-investment grade ("HSG:" BB- to BB+), low sub-investment grade ("LSG:" D to B+), and unrated. The unrated dummy is omitted from the regressions to avoid perfect collinearity (but the loans are included). Robustness checks use granular ratings ranging from AAA to D and unrated, with unrated again being the omitted category. We prefer the coarse ratings because there are very few loans in some of the granular categories.[14] For pure term loans, 3.8 percent are HIG, 17 percent are LIG, 53.4 percent are HSG, 13.4 percent are LSG and 12.6 are not rated. For pure revolvers, 13 percent are HIG, 26.2 percent are LIG, 45.4 percent are HSG, 14.1 percent are LSG and 1.2 percent are not rated.

2.6.3. Control Variables

Loss given default (LGD) variables. We include the loan's expected LGD as provided by the bank and a dummy = 1 if the LGD is available. LGD is not necessarily comparable across banks, since banks may differ in their degree of conservatism. For the retention equations, LGD information is only available for 55 percent of the pure term loans and 71 percent of the revolvers. For the pricing equations, LGD information is available for 56 percent of the pure term loans and 75 percent of the pure revolvers. The dummy accounts for the average difference in loan retention between banks that have LGD available and those that do not. Inclusion of the dummy ensures that observations with missing information do not drop out of the regressions.

[14] It is critical to our tests that the standardized loan ratings are not only comparable across lead banks, but that they are confidential to these banks. Otherwise, they would not be private information for which our hypotheses are relevant. The internal ratings are proprietary information and cannot be shared with others, so the information is confidential.

Regulatory risk ratings. Banks are required by regulators to assign loans to one or more of five regulatory risk ratings: (1) pass: no potential weaknesses that may lead to future repayment problems or the bank holds the loan in a for-sale or trading account; (2) special mention: potential weaknesses that may lead to future repayment problems; (3) substandard: inadequately protected and there is a distinct possibility that the bank will sustain some future losses; (4) doubtful: inadequately protected and repayment in full is highly questionable; and (5) loss: uncollectable. These ratings are reviewed by regulators during bank examinations and adjusted if the regulator and bank ratings do not agree. The five variables capture the proportion of a loan that is assigned to each category, although in most cases, the entire loan is assigned to just one category. We omit Pass to avoid perfect collinearity.

Loan characteristics. For our loan retention hypothesis, we include the natural log of facility size ($ million), the natural log of maturity, and five loan purpose variables (general corporate, acquisition financing, debt refinancing, working capital, and other (omitted from regressions to avoid perfect collinearity). We also include a dummy to indicate if the loan is a packaged loan (a loan originated concurrently with other loans for the same borrower). As noted above, we exclude the loan characteristic controls from our pricing equations as potentially endogenous codetermined variables.

Bank market position variables. Market position is proxied by the lead bank's rank in the U.S. syndicated loans league table in the previous year as identified by Bloomberg. These league tables rank the top 30 banks in terms of dollar volume of syndicated loans originated by each bank. We include dummies for the top 3 banks and the next 27 banks.

Bank condition variables. To control for bank condition, we include the equity capital ratio, a bank liquidity ratio, and the allowance for loan and lease losses ratio, again at the highest holder level. For domestic BHCs, data are obtained from the Consolidated Statements for Holding Companies (FR-Y9C). For foreign banking organizations, we use quarterly financial reports from Bloomberg, since the FR-Y9C has only the U.S. information of these organizations.

Relationship strength. To measure relationship strength, we focus on the SNC loans obtained by the borrower in the previous five years. If all of those loans were provided by the same lead bank, as long as it has at least one prior loan, the bank-borrower relationship is considered strong.

Borrower characteristics. We include borrower leverage, profitability, and size. This information is available for publicly-traded domestic firms from Compustat and for foreign firms from Bloomberg.[15] We also include a dummy for if the firm is publicly traded.[16] This dummy accounts for the average difference in loan retention between private and publicly-traded firms, and allows us to include in the regressions private firms with missing information on the borrower characteristics. To ensure that this procedure does not significantly bias our results, we conduct robustness checks in Table 7 and Table 9 below in which private and publicly-traded are examined in separate regressions and the main findings continue to hold.

Borrower public ratings. We use coarse or granular senior public debt ratings, corresponding with whether the concordance-mapped internal loan ratings are coarse or granular, respectively. We also add a borrower debt public rating available flag. We conduct additional robustness checks in Table 7 below in which firms without and with public debt ratings are examined in separate regressions and the main findings continue to hold.

2.6.4. Additional Variables for Testing our Second Conjecture

As discussed above, our second conjecture is that for both pure term loans and pure revolvers, the data are likely to hold more closely to the *Signaling Hypothesis* for syndicates with low proportions of banks with high Bloomberg league table ranks, and to be relatively more consistent with the

[15] Our Compustat subscription is restricted to domestic entities.

[16] To identify public borrowers, we employ a three-step approach. First, we try to match each sample firm's tax identification number to Compustat. Second, we try to match unmatched firms with Compustat based on company name and NAICS code using the COMPGED function in SAS. This function returns the generalized edit distance between two strings. The lower the score, the higher the likelihood that the name is a match. Firms that we are able to match in this step generally have low scores (up to 300) for both name and NAICS code. Remaining firms are hand matched.

Sophisticated Syndicate Hypothesis for syndicates with high proportions of ranked banks. We use the *League Table Proportion HIGH* and *League Table Proportion LOW* dummies described above for this.

Under OTHER VARIABLES in Table 2 Panel B, we show the summary statistics for the retention dataset for PARTICIPTOP3 and PARTICIPTOP30 – the proportions of the syndicate participant dollars invested by Bloomberg league table Top 3 and Top 30 lead banks from the prior year, respectively – for both pure term loan and pure revolver retention samples. As shown, the revolver syndicates tend to have much higher proportions of the more sophisticated participants with high ranks. We construct the *League Table Proportion HIGH* and *League Table Proportion LOW* dummies for the retention tests of the second conjecture based on whether the syndicate proportions are above the means for the pure revolver sample and equal to or below the means for the pure term loan sample. Thus, *League Table Proportion HIGH* equals one if PARTICIPTOP3 or PARTICIPTOP30 > 0.130 or > 0.510, respectively, and *League Table Proportion LOW* equals one if PARTICIPTOP3 or PARTICIPTOP30 ≤ 0.076 or ≤ 0.329, respectively, depending on whether Top 3 or Top 30 is considered sophisticated.

We construct the *League Table Proportion HIGH* and *League Table Proportion LOW* dummies analogously for the pricing tests of the second conjecture based on the summary statistics for PARTICIPTOP3 or PARTICIPTOP30 for the pricing analysis dataset shown in Table 2 Panel F. Thus, for these tests, *League Table Proportion HIGH* equals one if PARTICIPTOP3 or PARTICIPTOP30 > 0.138 or > 0.544, respectively, and *League Table Proportion LOW* equals one if PARTICIPTOP3 or PARTICIPTOP30 ≤ 0.075 or ≤ 0.337, respectively, depending on whether Top 3 or Top 30 is considered sophisticated.

3. Regression Results

This section tests our hypotheses, presents robustness checks, and shows some additional results.

3.1 Main Results for Retention Analysis

Table 4 examines whether lead banks retain more or less of loans when their private information is more favorable, i.e., when the loans are rated as higher quality. We regress the proportion of the loan retained

by the lead bank on our key private information variables about the loan in coarse form – i.e., grouped into high investment grade (LOANRATINGHIG), low investment grade (LOANRATINGLIG), high sub-investment grade (LOANRATINGHSG), low sub-investment grade (LOANRATINGLSG), and the excluded LOANNOTRATED category. All regressions include time fixed effects and different sets of control variables from Equation (1).

Panel A gives the results for pure term loans, Panel B shows findings for pure revolvers, and Panel C essentially replicates the approach in the literature by including all syndicated loans (pure and impure term loans and revolvers, as well as other loans) in the same regression, with additional dummies for pure term loans and pure revolvers. In Panels A and B, Column (1) includes as controls only the other private information variables – the loss given default variables plus regulatory risk ratings. Subsequent columns add loan characteristics (Column (2)), the lead bank's market rank (Column (3)), the lead bank's condition (Column (4)), bank-borrower relationship strength (Column (5)), borrower characteristics and industry fixed effects (Column (6)), and borrower public debt ratings (Column (7)). In the interest of brevity, coefficient estimates for time and borrower industry fixed effects and data availability flags for loss given default, borrower publicly listed, and publicly rated are not shown. Panel C includes only full specifications, replicating Columns (7) from Panels A and B for easy comparison of results for pure term loans, pure revolvers, and all syndicated loans combined.

The results for pure term loans in Table 4 Panel A are consistent with the *Signaling Hypothesis*. The loan rating coefficients suggest that lead banks retain more of rated loans than non-rated loans, the omitted base category, across all specifications. Among the rated loans, they also generally retain more of those that are more highly rated. In Column (7) with all of the controls included, the effects are monotonic and all of the coefficients are statistically significant – the higher the private loan rating, the higher the loan retention – providing statistically significant evidence in favor of the *Signaling Hypothesis*. The results are also economically significant. The coefficient of 0.078 on LOANRATINGHIG in Column (7) suggests that lead banks hold 7.8% more of the loans with the highest

private rating relative to unrated loans, raising the retention rate by almost one-third relative to the mean of 24.7% shown in Table 2 Panel B. The difference between the highest and the lowest of the rated loans – i.e., the difference between the coefficients on LOANRATINGHIG and LOANRATINGLSG – is also a statistically and economically significant 3.8% (0.078 – 0.040).

Looking next at the results for pure revolvers in Table 4 Panel B, there are no statistically or economically significant effects of the coarse loan ratings variables on lead bank loan retention in the full specification in column (7), consistent with neither the *Signaling Hypothesis* nor the *Sophisticated Syndicate Hypothesis* for pure revolvers. The only private loan ratings that are statistically or economically significant are in Column (1), which has the fewest control variables, and these coefficients are not mutually consistent.

The results are also consistent with our first conjecture that the data would adhere more to the *Signaling Hypothesis* for pure term loans – the *Signaling Hypothesis* empirically dominates for these loans – and adhere relatively more with the *Sophisticated Syndicate Hypothesis* for pure revolvers – neither hypothesis dominates for these loans. As discussed above, the syndicates for pure revolvers have higher representations of relatively sophisticated top Bloomberg league table lead banks. As shown in Table 2 Panel B, for pure term loan syndicates, PARTICIPTOP30 has mean and median of 32.9% and 31.6%, respectively, versus 51.0% and 56.8%, respectively, for pure revolver syndicates.

Turning to the effects of the control variables on pure term loan retention in Table 4 Panel A Column (7), LOANLGD has a negative, but only marginally statistically significant coefficient, suggesting a lower retention of lower quality loans, consistent with the results for loan ratings. For the regulatory risk ratings, SUBSTANDARD and DOUBTFUL loans are retained significantly less than PASS loans, again suggesting that lead banks retain more of higher quality loans. Loan size has a negative effect, possibly because the lead bank more often runs into concentration risk problems or legal lending limits in retaining more of larger loans, or because large loans are less informationally opaque. Lead banks also appear to retain less of longer maturity loans, possibly because they are riskier, *ceteris*

paribus. The coefficients of the loan purpose variables are all negative and statistically significant, suggesting that lead banks retain more of "other" loans, which is difficult to interpret. Lead banks that are in the top 3 in the league tables retain less of term loans, possibly because their ranking assures syndicate members of loan quality, reducing the amount they need to hold to signal loan quality. Lead banks with higher liquidity ratios retain more of the loans, possibly reflecting more capacity to keep loans on the balance sheet. Banks with higher loan loss reserves retain much more of the loans they originate, possibly because high reserves hurt their reputations for making quality loans, reducing demand for their syndicated loans. If the lead bank has a strong relationship with the borrower, the bank retains less, possibly because of a certification effect of the quality of the loan. Borrower characteristics and public ratings are sometimes insignificant and of conflicting signs, making them difficult to interpret. Nonetheless, it is important to include a strong set of controls for public information about the borrowers in the regressions, so that we can interpret our main results for the effects of banks' internal ratings as reflecting the effects of private information.

Most control variable results are of the same sign but are less often statistically significant for revolvers in Panel B Column (7), but there are notable exceptions. The lead bank condition variables suggest that those with higher capital ratios retain more, rather than the more liquid banks, although the logic behind the findings is essentially the same. Borrower size becomes negative and statistically significant, but small in magnitude, and the borrower public rating variables are mixed.

As indicated, Panel C shows the full specification including all of the syndicated loans in Column (3) compared with the pure term loans and pure revolvers in Columns (1) and (2), respectively, repeated from Columns (7) in Panels A and B, respectively. Column (3) has 12,011 total loan observations, almost four times as many as the pure term loans in Column (1) and almost twice the total for pure revolvers in Column (2), yet the findings for the full loan sample are largely dominated by the pure term loan subsample. The coefficients on the loan ratings are all positive and statistically and economically significant for the full sample in Column (3), and generally declining as the favorability of the private

information decreases, consistent with the pure term loan results. These results suggest that if we had followed the usual procedure of including all the loans in our main tests, we would have concluded that the *Signaling Hypothesis* was dominant overall, which is not correct for the pure revolvers, which account for most of the loans. Moreover, our tests of our first conjecture about different results for the two credit types would not be possible.

3.2 Robustness Check for Retention Analysis Excluding Unrated Loans

To check robustness, we rerun the full specifications in Table 5, but exclude loans that are not rated and use the low sub-investment grade loan ratings as the omitted base category. For brevity, we show only the coefficients for the concordance-mapped internal loan ratings and suppress the coefficients on the controls. The coefficient on LOANRATINGHIG in the full specification for term loans in Table 5 Column (1) is a statistically and economically significant 0.039. This suggests that lead banks retain 3.9% more of loans rated as high investment grade than low sub-investment grade, *ceteris paribus*, almost the same as the 3.8% difference between the high investment grade and low sub-investment grade coefficients in the main specification in Table 4 Panel A. The results are again much different for the pure revolvers in Column (2), showing no significance for the LOANRATINGHIG coefficient and negative and statistically significant coefficients for the other two ratings.

3.3 Robustness Check for Retention Analysis Using Granular Loan Ratings

For robustness, Table 6 Column (1) and (2) show the findings for pure term loans and pure revolvers, respectively, using granular loan ratings. The results are largely consistent with those for the coarse ratings in Table 4. In Panel A, all of the ratings from AAA to B are positive and statistically significant and monotonically decreasing, with the sole exception of the AA rating, which makes up only one percent of the observations. These results support the main findings and are again consistent with *Signaling Hypothesis* dominating for pure term loans. The lower ratings – all of which have one percent or fewer of the observations – are somewhat mixed. In Panel B, none of the loan ratings have statistically significant coefficients, with the sole exception of the marginally significant CC rating, which represents

less than one percent of the observations. Again, the findings suggest that neither hypothesis empirically dominates for pure revolvers. In the remainder of the results, we focus on the coarse ratings because of the very few observations in some of the granular ratings categories.

3.4 Robustness Checks for Retention Analysis Using Subsamples

As discussed above, we include both private and publicly-traded firms in our main analysis in Table 4 and specify a publicly-traded dummy to account for the average difference between the two groups. Similarly, Table 4 also includes firms both without and with public bond ratings. Here, we ensure that these procedures do not significantly bias our results. Table 7, Columns (1) – (4) show the results of regressions of the private and publicly-traded groups separately, and Columns (5) – (8) show the findings for firms without and with public bond ratings. In all cases, we use the most complete possible specifications from Table 4. The subsample results confirm our main findings – for pure term loans, more favorable private information is associated with more lead bank retention, while there is no significant relation for pure revolvers. The only notable difference from our main findings is that in Column (6), only the most favorable coarse ratings has a positive and statistically significant effect, likely reflecting the very small subsample size for firms with public bond ratings.

3.5 Main Results for Pricing Analyses

Table 8 examines whether lead banks' private information is priced into the loan interest rate spreads using Equation (2) above. Panels A and B give the results for pure term loans and pure revolvers, respectively. The interest rate spread is regressed on our key private information variables about the loan in coarse form, with all the controls and fixed effects from Equation (1) with the exception of loan characteristics, which may be endogenously codetermined with the spreads. Nonetheless, when loan characteristics are included in untabulated regressions, the main results still hold.

The results in Panel A suggest that for pure term loans, some of the private information is incorporated into the spreads – more favorable private information is associated with lower spreads after controlling for indicators of public information. This is consistent with our retention results above, again

suggesting that the *Signaling Hypothesis* empirically dominates overall for pure term loans. The coefficient of -0.017 on LOANRATINGHIG in the full specification in Column (6) suggests that lead banks charge a spread of 1.7 percentage points less for loans with high investment grade rating than unrated loans, which is economically as well as statistically significant, given that the mean spread from Table 2 Panel F is 3.3 percent.

In Panel B Column (6), the narrowing of the spread for pure revolvers is much less than observed for pure term loans. The statistically significant coefficient of -0.008 on LOANRATINGHIG in Column (6) is only about half of that for term loans, and the remaining coefficients are either marginally significant or go in the opposite direction. Consistent with our retention results, these findings suggest that there is no strong domination of either hypothesis for pure revolvers, and are again consistent with our first conjecture that the data would adhere more with the *Signaling Hypothesis* for pure term loans and adhere relatively more with the *Sophisticated Syndicate Hypothesis* for pure revolvers.

3.6 Robustness Checks for Pricing Analysis Using Subsamples

Similar to Table 7, Table 9, Columns (1) – (4) show the results of pricing regressions for private and publicly-traded groups separately, and Columns (5) – (8) show the findings for firms without and with public bond ratings. The subsample results confirm our main findings. The results are similar between private and publicly-traded firms and between those without and with public bond ratings and the effects of favorable private information on spreads is again about twice as large for pure term loans than for pure revolvers.

3.7 Tests of the Second Conjecture

In our final set of tests, we use the retention and loan spread data to test our second conjecture that for both pure term loans and pure revolvers, the data are likely to hold more closely to the *Signaling Hypothesis* for syndicates with low proportions of banks that are ranked highly on the Bloomberg league tables, and to be relatively more consistent with the *Sophisticated Syndicate Hypothesis* for syndicates with high proportions.

In Table 10, we rerun the retention regressions using interaction terms of the private information variables with dummies for high and low syndicate proportions of banks with high Bloomberg league table ranks from the prior year in the Top 3 or Top 30, with medium proportions as the excluded base case. Our full set of control variables are included as well. Columns (1) and (3) show the results for PARTCIPTOP3, while Columns (2) and (4) show the results for PARTICIPTOP30 for pure term loans and pure revolvers. The results are partially consistent with our second conjecture. They indicate that the *Signaling Hypothesis* dominates for pure term loans when the syndicate is relatively unsophisticated (LOW interactions), consistent with the second conjecture. However, there is little evidence suggesting that the *Signaling Hypothesis* dominates for pure revolvers when the syndicate is relatively unsophisticated or that the *Sophisticated Syndicate Hypothesis* dominates for either credit type when the syndicate is relatively sophisticated (HIGH interactions).

Table 11 shows the corresponding analysis for spreads, and the results are again partially consistent with our second conjecture. The interactions with the LOW dummies in Columns (1), (2), and (3) are mostly negative, statistically significant, and greater in magnitude for the higher ratings, consistent with the *Signaling Hypothesis* for both credit types. The interactions with the HIGH dummies are mostly small and statistically insignificant.

4. Conclusion

In the syndicated loan market, lead banks generate private information about loan quality, but little is known about how they use this information. We use a unique dataset in which we are able to compute comparable measures of the favorability of private information about the quality of individual loans made by different lead banks. We formulate and test hypotheses about how this favorability affects the proportion of the loan retained and the interest rate spread on the loan by the lead bank. Under the *Signaling Hypothesis*, potential syndicate participants are relatively uninformed, so lead banks may retain more and charge lower interest rate spreads on loans for which their private information is more

favorable to signal the quality to potential participants. Under the opposing *Sophisticated Syndicate Hypothesis*, the potential participants are sophisticated, and can independently divine the private information, so there is no need to signal loan quality with higher retention and/or lower spreads. The syndicate members demand greater shares of the higher quality loans, resulting in *less* lead bank retention of these loans.

We also differentiate the results between "pure" term loans (fixed amounts with fixed maturities) and "pure" revolvers (borrower may draw down and repay until maturity) and test two conjectures about the circumstances under which the different hypotheses are more likely to hold. The first is that the data are likely to adhere more strongly to the *Signaling Hypothesis* for pure term loans and to align relatively more with the *Sophisticated Syndicate Hypothesis* for pure revolvers because syndicate participants for pure revolvers are more often large banks that are lead banks on other loans. The second is that for both pure term loans and pure revolvers, the data are likely to hold more closely to the *Signaling Hypothesis* for syndicates with low proportions of sophisticated banks that are ranked highly on the Bloomberg league tables, and to be relatively more consistent with the *Sophisticated Syndicate Hypothesis* for syndicates with high proportions.

We find that for pure term loans, favorable private information is associated with higher loan retention and lower spreads by lead banks, consistent with the *Signaling Hypothesis*, while for pure revolvers, neither hypothesis empirically dominates. The data also provide at least some support for the two conjectures – the *Signaling Hypothesis* is relatively stronger for pure term loans and for syndicates with less participation by sophisticated banks that are ranked highly on the Bloomberg league tables, and the *Sophisticated Syndicate Hypothesis* is relatively stronger for pure revolvers and for syndicates with more participation by sophisticated banks with high Bloomberg ranks.

The findings also have social implications regarding the issue of lead bank incentives to invest in producing private information. The originate-to-distribute model involves an inherent incentive to underinvest in producing private information because much of the benefits accrue to participants that

buy parts of the loans in the syndicated loan market or investors that buy securities backed by loan revenues in the securitization market. This problem may be mitigated to some degree by originating banks signaling some of the private information to the purchasers of the loans or securities backed by loan revenues. Our findings that the *Signaling Hypothesis* holds for pure term loans overall and for syndicates with relatively low representation of banks ranked highly on the Bloomberg league tables suggest that this incentive to underinvest in private information production may be mitigated to some degree on some of these loans. The signaling is costly to the lead banks on these loans in terms of tying up funds, reducing bank liquidity, increasing required regulatory capital, and receiving lower interest income on the higher quality loans, but it allows the market to clear in the presence of asymmetric information and gives them more of the benefits of investing in private information.

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Table 1: SNC Reporting Requirements for Basic Reporters and Expanded Reporters

This table shows the Shared National Credit (SNC) annual reporting requirements of the original program for all reporters set up in 1977, requirements which continue currently for basic reporters. The table also shows the quarterly reporting requirements for starting in December 2009 for the 18 expanded reporters, banks that were transitioning to Basel II at that time.

	Rules of the original program (which continue currently for basic reporters)	**Rules for the 18 expanded reporters**
Minimum aggregate loan size	$20 million	$0
Syndicate composition requirements	Contains ≥ 3 unaffiliated federally supervised institutions	Contains ≥ 2 financial entities
Reporting frequency	Annually	Quarterly
Reporting requirements	1. Bank data 2. Borrower data 3. Loan data 4. Participant data 5. Credit risk ratings (both internal & regulatory risk ratings)	Items 1-5 (see left) plus: 6. Basel II risk metrics incl. probability of default (PD) and loss given default (LGD)

Table 2: Regression Variables

The analyses use loan level data on syndicated loans from the Shared National Credit (SNC) and the DealScan databases from 2011:Q1 to 2014:Q4. The analyses focus on pure term loans (loans of fixed amounts with fixed maturities) and pure revolvers (credits for which the borrower may draw down and repay any amount up to a fixed maximum as often as desired over the maturity of the agreement) in the SNC database. We exclude term credit with separate tranches, debtor-in-possession loans, bridge loans, non-revolving lines of credit, revolving lines converting to term, and other loans not defined as a term loan or a revolver. Panel A describes the regression variables and their sources. Table 2, Panels B through E relate to the retention equations. The retention equations use the proportion retained as the dependent variable, which is derived from SNC. Panel B displays the summary statistics of all the variables for the retention equations separately for pure term loans and pure revolvers. Panel C shows the proportion retained by coarse internal loan rating. Panel D shows the proportion retained over time. Panel E shows the number of distinct borrowers, total number of loans, and the number of distinct lead agents for the retention equations. Table 2, Panels F through I relate to the pricing equations. The pricing equations use the interest rate spread as the dependent variable, which comes from DealScan. We link pricing information from DealScan to SNC by matching borrower names using a Levenshtein algorithm (we match any unmatched borrower names from the SNC to DealScan by hand). For matched borrowers, we match loans found in SNC to loans found in DealScan based on the origination date, maturity date, loan type, and commitment amount. Panel F displays the summary statistics for the pricing sample for pure term loans and pure revolvers. The pricing sample is smaller than the retention sample because it only consists of observations where pricing information from DealScan is available. Panel G shows the interest rate spread by coarse internal loan rating. Panel H shows the interest rate spread over time. Panel I shows the number of distinct borrowers, number of loans, and the number of distinct lead agents for the pricing sample. For both the coarse and granular internal loan rating explanatory variables, we use concordance maps provided by each bank to their regulators to link each bank's internal loan rating to a common S&P credit rating scale. To clarify, the concordance-mapped loan ratings are not S&P ratings, they simply use the same scale as S&P ratings. Table 3 below illustrates how we map from each bank's internal loan rating to a common S&P scale. The control variables are from SNC, Bloomberg, Compustat, and Y-9C filings. Since our Compustat subscription only contains information for domestic borrowers, we use Compustat for domestic borrowers and Bloomberg for foreign borrowers. Additionally, because SNC, Bloomberg, and Compustat lack a reliable common identifier, we use a Levenshtein algorithm to match both Bloomberg and Compustat variables to SNC. For unmatched obligors in SNC, we hand match borrowers to Bloomberg or Compustat and ensure the data are merger-adjusted. Finally, we use Y-9C Filings for the bank control variables for domestic highest holders and Bloomberg for foreign high holders.

Panel A: Variable descriptions

Variable	Mnemonic	Description	Source
DEPENDENT VARIABLES			
Proportion of Loan Retained	RETAIN	Proportion of the loan retained at origination by the lead bank at the highest holder level. (If there are multiple lead arrangers, SNC views the self-identified primary agent to be the lead bank).	SNC
Interest rate spread	SPREAD	The interest rate spread of the loan relative to LIBOR.	DealScan, SNC
KEY EXPLANATORY VARIABLES: BANK PRIVATE INFO FAVORABILITY			
Internal Loan Ratings			
Loan Ratings from SNC and concordance table (coarse, constructed by authors from granular ratings)			
Loan Rating High Investment Grade	LOANRATINGHIG	Dummy = 1 if the lead bank internally rates the loan A- or above	SNC, concordance tables
Loan Rating Low Investment Grade	LOANRATINGLIG	Dummy = 1 if the lead bank internally rates the loan BBB- to BBB+	SNC, concordance tables
Loan Rating High Sub-Investment Grade	LOANRATINGHSG	Dummy = 1 if the lead bank internally rates the loan BB- to BB+	SNC, concordance tables
Loan Rating Low Sub-Investment Grade	LOANRATINGLSG	Dummy = 1 if the lead bank internally rates the loan D to B+	SNC, concordance tables
Loan Not Rated	LOANNOTRATED	Dummy = 1 if the lead bank does not rate the loan	SNC, concordance tables
Internal Loan Ratings from SNC and concordance table (granular)			
Loan Rating AAA	LOANRATINGAAA	Dummy = 1 if the lead bank internally rates the loan AAA	SNC, concordance tables
Loan Rating AA	LOANRATINGAA	Dummy = 1 if the lead bank internally rates the loan AA+ / AA / AA-	SNC, concordance tables

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Variable	Mnemonic	Description	Source
Loss Given Default Variables from SNC (cont.)			
Loan Rating A	LOANRATINGA	Dummy = 1 if the lead bank internally rates the loan A+ / A / A-	SNC, concordance tables
Loan Rating BBB	LOANRATINGBBB	Dummy = 1 if the lead bank internally rates the loan BBB+ / BBB / BBB-	SNC, concordance tables
Loan Rating BB	LOANRATINGBB	Dummy = 1 if the lead bank internally rates the loan BB+ / BB / BB-	SNC, concordance tables
Loan Rating B	LOANRATINGB	Dummy = 1 if the lead bank internally rates the loan B+ / B / B-	SNC, concordance tables
Loan Rating CCC	LOANRATINGCCC	Dummy = 1 if the lead bank internally rates the loan CCC+ / CCC / CCC-	SNC, concordance tables
Loan Rating CC	LOANRATINGCC	Dummy = 1 if the lead bank internally rates the loan CC	SNC, concordance tables
Loan Rating C	LOANRATINGC	Dummy = 1 if the lead bank internally rates the loan C	SNC, concordance tables
Loan Rating D	LOANRATINGD	Dummy = 1 if the lead bank internally rates the loan D	SNC, concordance tables
Loan Loss Given Default	LOANLGD	Expected loss given default of the loan before credit enhancement if available, otherwise after credit enhancement, if available.	SNC
Loan Loss Given Default Available Flag	LOANLGDAVAIL	Dummy =1 if LOANLGD available	SNC
Regulatory Risk Ratings			
Proportion of Pass	PASS	Proportion of the loan rated by the regulators as "Pass"	SNC
Proportion of Special Mention	SPECIALMENTION	Proportion of the loan rated by the regulators as "Special Mention"	SNC
Proportion of Substandard	SUBSTANDARD	Proportion of the loan rated by the regulators as "Substandard"	SNC
Proportion of Doubtful	DOUBTFUL	Proportion of the loan rated by the regulators as "Doubtful"	SNC
Proportion of Loss	LOSS	Proportion of the loan rated by the regulators as "Loss"	SNC
Loan Characteristics			
Natural Log of Facility Size ($ mln)	LN(FACILITYSIZE)	Natural log of the loan facility size	SNC
Natural Log of Maturity (years)	LN(MATURITY)	Natural log of loan maturity in years	SNC
Loan Purpose: General Corporate	LOANPURPGENERAL	Dummy = 1 if the loan is used for general corporate purposes	SNC
Loan Purpose: Acquisition Financing	LOANPURPACQFIN	Dummy = 1 if the loan is used to finance acquisitions	SNC
Loan Purpose: Debt Refinancing	LOANPURPDEBTREFI	Dummy = 1 if the loan is used to refinance debt	SNC
Loan Purpose: Working Capital	LOANPURPWC	Dummy = 1 if the loan is used to finance working capital needs	SNC
Loan Purpose: Other	LOANPURPOTHER	Dummy = 1 if the loan is used for other purposes	SNC
Packaged Loan Dummy	PACKAGEDLOAN	Dummy = 1 if the loan was originated concurrently with other loans to the same obligor at the same origination date	SNC
Bank Market Rank			
Top 3 US Syndicated Loan League Table Dummy	LEADTOP3	Dummy = 1 if the bank is in the top 3 (out of 30) of the US syndicated loan league table in the previous year as identified by Bloomberg.	Bloomberg
Next 27 US Syndicated Loan League Table Dummy	LEADNEXT27	Dummy = 1 if the bank is ranked 4 to 30 (out of 30) in the US syndicated loan league table in the previous year as identified by Bloomberg.	Bloomberg
Bank Condition			
Bank Equity Capital Ratio	BANKEQUITYR	The highest holder lead agent bank shareholder's equity divided by total assets	FR Y-9C, Bloomberg
Bank Cash to Total Assets Ratio	BANKCASHR	The highest holder lead agent banks' cash divided by total assets	FR Y-9C, Bloomberg
Bank Allowance for Loan & Lease Loss Ratio	BANKALLLR	The highest holder lead agent banks' allowance for loan and lease losses divided by total assets	FR Y-9C, Bloomberg
Relationship Strength			
Strong Relationship Dummy	STRONGRELSHIP	Dummy =1 if the borrower has all of its SNC loans from the bank in the past 5 years, provided it has at least 1 prior loan during that interval.	SNC

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Variable	Mnemonic	Description	Source
Borrower Characteristics			
Borrower Leverage	BORROWERLEV	(Total assets minus shareholder equity) divided by total assets.	Compustat, Bloomberg
Borrower Return on Assets	BORROWERROA	Net income divided by total assets.	Compustat, Bloomberg
Borrower Log Total Assets	BORROWERLNTA	Size measured as the natural log of total assets.	Compustat, Bloomberg
Borrower Publicly-Traded Flag	BORROWERPUBLIC	Dummy = 1 if the borrower is publicly traded so that leverage, return on assets, and total assets are available from Compustat or Bloomberg.	Compustat, Bloomberg
Borrower Public Debt Ratings			
Borrower Public Debt Ratings (coarse, constructed by authors from granular ratings)			
Public Debt Rating High Investment Grade	BOROWPUBRATINGHIG	Dummy = 1 if the S&P senior debt rating is A- or above	Compustat
Public Debt Rating Low Investment Grade	BORROWPUBRATINGLIG	Dummy = 1 if the S&P senior debt rating is BBB- to BBB+	Compustat
Public Debt Rating High Sub-Investment Grade	BORROWPUBRATINGHSG	Dummy = 1 if the S&P senior debt rating is BB- to BB+	Compustat
Public Debt Rating Low Sub-Investment Grade	BORROWPUBRATINGLSG	Dummy = 1 if the S&P senior debt rating is D to B+	Compustat
Borrower Debt Rating Available Flag	BORROWRATINGAVAIL	Dummy = 1 if borrower public debt rating is available from Compustat. This variable is included in the summary statistics only.	Compustat
Borrower Public Debt Ratings (granular)			
Public Debt Rating AAA	BORROWPUBRATINGAAA	Dummy = 1 if the S&P senior debt rating is AAA	Compustat
Public Debt Rating AA	BORROWPUBRATINGAA	Dummy = 1 if the S&P senior debt rating is AA+ / AA / AA-	Compustat
Public Debt Rating A	BORROWPUBRATINGA	Dummy = 1 if the S&P senior debt rating is A+ / A / A-	Compustat
Public Debt Rating BBB	BORROWPUBRATINGBBB	Dummy = 1 if the S&P senior debt rating is BBB+ / BBB / BBB-	Compustat
Public Debt Rating Berger and Bouwman	BORROWPUBRATINGBB	Dummy = 1 if the S&P senior debt rating is BB+ / BB / BB-	Compustat
Public Debt Rating B	BORROWPUBRATINGB	Dummy = 1 if the S&P senior debt rating is B+ / B / B-	Compustat
Public Debt Rating CCC	BORROWPUBRATINGCCC	Dummy = 1 if the S&P senior debt rating is CCC+ / CCC / CCC-	Compustat
Public Debt Rating CC	BORROWPUBRATINGCC	Dummy = 1 if the S&P senior debt rating is CC	Compustat
Public Debt Rating C	BORROWPUBRATINGC	Dummy = 1 if the S&P senior debt rating is C	Compustat
FIXED EFFECTS			
Industry FEs		7 dummies = 1 for the 7 industries (production; sales, transportation and utilities; financial services; professional and business services; healthcare and education; leisure and hospitality; other)	SNC
Time FEs		16 dummies = 1 for the 16 sample quarters (2011:Q1 – 2014:Q4)	
OTHER VARIABLES			
The dollar proportion of the syndicate ranked in the top 3 of the syndicated loan league tables	PARTICIPTOP3	The dollar proportion of the syndicate dollars held by banks in the top 3 of the syndicated loan league tables	SNC
The dollar proportion of the syndicate ranked in the top 30 of the syndicated loan league tables	PARTICIPTOP30	The dollar proportion of the syndicate dollars held by banks in the top 30 of the syndicated loan league tables	SNC

Panel B: Retention Analysis Summary Statistics for Pure Term Loans and Pure Revolvers

		Pure Term						Pure Revolvers					
Variable	**Mnemonic**	**N**	**Mean**	**SD**	**P25**	**P50**	**P75**	**N**	**Mean**	**SD**	**P25**	**P50**	**P75**
DEPENDENT VARIABLE													
Proportion of Loan Retained	RETAIN	3056	0.247	0.181	0.105	0.225	0.365	6477	0.250	0.154	0.125	0.214	0.343
KEY EXPLANATORY VARIABLES: BANK PRIVATE INFO FAVORABILITY													
Loan Ratings													
Loan Ratings from SNC and concordance table (coarse)													
Loan Rating High Investment Grade	LOANRATINGHIG	3056	0.038	0.190	0.000	0.000	0.000	6477	0.130	0.336	0.000	0.000	0.000
Loan Rating Low Investment Grade	LOANRATINGLIG	3056	0.170	0.375	0.000	0.000	0.000	6477	0.262	0.440	0.000	0.000	1.000
Loan Rating High Sub-Investment Grade	LOANRATINGHSG	3056	0.534	0.499	0.000	1.000	1.000	6477	0.454	0.498	0.000	0.000	1.000
Loan Rating Low Sub-Investment Grade	LOANRATINGLSG	3056	0.134	0.340	0.000	0.000	0.000	6477	0.141	0.348	0.000	0.000	0.000
Loan Not Rated	LOANNOTRATED	3056	0.126	0.332	0.000	0.000	0.000	6477	0.012	0.110	0.000	0.000	0.000
Loan Ratings from SNC and concordance table (granular)													
Loan Rating AAA	LOANRATINGAAA	3056	0.003	0.054	0.000	0.000	0.000	6477	0.003	0.058	0.000	0.000	0.000
Loan Rating AA	LOANRATINGAA	3056	0.005	0.072	0.000	0.000	0.000	6477	0.031	0.173	0.000	0.000	0.000
Loan Rating A	LOANRATINGA	3056	0.029	0.169	0.000	0.000	0.000	6477	0.096	0.294	0.000	0.000	0.000
Loan Rating BBB	LOANRATINGBBB	3056	0.170	0.375	0.000	0.000	0.000	6477	0.262	0.440	0.000	0.000	1.000
Loan Rating BB	LOANRATINGBB	3056	0.534	0.499	0.000	1.000	1.000	6477	0.454	0.498	0.000	0.000	1.000
Loan Rating B	LOANRATINGB	3056	0.113	0.316	0.000	0.000	0.000	6477	0.118	0.323	0.000	0.000	0.000
Loan Rating CCC	LOANRATINGCCC	3056	0.007	0.081	0.000	0.000	0.000	6477	0.012	0.110	0.000	0.000	0.000
Loan Rating CC	LOANRATINGCC	3056	0.004	0.063	0.000	0.000	0.000	6477	0.005	0.072	0.000	0.000	0.000
Loan Rating C	LOANRATINGC	3056	0.001	0.036	0.000	0.000	0.000	6477	0.001	0.033	0.000	0.000	0.000
Loan Rating D	LOANRATINGD	3056	0.009	0.095	0.000	0.000	0.000	6477	0.004	0.061	0.000	0.000	0.000
CONTROL VARIABLES													
Loss Given Default Variables from SNC ***(Regressions include zeros for missing values and the flag equals one for these observations)***													
Loan Loss Given Default	LOANLGD	1684	0.304	0.156	0.213	0.343	0.420	4611	0.346	0.135	0.280	0.373	0.442
Loan Loss Given Default Available Flag	LOANLGDAVAIL	3056	0.551	0.497	0.000	1.000	1.000	6477	0.712	0.453	0.000	1.000	1.000
Regulatory Risk Ratings													
Proportion of Pass	PASS	2995	0.944	0.230	1.000	1.000	1.000	6384	0.946	0.226	1.000	1.000	1.000
Proportion of Special Mention	SPECIALMENTION	3056	0.033	0.178	0.000	0.000	0.000	6477	0.040	0.196	0.000	0.000	0.000
Proportion of Substandard	SUBSTANDARD	3056	0.021	0.142	0.000	0.000	0.000	6477	0.013	0.114	0.000	0.000	0.000
Proportion of Doubtful	DOUBTFUL	3056	0.002	0.048	0.000	0.000	0.000	6477	0.002	0.040	0.000	0.000	0.000
Proportion of Loss	LOSS	3056	0.002	0.037	0.000	0.000	0.000	6477	0.000	0.008	0.000	0.000	0.000

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		Pure Term						Pure Revolvers					
Variable	**Mnemonic**	**N**	**Mean**	**SD**	**P25**	**P50**	**P75**	**N**	**Mean**	**SD**	**P25**	**P50**	**P75**
Loan characteristics													
Facility Size ($ mln) *(regressions use natural log)*	FACILITYSIZE	3056	321.0	936.4	50.0	125.0	300.0	6477	437.2	782.8	70.0	180.0	500.0
Maturity (years) *(regressions use natural log)*	MATURITY	3056	5.021	1.786	4.142	5.117	5.408	6477	4.432	1.715	4.075	5.094	5.133
Loan Purpose: General Corporate	LOANPURPGENERAL	3056	0.240	0.427	0.000	0.000	0.000	6477	0.297	0.457	0.000	0.000	1.000
Loan Purpose: Acquisition Financing	LOANPURPACQFIN	3056	0.192	0.394	0.000	0.000	0.000	6477	0.043	0.203	0.000	0.000	0.000
Loan Purpose: Debt Refinancing	LOANPURPDEBTREFIN	3056	0.129	0.336	0.000	0.000	0.000	6477	0.026	0.159	0.000	0.000	0.000
Loan Purpose: Working Capital	LOANPURPWC	3056	0.176	0.381	0.000	0.000	0.000	6477	0.419	0.493	0.000	0.000	1.000
Loan Purpose: Other	LOANPURPOTHER	3056	0.262	0.440	0.000	0.000	1.000	6477	0.216	0.411	0.000	0.000	0.000
Packaged Loan Flag	PACKAGEDLOAN	3056	0.368	0.482	0.000	0.000	1.000	6477	0.181	0.385	0.000	0.000	0.000
Bank Market Rank													
Top 3 US Syndicated Loan League Table Dummy	LEADTOP3	3056	0.451	0.498	0.000	0.000	1.000	6477	0.495	0.500	0.000	0.000	1.000
Next 27 US Syndicated Loan League Table Dummy	LEADNEXT27	3056	0.462	0.499	0.000	0.000	1.000	6477	0.445	0.497	0.000	0.000	1.000
Bank Condition													
Bank Equity Capital Ratio	BANKEQUITYR	3056	0.094	0.029	0.082	0.104	0.112	6477	0.097	0.026	0.084	0.107	0.112
Bank Cash to Total Assets Ratio	BANKCASHR	3056	0.069	0.040	0.044	0.064	0.079	6477	0.072	0.042	0.044	0.065	0.088
Bank Allowance for Loan & Lease Loss Ratio	BANKALLLR	3056	0.010	0.005	0.006	0.010	0.013	6477	0.011	0.005	0.007	0.011	0.014
Relationship Strength													
Strong Relationship Dummy	STRONGRELSHIP	3056	0.432	0.495	0.000	0.000	1.000	6477	0.449	0.497	0.000	0.000	1.000
Borrower Characteristics ***(Regressions include zeros for missing values and the flag equals one for these observations)***													
Borrower Leverage	BORROWERLEV	892	0.715	1.460	0.508	0.622	0.758	2766	0.774	4.570	0.477	0.617	0.741
Borrower Return on Assets	BORROWERROA	892	-0.061	1.211	0.000	0.007	0.015	2766	-0.019	0.731	0.003	0.010	0.019
Borrower Total Assets ($ billion) *(regressions use natural log)*	BORROWERTA	892	24.6	161.9	1.2	2.9	7.3	2767	23.3	128.8	1.3	3.6	12.4
Borrower Publicly-Traded Flag	BORROWERPUBLIC	3056	0.292	0.455	0.000	0.000	1.000	6477	0.427	0.495	0.000	0.000	1.000

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		Pure Term						Pure Revolvers					
Variable	**Mnemonic**	**N**	**Mean**	**SD**	**P25**	**P50**	**P75**	**N**	**Mean**	**SD**	**P25**	**P50**	**P75**
Borrower Public Debt Ratings													
Borrower Public Debt Ratings (coarse, constructed by authors from granular ratings)													
Borrower Public Rating High Investment Grade	BORROWPUBRATINGHIG	429	0.061	0.239	0.000	0.000	0.000	1450	0.237	0.425	0.000	0.000	0.000
Borrower Public Rating Low Investment Grade	BORROWPUBRATINGLIG	429	0.287	0.453	0.000	0.000	1.000	1450	0.366	0.482	0.000	0.000	1.000
Borrower Public Rating High Sub-Investment Grade	BORROWPUBRATINGHSG	429	0.396	0.490	0.000	0.000	1.000	1450	0.250	0.433	0.000	0.000	0.000
Borrower Public Rating Low Sub-Investment Grade	BORROWPUBRATINGLSG	429	0.256	0.437	0.000	0.000	1.000	1450	0.148	0.355	0.000	0.000	0.000
Borrower Rating Available Flag	BORROWRATINGAVAIL	3056	0.140	0.347	0.000	0.000	0.000	6477	0.224	0.417	0.000	0.000	0.000
Borrower Public Debt Ratings (granular)													
Borrower Public Rating AAA	BORROWPUBRATINGAAA	429	0.000	0.000	0.000	0.000	0.000	1450	0.010	0.098	0.000	0.000	0.000
Borrower Public Rating AA	BORROWPUBRATINGAA	429	0.005	0.068	0.000	0.000	0.000	1450	0.030	0.172	0.000	0.000	0.000
Borrower Public Rating A	BORROWPUBRATINGA	429	0.056	0.230	0.000	0.000	0.000	1450	0.197	0.398	0.000	0.000	0.000
Borrower Public Rating BBB	BORROWPUBRATINGBBB	429	0.287	0.453	0.000	0.000	1.000	1450	0.366	0.482	0.000	0.000	1.000
Borrower Public Rating BB	BORROWPUBRATINGBB	429	0.396	0.490	0.000	0.000	1.000	1450	0.250	0.433	0.000	0.000	0.000
Borrower Public Rating B	BORROWPUBRATINGB	429	0.249	0.433	0.000	0.000	0.000	1450	0.146	0.353	0.000	0.000	0.000
Borrower Public Rating CCC	BORROWPUBRATINGCCC	429	0.005	0.068	0.000	0.000	0.000	1450	0.002	0.045	0.000	0.000	0.000
Borrower Public Rating CC	BORROWPUBRATINGCC	429	0.002	0.048	0.000	0.000	0.000	1450	0.001	0.026	0.000	0.000	0.000
Borrower Public Rating C	BORROWPUBRATINGC	429	0.000	0.000	0.000	0.000	0.000	1450	0.000	0.000	0.000	0.000	0.000
Borrower Public Rating D	BORROWPUBRATINGD	429	0.000	0.000	0.000	0.000	0.000	1450	0.000	0.000	0.000	0.000	0.000
FIXED EFFECTS													
Borrower Industry FEs	Production	3056	0.333	0.471	0.000	0.000	1.000	6477	0.342	0.474	0.000	0.000	1.000
	Sales, transportation, utilities	3056	0.161	0.368	0.000	0.000	0.000	6477	0.207	0.405	0.000	0.000	0.000
	Financial services	3056	0.193	0.395	0.000	0.000	0.000	6477	0.196	0.397	0.000	0.000	0.000
	Professional business services	3056	0.161	0.368	0.000	0.000	0.000	6477	0.155	0.362	0.000	0.000	0.000
	Healthcare and education	3056	0.064	0.244	0.000	0.000	0.000	6477	0.040	0.196	0.000	0.000	0.000
	Leisure and hospitality	3056	0.074	0.262	0.000	0.000	0.000	6477	0.048	0.213	0.000	0.000	0.000
	Other	3056	0.014	0.116	0.000	0.000	0.000	6477	0.012	0.110	0.000	0.000	0.000
Time FEs													
OTHER VARIABLES													
The dollar proportion of the Syndicate Ranked in the top 3 of the League Tables	PARTICIPTOP3	3056	0.076	0.113	0.000	0.000	0.144	6477	0.130	0.129	0.000	0.123	0.205
The dollar proportion of the Syndicate Ranked in the top 30 of the League Tables	PARTICIPTOP30	3056	0.329	0.264	0.047	0.316	0.578	6477	0.510	0.232	0.364	0.568	0.686

Panel C: Loan Proportion Retained by Coarse Internal Loan Rating

	Panel C1: Pure Term						Panel C2: Pure Revolvers					
Year	**N**	**Mean**	**Std. Dev.**	**P25**	**Median**	**P75**	**N**	**Mean**	**Std. Dev.**	**P25**	**Median**	**P75**
HIG	115	0.270	0.148	0.151	0.267	0.350	842	0.189	0.141	0.091	0.131	0.237
LIG	518	0.237	0.155	0.114	0.200	0.333	1700	0.192	0.130	0.100	0.150	0.250
HSG	1631	0.279	0.155	0.154	0.270	0.386	2943	0.278	0.150	0.160	0.250	0.374
LSG	408	0.240	0.223	0.049	0.207	0.373	912	0.323	0.161	0.201	0.300	0.419
NR	384	0.128	0.217	0.005	0.027	0.127	80	0.258	0.152	0.138	0.227	0.333
Total	3056	0.247	0.181	0.105	0.225	0.365	6477	0.250	0.154	0.125	0.214	0.343

Panel D: Loan Proportion Retained Over Time

	Panel D1: Pure Term						Panel D2: Pure Revolvers					
Year	**N**	**Mean**	**Std. Dev.**	**P25**	**Median**	**P75**	**N**	**Mean**	**Std. Dev.**	**P25**	**Median**	**P75**
2011	723	0.233	0.175	0.106	0.200	0.346	1783	0.223	0.142	0.113	0.183	0.300
2012	765	0.252	0.181	0.112	0.237	0.368	1606	0.259	0.159	0.131	0.222	0.350
2013	746	0.248	0.176	0.105	0.233	0.360	1491	0.262	0.152	0.135	0.240	0.361
2014	822	0.255	0.190	0.102	0.234	0.377	1597	0.261	0.159	0.127	0.225	0.360
Total	3056	0.247	0.181	0.105	0.225	0.365	6477	0.250	0.154	0.125	0.214	0.343

Panel E: Number of Distinct Borrowers, Number of Loans, And Number Of Distinct Lead Arrangers Over Time

	Panel E1: Pure Term			Panel E2: Pure Revolvers		
Year	**Number of borrowers**	**Number of loans**	**Number of lead arrangers**	**Number of borrowers**	**Number of loans**	**Number of lead arrangers**
2011	586	723	26	1502	1783	29
2012	635	765	28	1379	1606	31
2013	634	746	26	1307	1491	30
2014	674	822	28	1440	1597	30
Total	2137	3056	30	4307	6477	31

Table F: Pricing Analysis Summary Statistics for Pure Term Loans and Pure Revolvers

		Pure Term						Pure Revolvers					
Variable	**Mnemonic**	**N**	**Mean**	**SD**	**P25**	**P50**	**P75**	**N**	**Mean**	**SD**	**P25**	**P50**	**P75**
DEPENDENT VARIABLE													
Interest Rate Spread	SPREAD	1624	0.033	0.016	0.020	0.030	0.040	3720	0.022	0.012	0.013	0.018	0.028
KEY EXPLANATORY VARIABLES:													
BANK PRIVATE INFO FAVORABILITY													
Loan Ratings													
Loan Ratings from SNC and concordance table (coarse)													
Loan Rating High Investment Grade	LOANRATINGHIG	1624	0.026	0.161	0.000	0.000	0.000	3720	0.120	0.325	0.000	0.000	0.000
Loan Rating Low Investment Grade	LOANRATINGLIG	1624	0.158	0.365	0.000	0.000	0.000	3720	0.308	0.462	0.000	0.000	1.000
Loan Rating High Sub-Investment Grade	LOANRATINGHSG	1624	0.524	0.500	0.000	1.000	1.000	3720	0.430	0.495	0.000	0.000	1.000
Loan Rating Low Sub-Investment Grade	LOANRATINGLSG	1624	0.137	0.344	0.000	0.000	0.000	3720	0.133	0.340	0.000	0.000	0.000
Loan Not Rated	LOANNOTRATED	1624	0.155	0.362	0.000	0.000	0.000	3720	0.009	0.095	0.000	0.000	0.000
Loan Ratings from SNC and concordance table (granular)													
Loan Rating AAA	LOANRATINGAAA	1624	0.000	0.000	0.000	0.000	0.000	3720	0.003	0.054	0.000	0.000	0.000
Loan Rating AA	LOANRATINGAA	1624	0.003	0.055	0.000	0.000	0.000	3720	0.023	0.149	0.000	0.000	0.000
Loan Rating A	LOANRATINGA	1624	0.023	0.151	0.000	0.000	0.000	3720	0.094	0.292	0.000	0.000	0.000
Loan Rating BBB	LOANRATINGBBB	1624	0.158	0.365	0.000	0.000	0.000	3720	0.308	0.462	0.000	0.000	1.000
Loan Rating BB	LOANRATINGBB	1624	0.524	0.500	0.000	1.000	1.000	3720	0.430	0.495	0.000	0.000	1.000
Loan Rating B	LOANRATINGB	1624	0.124	0.330	0.000	0.000	0.000	3720	0.120	0.325	0.000	0.000	0.000
Loan Rating CCC	LOANRATINGCCC	1624	0.009	0.092	0.000	0.000	0.000	3720	0.009	0.092	0.000	0.000	0.000
Loan Rating CC	LOANRATINGCC	1624	0.002	0.043	0.000	0.000	0.000	3720	0.004	0.061	0.000	0.000	0.000
Loan Rating C	LOANRATINGC	1624	0.001	0.025	0.000	0.000	0.000	3720	0.000	0.000	0.000	0.000	0.000
Loan Rating D	LOANRATINGD	1624	0.001	0.035	0.000	0.000	0.000	3720	0.001	0.033	0.000	0.000	0.000
CONTROL VARIABLES													
Loss Given Default Variables from SNC													
(Regressions include zeros for missing values and the flag equals one for these observations)													
Loan Loss Given Default	LOANLGD	918	0.299	0.155	0.205	0.342	0.422	2822	0.360	0.127	0.290	0.390	0.450
Loan Loss Given Default Available Flag	LOANLGDAVAIL	1624	0.565	0.496	0.000	1.000	1.000	3720	0.759	0.428	1.000	1.000	1.000
Regulatory Risk Ratings													
Proportion of Pass	PASS	1615	0.955	0.206	1.000	1.000	1.000	3706	0.954	0.209	1.000	1.000	1.000
Proportion of Special Mention	SPECIALMENTION	1624	0.035	0.184	0.000	0.000	0.000	3720	0.037	0.188	0.000	0.000	0.000
Proportion of Substandard	SUBSTANDARD	1624	0.009	0.096	0.000	0.000	0.000	3720	0.009	0.095	0.000	0.000	0.000
Proportion of Doubtful	DOUBTFUL	1624	0.001	0.035	0.000	0.000	0.000	3720	0.001	0.023	0.000	0.000	0.000
Proportion of Loss	LOSS	1624	0.000	0.000	0.000	0.000	0.000	3720	0.000	0.000	0.000	0.000	0.000

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Variable	Mnemonic	Pure Term N	Pure Term Mean	Pure Term SD	Pure Term P25	Pure Term P50	Pure Term P75	Pure Revolvers N	Pure Revolvers Mean	Pure Revolvers SD	Pure Revolvers P25	Pure Revolvers P50	Pure Revolvers P75
Bank Market Rank													
Top 3 US Syndicated Loan League Table Dummy	LEADTOP3	1624	0.478	0.500	0.000	0.000	1.000	3720	0.559	0.497	0.000	1.000	1.000
Next 27 US Syndicated Loan League Table Dummy	LEADNEXT27	1624	0.472	0.499	0.000	0.000	1.000	3720	0.418	0.493	0.000	0.000	1.000
Bank Condition													
Bank Equity Capital Ratio	BANKEQUITYR	1624	0.093	0.029	0.082	0.099	0.111	3720	0.096	0.025	0.084	0.107	0.112
Bank Cash to Total Assets Ratio	BANKCASHR	1624	0.070	0.039	0.045	0.064	0.079	3720	0.075	0.041	0.050	0.066	0.092
Bank Allowance for Loan & Lease Loss Ratio	BANKALLLR	1624	0.009	0.005	0.006	0.010	0.013	3720	0.011	0.004	0.007	0.011	0.014
Relationship Strength													
Strong Relationship Dummy	STRONGRELSHIP	1624	0.440	0.497	0.000	0.000	1.000	3720	0.466	0.499	0.000	0.000	1.000
Borrower Characteristics													
(Regressions include zeros for missing values and the flag equals one for these observations)													
Borrower Leverage	BORROWERLEV	548	0.736	1.430	0.515	0.628	0.770	1865	0.750	3.666	0.477	0.613	0.732
Borrower Return on Assets	BORROWERROA	548	-0.086	1.517	0.001	0.008	0.016	1865	-0.026	0.861	0.003	0.011	0.020
Borrower Total Assets ($ billion) *(regressions use natural log)*	BORROWERTA	548	22.6	161.9	1.2	2.9	6.4	1866	16.8	99.5	1.2	3.5	11.4
Borrower Publicly-Traded Flag	BORROWERPUBLIC	1624	0.337	0.473	0.000	0.000	1.000	3720	0.502	0.500	0.000	1.000	1.000
Borrower Public Debt Ratings													
Borrower Public Debt Ratings (coarse)													
Borrower Public Rating High Investment Grade	BORROWPUBRATINGHIG	283	0.042	0.202	0.000	0.000	0.000	989	0.201	0.401	0.000	0.000	0.000
Borrower Public Rating Low Investment Grade	BORROWPUBRATINGLIG	283	0.279	0.449	0.000	0.000	1.000	989	0.405	0.491	0.000	0.000	1.000
Borrower Public Rating High Sub-Investment Grade	BORROWPUBRATINGHSG	283	0.406	0.492	0.000	0.000	1.000	989	0.255	0.436	0.000	0.000	1.000
Borrower Public Rating Low Sub-Investment Grade	BORROWPUBRATINGLSG	283	0.272	0.446	0.000	0.000	1.000	989	0.139	0.346	0.000	0.000	0.000
Borrower Rating Available Flag	BORROWRATINGAVAIL	1624	0.174	0.379	0.000	0.000	0.000	3720	0.266	0.442	0.000	0.000	1.000
FIXED EFFECTS													
Borrower Industry FEs	Production	1624	0.341	0.474	0.000	0.000	1.000	3720	0.363	0.481	0.000	0.000	1.000
	Sales, transportation, utilities	1624	0.162	0.369	0.000	0.000	0.000	3720	0.213	0.409	0.000	0.000	0.000
	Financial services	1624	0.171	0.376	0.000	0.000	0.000	3720	0.152	0.359	0.000	0.000	0.000
	Professional business services	1624	0.179	0.384	0.000	0.000	0.000	3720	0.169	0.374	0.000	0.000	0.000
	Healthcare and education	1624	0.057	0.232	0.000	0.000	0.000	3720	0.041	0.198	0.000	0.000	0.000
	Leisure and hospitality	1624	0.077	0.267	0.000	0.000	0.000	3720	0.051	0.219	0.000	0.000	0.000
	Other	1624	0.013	0.113	0.000	0.000	0.000	3720	0.012	0.107	0.000	0.000	0.000
Time FEs													

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Variable	Mnemonic	Pure Term						Pure Revolvers					
		N	Mean	SD	P25	P50	P75	N	Mean	SD	P25	P50	P75
OTHER VARIABLES													
The dollar proportion of the Syndicate Ranked in the top 3 of the Syndicated Loan League Tables	PARTICIPTOP3	1624	0.075	0.109	0.000	0.006	0.143	3720	0.138	0.121	0.000	0.133	0.211
The dollar proportion of the Syndicate Ranked in the top 30 of the Syndicated Loan League Tables	PARTICIPTOP30	1624	0.337	0.265	0.054	0.329	0.582	3720	0.544	0.215	0.420	0.597	0.707

Panel G: Interest Rate Spread Proportion by Coarse Internal Loan Rating

Rating	Panel G1: Pure Term						Panel G2: Pure Revolvers					
	N	Mean	Std. Dev.	P25	Median	P75	N	Mean	Std. Dev.	P25	Median	P75
HIG	43	0.014	0.006	0.010	0.013	0.018	447	0.011	0.005	0.008	0.010	0.013
LIG	256	0.020	0.010	0.015	0.018	0.023	1145	0.015	0.006	0.011	0.014	0.018
HSG	851	0.031	0.013	0.021	0.030	0.038	1599	0.025	0.011	0.018	0.023	0.031
LSG	222	0.046	0.018	0.035	0.043	0.053	495	0.038	0.012	0.028	0.038	0.045
NR	252	0.043	0.017	0.030	0.038	0.050	34	0.024	0.013	0.013	0.020	0.035
Total	1624	0.033	0.016	0.020	0.030	0.040	3720	0.022	0.012	0.013	0.018	0.028

Panel H: Interest Rate Spread Proportion Over Time

Year	Panel H1: Pure Term						Panel H2: Pure Revolvers					
	N	Mean	Std. Dev.	P25	Median	P75	N	Mean	Std. Dev.	P25	Median	P75
2011	380	0.032	0.015	0.020	0.030	0.040	1035	0.022	0.012	0.013	0.018	0.028
2012	390	0.034	0.018	0.020	0.030	0.045	947	0.023	0.013	0.013	0.018	0.030
2013	405	0.032	0.016	0.020	0.030	0.040	872	0.022	0.011	0.013	0.018	0.030
2014	449	0.032	0.016	0.020	0.030	0.040	866	0.021	0.011	0.013	0.018	0.028
Total	1624	0.033	0.016	0.020	0.030	0.040	3720	0.022	0.012	0.013	0.018	0.028

Panel I: Number of Distinct Borrowers, Number of Loans, and Number of Distinct Lead Arrangers When Pricing is Available

Year	Panel I1: Pure Term			Panel I2: Pure Revolvers		
	Number of borrowers	Number of loans	Number of lead arrangers	Number of borrowers	Number of loans	Number of lead arrangers
2011	349	380	23	953	1035	23
2012	354	390	23	857	947	26
2013	363	405	23	805	872	25
2014	393	449	23	830	866	27
Total	1281	1624	26	2813	3720	29

Table 3: Hypothetical Concordance Mappings

This table shows three hypothetical examples of concordance mappings, one alphanumeric, one numeric, and one alphabetic. Every bank in our sample assigns an internal loan rating for each of its loans in our sample; however, every bank's internal rating system is different with some banks using an alphanumeric scale, some banks using a purely numeric scale, and other banks using an alphabetic scale. Additionally, many banks' internal credit rating systems differ with regards to granularity with some banks having highly granular credit rating scales while other banks use coarse scales; consequently, concordance maps that map every bank's internal loan rating to a common S&P scale are necessary to compare internal loan ratings between banks. The bank's "raw" internal loan ratings scale is shown on the left of each panel and the corresponding concordance-mapped ratings based upon the S&P ratings scale from the bank's concordance table are shown on the right. Note that not all the banks' concordance tables map into all of the possible S&P ratings.

Panel A: Alphanumeric Example		**Panel B: Numeric Example**		**Panel C: Alphabetic Example**	
Bank's "raw" internal loan ratings scale	**Concordance-mapped ratings**	**Bank's "raw" internal loan ratings scale**	**Concordance-mapped ratings**	**Bank's "raw" internal loan ratings scale**	**Concordance-mapped ratings**
A1	AAA	75+	AA+	A	AAA
B1	AA	75	AA	B	AA+
C1	A	75-	AA-	C	AA
A2	BBB	70+	A+	D	AA-
B2	BB	70	A	E	A+
C2	B	70-	A-	F	A
3	CCC	65+	BBB+	G	A-
4	CC	65	BBB	H	BBB+
5	C	65-	BBB-	I	BBB
6	D	60+	BB+	J	BBB-
7N	Not Rated	60	BB	K	BB+
		60-	BB-	L	BB
		55+	B+	M	BB-
		55	B	N	B+
		55-	B-	O	B
		50	CCC+/CCC/CCC-	P	B-
		45	CC+/CC/CC-	Q	CCC+
		40	D	R	CCC
				S	CCC-
				T	CC+
				U	CC
				V	CC-
				W	C+
				X	C
				Y	C-
				Z	D
				ZZ	Not Rated

Table 4: Main Results for Retention Analysis

This table examines if banks retain more or less of the loan when their private information is favorable, i.e., when the loans are rated as higher quality, using Equation (1). To ensure we are comparing similar loans, our results only consider pure term loans (loans of fixed amounts with fixed maturities) and pure revolvers (credits for which the borrower may draw down and repay any amount up to a fixed maximum as often as desired over the maturity of the agreement) in the SNC database. We exclude term credit with separate tranches, debtor-in-possession loans, bridge loans, non-revolving lines of credit, revolving lines converting to term, and other loans not identified as a term loan or a revolver. We regress the proportion of the loan retained on our internal loan rating variables, and on alternative sets of control variables. The main results presented here are based on the coarse internal loan ratings. Panel A focuses on pure term loans, while Panel B is based on pure revolvers. To demonstrate robustness, we include progressively more control variables in each column of Panels A and B with the full specifications presented in Column (7). Panel C considers the full specification from Panels A and B, which only contain pure term loans and pure revolvers and compares the results to the entire sample containing all syndicated loans. In the full sample, we include pure term loans and pure revolvers as well as term credit with separate tranches, debtor-in-possession loans, bridge loans, non-revolving lines of credit, revolving lines converting to term, capitalized lease obligations, standby letters of credit, other real estate owned, and other loans. Panel C, Columns (1) and (2) replicate Column (7) from Panels A and B for easy comparison of pure term loans and pure revolvers to the full specification in Column (3) that includes all syndicated loans in the same regression, with additional dummies for pure term loans and pure revolvers We include LOANLGDAVAIL, PACKAGEDLOAN, BORROWERPUBLIC, and Industry fixed effect dummies in Panels A, B, and C; however, we do not show them for brevity. For all regressions, we include LOANLGDAVAIL flag to account for the average difference in loan retention by the lead agent for loans which the bank has LGD information available and for loans that bank does not. For regressions that control for loan characteristics, Column (2) through Column (7), we include a PACKAGEDLOAN flag to account for the average difference in loan retention by the lead agent for loans that are originated concurrently with other loans for the same borrower as part of a packaged deal and for loans that are originated independently. For regressions that control for borrower characteristics, Column (6) and Column (7), we include the BORROWERPUBLIC flag to capture average difference in loan retention by the lead agent for loans which the borrower's financial information is publicly available and for loans which the borrower's financial information is not available publicly. Finally, we capture industry fixed effects in Column (6) and Column (7). All variables are defined in Table 2, Panel A. t-statistics based on robust standard errors clustered by bank are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Panel A: Main Results for Retention Analysis – Pure Term Loans

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN
LOANRATINGHIG	0.163***	0.100***	0.091***	0.068***	0.072***	0.083***	0.078***
	(8.98)	(5.57)	(4.96)	(3.63)	(3.86)	(4.39)	(4.14)
LOANRATINGLIG	0.143***	0.073***	0.066***	0.048***	0.051***	0.061***	0.062***
	(9.95)	(5.11)	(4.57)	(3.21)	(3.43)	(4.08)	(3.98)
LOANRATINGHSG	0.171***	0.063***	0.055***	0.038***	0.043***	0.046***	0.047***
	(13.87)	(4.71)	(4.10)	(2.72)	(3.02)	(3.29)	(3.32)
LOANRATINGLSG	0.127***	0.053***	0.041**	0.038**	0.040**	0.040**	0.040**
	(7.41)	(3.13)	(2.45)	(2.27)	(2.38)	(2.37)	(2.36)
LOANLGD	-0.104***	-0.078**	-0.068**	-0.072**	-0.075**	-0.054*	-0.053*
	(-3.25)	(-2.47)	(-2.18)	(-2.32)	(-2.42)	(-1.76)	(-1.72)
SPECIALMENTION	-0.013	-0.002	-0.002	0.002	0.001	0.001	0.000
	(-0.47)	(-0.09)	(-0.07)	(0.08)	(0.05)	(0.03)	(0.01)
SUBSTANDARD	0.021	-0.044*	-0.039	-0.046*	-0.043*	-0.042*	-0.042*
	(0.84)	(-1.79)	(-1.60)	(-1.91)	(-1.81)	(-1.81)	(-1.82)
DOUBTFUL	0.034	-0.108***	-0.103***	-0.094***	-0.095***	-0.085**	-0.085**
	(0.61)	(-3.09)	(-2.93)	(-2.81)	(-2.75)	(-2.42)	(-2.42)
LOSS	0.128**	-0.013	-0.007	-0.017	-0.024	-0.004	-0.004
	(2.11)	(-0.20)	(-0.10)	(-0.25)	(-0.35)	(-0.07)	(-0.07)
LN(FACILITYSIZE)		-0.063***	-0.062***	-0.060***	-0.060***	-0.055***	-0.055***
		(-25.28)	(-24.70)	(-23.64)	(-23.78)	(-20.74)	(-20.34)
LN(MATURITY)		-0.023***	-0.022***	-0.019**	-0.020**	-0.020**	-0.019**
		(-3.03)	(-2.87)	(-2.51)	(-2.56)	(-2.58)	(-2.48)
LOANPURPGENERAL		-0.049***	-0.047***	-0.041***	-0.041***	-0.036***	-0.036***
		(-5.79)	(-5.59)	(-4.64)	(-4.65)	(-4.11)	(-4.10)
LOANPURPACQFIN		-0.036***	-0.038***	-0.036***	-0.037***	-0.033***	-0.032***
		(-4.34)	(-4.52)	(-4.30)	(-4.42)	(-3.79)	(-3.75)
LOANPURPDEBTREFIN		-0.045***	-0.046***	-0.039***	-0.039***	-0.033***	-0.033***
		(-4.54)	(-4.70)	(-4.00)	(-3.99)	(-3.45)	(-3.44)
LOANPURPWC		-0.051***	-0.047***	-0.048***	-0.046***	-0.040***	-0.040***
		(-6.71)	(-6.07)	(-6.23)	(-6.04)	(-5.28)	(-5.23)
LEADTOP3			-0.064***	-0.060***	-0.056***	-0.053***	-0.053***
			(-4.18)	(-3.79)	(-3.56)	(-3.38)	(-3.41)
LEADNEXT27			-0.042***	-0.014	-0.012	-0.012	-0.012
			(-4.40)	(-1.41)	(-1.18)	(-1.20)	(-1.24)
BANKEQUITYR				0.171	0.115	0.106	0.105
				(1.30)	(0.87)	(0.80)	(0.79)
BANKCASHR				0.172**	0.184**	0.155*	0.154*
				(1.98)	(2.12)	(1.79)	(1.78)
BANKALLLR				5.293***	5.656***	5.354***	5.246***
				(6.49)	(6.87)	(6.50)	(6.36)
STRONGRELSHIP					-0.031***	-0.030***	-0.029***
					(-4.29)	(-4.18)	(-4.01)
BORROWERLEV						0.007***	0.007***
						(2.70)	(2.93)
BORROWERROA						0.009***	0.010***
						(2.97)	(3.46)
BORROWERLNTA						0.001	-0.000
						(0.54)	(-0.04)
BORROWPUBRATINGHIG							0.060**
							(2.39)
BORROWPUBRATINGLIG							-0.003
							(-0.23)
BORROWPUBRATINGHSG							-0.019
							(-1.57)
BORROWPUBRATINGLSG							0.002
							(0.10)
Observations	3,056	3,056	3,056	3,056	3,056	3,056	3,056
Adjusted R-squared	0.100	0.300	0.304	0.317	0.322	0.332	0.333

Panel B: Main Results for Retention Analysis– Pure Revolvers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN
LOANRATINGHIG	-0.044**	0.016	0.008	0.006	0.009	0.011	0.007
	(-2.46)	(0.99)	(0.54)	(0.41)	(0.56)	(0.71)	(0.44)
LOANRATINGLIG	-0.038**	-0.007	-0.012	-0.014	-0.011	-0.009	-0.008
	(-2.20)	(-0.45)	(-0.79)	(-0.88)	(-0.74)	(-0.64)	(-0.54)
LOANRATINGHSG	0.029*	-0.003	-0.013	-0.015	-0.012	-0.015	-0.014
	(1.67)	(-0.20)	(-0.89)	(-0.98)	(-0.82)	(-1.00)	(-0.92)
LOANRATINGLSG	0.080***	0.017	0.003	0.008	0.009	0.004	0.004
	(4.48)	(1.08)	(0.22)	(0.51)	(0.55)	(0.26)	(0.25)
LOANLGD	-0.127***	-0.042***	-0.043***	-0.054***	-0.054***	-0.035***	-0.036***
	(-7.74)	(-3.08)	(-3.17)	(-3.79)	(-3.85)	(-2.58)	(-2.63)
SPECIALMENTION	-0.018	-0.004	-0.007	-0.003	-0.002	0.001	-0.000
	(-1.56)	(-0.42)	(-0.79)	(-0.32)	(-0.25)	(0.09)	(-0.01)
SUBSTANDARD	-0.007	-0.040***	-0.039**	-0.042***	-0.041***	-0.037**	-0.037**
	(-0.42)	(-2.62)	(-2.54)	(-2.71)	(-2.71)	(-2.45)	(-2.49)
DOUBTFUL	-0.057	-0.101*	-0.090	-0.097*	-0.094	-0.085	-0.086
	(-1.24)	(-1.70)	(-1.56)	(-1.67)	(-1.63)	(-1.49)	(-1.52)
LOSS	-0.034	-0.052	-0.029	-0.030	-0.045	0.011	0.005
	(-1.29)	(-1.59)	(-0.91)	(-0.95)	(-1.41)	(0.33)	(0.15)
LN(FACILITYSIZE)		-0.070***	-0.069***	-0.069***	-0.068***	-0.062***	-0.061***
		(-48.79)	(-47.25)	(-47.14)	(-46.85)	(-38.73)	(-38.30)
LN(MATURITY)		-0.036***	-0.035***	-0.034***	-0.035***	-0.029***	-0.029***
		(-10.52)	(-10.15)	(-9.82)	(-10.11)	(-8.42)	(-8.25)
LOANPURPGENERAL		-0.014***	-0.014***	-0.014***	-0.013***	-0.010**	-0.010**
		(-3.36)	(-3.56)	(-3.40)	(-3.10)	(-2.28)	(-2.34)
LOANPURPACQFIN		-0.013	-0.014	-0.016*	-0.015*	-0.013	-0.012
		(-1.48)	(-1.56)	(-1.74)	(-1.73)	(-1.56)	(-1.45)
LOANPURPDEBTREFIN		0.003	-0.003	0.001	0.002	0.005	0.004
		(0.26)	(-0.27)	(0.12)	(0.19)	(0.39)	(0.37)
LOANPURPWC		0.003	0.001	-0.002	-0.001	-0.001	-0.001
		(0.76)	(0.35)	(-0.41)	(-0.34)	(-0.32)	(-0.32)
LEADTOP3			-0.044***	-0.040***	-0.040***	-0.037***	-0.036***
			(-4.96)	(-4.49)	(-4.54)	(-4.26)	(-4.18)
LEADNEXT27			-0.013*	-0.004	-0.005	-0.004	-0.004
			(-1.68)	(-0.57)	(-0.69)	(-0.59)	(-0.56)
BANKEQUITYR				0.208**	0.204**	0.194**	0.191**
				(2.37)	(2.33)	(2.25)	(2.22)
BANKCASHR				0.086*	0.080*	0.072	0.071
				(1.82)	(1.71)	(1.57)	(1.54)
BANKALLLR				0.973*	1.050**	1.269**	1.166**
				(1.80)	(1.97)	(2.40)	(2.21)
STRONGRELSHIP					-0.022***	-0.023***	-0.022***
					(-5.91)	(-6.13)	(-6.05)
BORROWERLEV						-0.000	-0.000
						(-0.77)	(-0.81)
BORROWERROA						-0.001	-0.000
						(-0.13)	(-0.10)
BORROWERLNTA						-0.008***	-0.007***
						(-6.99)	(-6.62)
BORROWPUBRATINGHIG							0.006
							(0.97)
BORROWPUBRATINGLIG							-0.015***
							(-3.54)
BORROWPUBRATINGHSG							-0.030***
							(-5.66)
BORROWPUBRATINGLSG							0.001
							(0.14)
Observations	6,477	6,477	6,477	6,477	6,477	6,476	6,476
Adjusted R-squared	0.154	0.447	0.452	0.454	0.457	0.475	0.477

Panel C: Main Results for Retention Analysis – Comparisons with all Syndicated Loans

Sample:	Pure Term Loans	Pure Revolvers	All Syndicated Loans
	(1)	(2)	(3)
Dependent variable:	RETAIN	RETAIN	RETAIN
LOANRATINGHIG	0.078***	0.007	0.047***
	(4.14)	(0.44)	(4.42)
LOANRATINGLIG	0.062***	-0.008	0.042***
	(3.98)	(-0.54)	(4.13)
LOANRATINGHSG	0.047***	-0.014	0.039***
	(3.32)	(-0.92)	(3.85)
LOANRATINGLSG	0.040**	0.004	0.042***
	(2.36)	(0.25)	(3.85)
LOANLGD	-0.053*	-0.036***	-0.069***
	(-1.72)	(-2.63)	(-5.40)
SPECIALMENTION	0.000	-0.000	-0.005
	(0.01)	(-0.01)	(-0.56)
SUBSTANDARD	-0.042*	-0.037**	-0.031***
	(-1.82)	(-2.49)	(-2.80)
DOUBTFUL	-0.085**	-0.086	-0.097***
	(-2.42)	(-1.52)	(-2.86)
LOSS	-0.004	0.005	-0.005
	(-0.07)	(0.15)	(-0.12)
LN(FACILITYSIZE)	-0.055***	-0.061***	-0.054***
	(-20.34)	(-38.30)	(-18.86)
LN(MATURITY)	-0.019**	-0.029***	-0.027***
	(-2.48)	(-8.25)	(-8.58)
LOANPURPGENERAL	-0.036***	-0.010**	-0.019***
	(-4.10)	(-2.34)	(-5.24)
LOANPURPACQFIN	-0.032***	-0.012	-0.024***
	(-3.75)	(-1.45)	(-4.46)
LOANPURPDEBTREFIN	-0.033***	0.004	-0.008
	(-3.44)	(0.37)	(-1.15)
LOANPURPWC	-0.040***	-0.001	-0.006*
	(-5.23)	(-0.32)	(-1.84)
LEADTOP3	-0.053***	-0.036***	-0.047***
	(-3.41)	(-4.18)	(-6.79)
LEADNEXT27	-0.012	-0.004	-0.011**
	(-1.24)	(-0.56)	(-2.04)
BANKEQUITYR	0.105	0.191**	0.179***
	(0.79)	(2.22)	(2.63)
BANKCASHR	0.154*	0.071	0.178***
	(1.78)	(1.54)	(4.46)
BANKALLLR	5.246***	1.166**	3.200***
	(6.36)	(2.21)	(7.70)
STRONGRELSHIP	-0.029***	-0.022***	-0.030***
	(-4.01)	(-6.05)	(-9.10)
BORROWERLEV	0.007***	-0.000	0.000
	(2.93)	(-0.81)	(0.12)
BORROWERROA	0.010***	-0.000	0.004
	(3.46)	(-0.10)	(0.91)
BORROWERLNTA	-0.000	-0.007***	-0.007***
	(-0.04)	(-6.62)	(-4.90)
BORROWPUBRATINGHIG	0.060**	0.006	0.007
	(2.39)	(0.97)	(1.28)
BORROWPUBRATINGLIG	-0.003	-0.015***	-0.014***
	(-0.23)	(-3.54)	(-3.16)
BORROWPUBRATINGHSG	-0.019	-0.030***	-0.032***
	(-1.57)	(-5.66)	(-6.29)
BORROWPUBRATINGLSG	0.002	0.001	-0.000
	(0.10)	(0.14)	(-0.03)
PURE TERM FLAG			-0.019***
			(-4.05)
PURE REVOLVER FLAG			-0.006*
			(-1.68)
Observations	3,056	6,476	12,011
Adjusted R-squared	0.333	0.477	0.377

Table 5: Robustness Check for Retention Analysis Excluding Unrated Loans

This table provides a robustness check to the main retention results in Table 4. We rerun the full specification regressions from Columns (7) of Table 4, Panels A and B excluding loans that are not rated and using the low sub-investment grade loan ratings (LOANRATINGLSG) as the omitted base category. Our results only consider pure term loans (loans of fixed amounts with fixed maturities) and pure revolvers (credits for which the borrower may draw down and repay any amount up to a fixed maximum as often as desired over the maturity of the agreement) in the SNC database. We exclude term credit with separate tranches, debtor-in-possession loans, bridge loans, non-revolving lines of credit, revolving lines converting to term, and other loans not identified as a term loan or a revolver. We regress the proportion of the loan retained on our internal loan rating variables (with LOANSRATINGLSG omitted), and the full set of control variables. The robustness check results presented here are based on coarse loan ratings. Column (1) focuses on term loans, Column (2) on revolvers. All regressions include an intercept, time fixed effects and all of the control variables (not shown for brevity). All variables are defined in Table 2, Panel A. t-statistics based on robust standard errors clustered by bank are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Sample:	Pure Term Loans	Pure Revolvers
	(1)	(2)
Dependent variable:	RETAIN	RETAIN
LOANRATINGHIG	0.039**	0.001
	(2.22)	(0.19)
LOANRATINGLIG	0.027**	-0.013*
	(2.21)	(-1.85)
LOANRATINGHSG	0.007	-0.018***
	(0.66)	(-2.88)
Loss given default	Yes	Yes
Regulatory risk ratings	Yes	Yes
Loan characteristics	Yes	Yes
Bank market ranking	Yes	Yes
Bank condition	Yes	Yes
Relationship strength	Yes	Yes
Borrower characteristics	Yes	Yes
Borrower Public Ratings	Yes	Yes
LGD available flag	Yes	Yes
Packaged loan flag	Yes	Yes
Borrower public flag	Yes	Yes
Borrower industry FEs	Yes	Yes
Time FEs	Yes	Yes
Observations	2,672	6,396
Adjusted R-squared	0.355	0.480

Table 6: Robustness Check for Retention Analysis Using Granular Loan Ratings

For robustness, Table 6 Columns (1) and (2) show the findings for pure term loans and pure revolvers, respectively, using granular ratings. Our results only consider pure term loans (loans of fixed amounts with fixed maturities) and pure revolvers (credits for which the borrower may draw down and repay any amount up to a fixed maximum as often as desired over the maturity of the agreement) in the SNC database. We exclude term credit with separate tranches, debtor-in-possession loans, bridge loans, non-revolving lines of credit, revolving lines converting to term, and other loans not identified as a term loan or a revolver. We regress the proportion of the loan retained on our internal loan rating variables and the full set of control variables. For this robustness check, we use the granular loan ratings instead of the coarse loan ratings used in Table 4. Column (1) focuses on pure term loans; Column (2) contains pure revolvers. Regressions include an intercept, time fixed effects, and all the control variables (not shown for brevity). All variables are defined in Table 2, Panel A. t-statistics based on robust standard errors clustered by bank are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Sample:	Pure Term Loans	Pure Revolvers
	(1)	(2)
Dependent variable:	RETAIN	RETAIN
LOANRATINGAAA	0.157***	0.014
	(3.94)	(0.61)
LOANRATINGAA	0.049	0.018
	(1.52)	(1.07)
LOANRATINGA	0.075***	0.002
	(3.70)	(0.14)
LOANRATINGBBB	0.061***	-0.009
	(3.96)	(-0.59)
LOANRATINGBB	0.047***	-0.014
	(3.31)	(-0.96)
LOANRATINGB	0.042**	0.003
	(2.47)	(0.16)
LOANRATINGCCC	-0.006	0.008
	(-0.14)	(0.35)
LOANRATINGCC	0.086**	0.056*
	(2.13)	(1.89)
LOANRATINGC	0.010	-0.018
	(0.25)	(-0.46)
LOANRATINGD	-0.045	-0.001
	(-0.88)	(-0.01)
Loss given default	Yes	Yes
Regulatory risk ratings	Yes	Yes
Loan characteristics	Yes	Yes
Bank market ranking	Yes	Yes
Bank condition	Yes	Yes
Relationship strength	Yes	Yes
Borrower characteristics	Yes	Yes
Borrower Public Ratings	Yes	Yes
LGD available flag	Yes	Yes
Packaged loan flag	Yes	Yes
Borrower public flag	Yes	Yes
Borrower industry FEs	Yes	Yes
Time FEs	Yes	Yes
Observations	3,056	6,476
Adjusted R-squared	0.334	0.477

Table 7: Robustness Check for Retention Analysis Using Subsamples

For robustness, Table 7 Columns (1) - (4) show the full specification of our main results from the retention regressions in Table 4 Panels A and B on the subsets of private and publicly-traded obligors, while Columns (5) - (8) show our main results for the subsets of obligors without and with public debt ratings. Our results only consider pure term loans (loans of fixed amounts with fixed maturities) and pure revolvers (credits for which the borrower may draw down and repay any amount up to a fixed maximum as often as desired until maturity) in the SNC database. We exclude term credit with separate tranches, debtor-in-possession loans, bridge loans, non-revolving lines of credit, revolving lines converting to term, and other loans not identified as a term loan or a revolver. The robustness check results presented here are based on coarse loan ratings. Columns (1) and (2) focus on pure term loans, while Columns (3) and (4) focus on pure revolvers, and analogously for Columns (5) - (8). Regressions are based on the most inclusive specifications, but control variable results are not shown for brevity. All variables are defined in Table 2, Panel A. t-statistics based on robust standard errors clustered by bank are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Sample:	Pure Term Loans		Pure Revolvers		Pure Term Loans		Pure Revolvers	
	Private Firms	Publicly-Traded Firms	Private Firms	Publicly-Traded Firms	Without Public Debt Ratings	With Public Debt Ratings	Without Public Debt Ratings	With Public Debt Ratings
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN
LOANRATINGHIG	0.051**	0.090***	0.011	0.004	0.071***	0.103**	0.013	-0.006
	(2.05)	(3.07)	(0.49)	(0.20)	(3.48)	(2.19)	(0.71)	(-0.22)
LOANRATINGLIG	0.060***	0.045*	-0.007	-0.010	0.076***	-0.016	-0.000	-0.029
	(3.15)	(1.80)	(-0.33)	(-0.49)	(4.59)	(-0.40)	(-0.02)	(-1.06)
LOANRATINGHSG	0.045***	0.040*	-0.010	-0.016	0.059***	-0.019	-0.009	-0.029
	(2.58)	(1.76)	(-0.50)	(-0.83)	(3.80)	(-0.56)	(-0.51)	(-1.04)
LOANRATINGLSG	0.033*	0.057	-0.000	0.022	0.043**	0.074	0.004	0.011
	(1.70)	(1.62)	(-0.01)	(0.98)	(2.46)	(1.49)	(0.22)	(0.34)
Loss given default	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regulatory risk ratings	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank market ranking	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank condition	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Relationship strength	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower characteristics	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Borrower Public Ratings	Yes	Yes	Yes	Yes	No	Yes	No	Yes
LGD available flag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Packaged loan flag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower public flag	No	No	No	No	Yes	Yes	Yes	Yes
Borrower industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,164	892	3,710	2,766	2,627	429	5,026	1,450
Adjusted R-squared	0.293	0.253	0.331	0.484	0.319	0.186	0.404	0.453

Table 8: Main Results for Pricing Analysis

This table examines if banks' private information is priced into the interest rate spreads of the loan using Equation (2). To ensure we are comparing similar loans, our main results only consider pure term loans (loans of fixed amounts with fixed maturities) and pure revolvers (credits for which the borrower may draw down and repay any amount up to a fixed maximum as often as desired over the maturity of the agreement) in the SNC database. We excluded term credit with separate tranches, debtor-in-possession loans, bridge loans, non-revolving lines of credit, revolving lines converting to term, and other loans not identified as a term loan or a revolver. Furthermore, for the pricing regressions, we only consider observations where pricing information is available. We regress the interest rate spread on our internal loan rating variables and on alternative sets of control variables. The main results presented here are based on the coarse internal loan ratings. Panel A focuses on pure term loans while Panel B is based on pure revolvers (a comparison of the regression results for the pricing equations between pure term loans, pure revolvers, and all syndicated loans for which pricing information is available in the appendix). To demonstrate robustness, we include progressively more control variables in each column of Panels A and B with the full specifications presented in Column (6). We include LOANLGDAVAIL, BORROWERPUBLIC, and industry fixed effect dummies in Panels A and B; however, we do not show them for brevity. For all regressions, we include LOANLGDAVAIL flag to account for the average difference in the interest rate spread for loans which the bank has LGD information available and for loans that bank does not. For regressions that control for borrower characteristics, Column (6), we include the BORROWERPUBLIC flag to capture average difference in the interest rate spread for loans which the borrower's financial information is publicly available and for loans which the borrower's financial information is not available publicly. Finally, we capture industry fixed effects in Columns (5) and (6). The LOSS variable is omitted from Table 8, Panels A and B since the proportion loss is zero for all observations in the sample. All variables are defined in Table 2, Panel A. t-statistics based on robust standard errors clustered by bank are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Panel A: Main Results for Pricing Analysis– Pure Term Loans

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	SPREAD	SPREAD	SPREAD	SPREAD	SPREAD	SPREAD
LOANRATINGHIG	-0.024***	-0.024***	-0.022***	-0.021***	-0.017***	-0.017***
	(-17.37)	(-17.42)	(-13.79)	(-13.19)	(-10.87)	(-10.02)
LOANRATINGLIG	-0.017***	-0.017***	-0.015***	-0.014***	-0.012***	-0.012***
	(-12.15)	(-12.39)	(-9.77)	(-9.20)	(-8.49)	(-7.54)
LOANRATINGHSG	-0.009***	-0.009***	-0.007***	-0.006***	-0.006***	-0.006***
	(-7.31)	(-7.36)	(-4.76)	(-4.10)	(-4.65)	(-4.21)
LOANRATINGLSG	0.005***	0.005***	0.005***	0.006***	0.004**	0.004**
	(3.04)	(2.67)	(2.99)	(3.32)	(1.96)	(2.01)
LOANLGD	-0.027***	-0.026***	-0.028***	-0.029***	-0.025***	-0.025***
	(-7.15)	(-7.01)	(-6.91)	(-7.17)	(-6.24)	(-6.25)
SPECIALMENTION	0.006**	0.007**	0.006**	0.006**	0.006**	0.006**
	(2.45)	(2.44)	(2.10)	(2.12)	(2.24)	(2.11)
SUBSTANDARD	-0.001	-0.001	-0.000	-0.000	0.001	0.001
	(-0.27)	(-0.24)	(-0.08)	(-0.05)	(0.25)	(0.20)
DOUBTFUL	0.042***	0.042***	0.043***	0.043***	0.041***	0.040***
	(24.36)	(22.15)	(21.62)	(20.82)	(11.93)	(13.70)
LOSS	-	-	-	-	-	-
	-	-	-	-	-	-
LEADTOP3		-0.002	-0.003	-0.002	-0.002	-0.002
		(-0.95)	(-1.28)	(-0.86)	(-0.71)	(-0.75)
LEADNEXT27		-0.001	-0.004**	-0.004**	-0.003	-0.003
		(-0.67)	(-2.23)	(-2.04)	(-1.61)	(-1.56)
BANKEQUITYR			-0.031*	-0.041**	-0.036**	-0.033**
			(-1.92)	(-2.55)	(-2.29)	(-2.16)
BANKCASHR			-0.004	-0.003	-0.000	0.001
			(-0.38)	(-0.27)	(-0.03)	(0.08)
BANKALLLR			-0.373***	-0.313***	-0.330***	-0.352***
			(-3.77)	(-3.18)	(-3.49)	(-3.75)
STRONGRELSHIP				-0.004***	-0.005***	-0.005***
				(-4.91)	(-5.44)	(-5.45)
BORROWERLEV					0.004**	0.003
					(2.03)	(1.64)
BORROWERROA					0.004*	0.003
					(1.69)	(1.24)
BORROWERLNTA					-0.001***	-0.001***
					(-3.64)	(-2.78)
BORROWPUBRATINGHIG						-0.002
						(-0.52)
BORROWPUBRATINGLIG						-0.004***
						(-3.51)
BORROWPUBRATINGHSG						-0.003**
						(-2.55)
BORROWPUBRATINGLSG						0.002
						(1.20)
Observations	1,624	1,624	1,624	1,624	1,624	1,624
Adjusted R-squared	0.340	0.340	0.351	0.361	0.418	0.421

Panel B: Main Results for Pricing Analysis– Pure Revolvers

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	SPREAD	SPREAD	SPREAD	SPREAD	SPREAD	SPREAD
LOANRATINGHIG	-0.010***	-0.010***	-0.009***	-0.009***	-0.009***	-0.008***
	(-4.58)	(-4.53)	(-4.14)	(-4.15)	(-4.23)	(-4.13)
LOANRATINGLIG	-0.006***	-0.006***	-0.005**	-0.005**	-0.004**	-0.004*
	(-2.60)	(-2.58)	(-2.17)	(-2.18)	(-2.11)	(-1.93)
LOANRATINGHSG	0.003	0.003	0.004*	0.004*	0.003	0.004*
	(1.33)	(1.33)	(1.80)	(1.82)	(1.63)	(1.87)
LOANRATINGLSG	0.015***	0.015***	0.015***	0.015***	0.012***	0.012***
	(6.49)	(6.45)	(6.23)	(6.23)	(5.67)	(5.94)
LOANLGD	-0.011***	-0.011***	-0.011***	-0.011***	-0.009***	-0.008***
	(-7.80)	(-7.84)	(-7.66)	(-7.61)	(-6.09)	(-5.58)
SPECIALMENTION	-0.002*	-0.002*	-0.002*	-0.002*	-0.001	-0.002*
	(-1.88)	(-1.77)	(-1.88)	(-1.88)	(-1.28)	(-1.68)
SUBSTANDARD	0.007***	0.007***	0.008***	0.008***	0.008***	0.008***
	(3.15)	(3.05)	(3.41)	(3.36)	(3.56)	(3.72)
DOUBTFUL	0.014***	0.014***	0.016***	0.016***	0.021***	0.021***
	(3.40)	(3.36)	(4.13)	(4.11)	(6.13)	(6.27)
LOSS	-	-	-	-	-	-
LEADTOP3		-0.003*	-0.004***	-0.004***	-0.003***	-0.004***
		(-1.95)	(-3.01)	(-3.01)	(-2.79)	(-2.86)
LEADNEXT27		-0.003**	-0.004***	-0.004***	-0.004***	-0.004***
		(-2.40)	(-3.36)	(-3.39)	(-3.16)	(-3.28)
BANKEQUITYR			-0.019**	-0.020**	-0.022***	-0.021***
			(-2.20)	(-2.29)	(-2.65)	(-2.62)
BANKCASHR			0.011**	0.011**	0.013***	0.012***
			(2.33)	(2.34)	(2.81)	(2.62)
BANKALLLR			-0.235***	-0.236***	-0.257***	-0.267***
			(-3.86)	(-3.91)	(-4.39)	(-4.59)
STRONGRELSHIP				-0.001***	-0.001***	-0.001***
				(-3.96)	(-3.91)	(-4.05)
BORROWERLEV					0.000	0.000
					(0.30)	(0.24)
BORROWERROA					-0.000	-0.001
					(-0.96)	(-1.44)
BORROWERLNTA					-0.000**	-0.000
					(-2.17)	(-0.13)
BORROWPUBRATINGHIG						-0.002***
						(-4.03)
BORROWPUBRATINGLIG						-0.002***
						(-4.81)
BORROWPUBRATINGHSG						0.000
						(0.53)
BORROWPUBRATINGLSG						0.006***
						(6.13)
Observations	3,720	3,720	3,720	3,720	3,719	3,719
Adjusted R-squared	0.485	0.487	0.496	0.498	0.539	0.548

Table 9: Robustness Check for Pricing Analysis for Samples without and with Publicly Available Information

For robustness, Table 9 Columns (1) – (4) show the full specification of our main results from the interest rate spread regressions in Table 8 Panels A and B on the subsets of private and publicly-traded obligors, while Columns (5) - (8) show our main results for the subsets of obligors without and with public debt ratings. Our results only consider pure term loans (loans of fixed amounts with fixed maturities) and pure revolvers (credits for which the borrower may draw down and repay any amount up to a fixed maximum as often as desired until maturity) in the SNC database. We exclude term credit with separate tranches, debtor-in-possession loans, bridge loans, non-revolving lines of credit, revolving lines converting to term, and other loans not identified as a term loan or a revolver. The robustness check results presented here are based on coarse loan ratings. Columns (1) and (2) focus on pure term loans, while Columns (3) and (4) focus on pure revolvers, and analogously for Columns (5) - (8). Regressions are based on the most inclusive specifications, but control variable results are not shown for brevity. All variables are defined in Table 2, Panel F. t-statistics based on robust standard errors clustered by bank are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Sample:	Pure Term Loans		Pure Revolvers		Pure Term Loans		Pure Revolvers	
	Private Firms	Publicly-Traded Firms	Private Firms	Publicly-Traded Firms	Without Public Debt Ratings	With Public Debt Ratings	Without Public Debt Ratings	With Public Debt Ratings
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN	RETAIN
LOANRATINGHIG	-0.020***	-0.019***	-0.011***	-0.006***	-0.017***	-0.010**	-0.008***	-0.006***
	(-8.16)	(-6.43)	(-3.54)	(-2.91)	(-9.05)	(-2.14)	(-2.90)	(-3.55)
LOANRATINGLIG	-0.011***	-0.014***	-0.006*	-0.003	-0.012***	-0.005*	-0.004	-0.004**
	(-5.84)	(-5.07)	(-1.93)	(-1.47)	(-7.11)	(-1.72)	(-1.27)	(-2.54)
LOANRATINGHSG	-0.005***	-0.008***	0.003	0.002	-0.006***	-0.002	0.004	-0.000
	(-3.08)	(-3.05)	(1.09)	(0.82)	(-3.86)	(-0.48)	(1.53)	(-0.28)
LOANRATINGLSG	0.003	0.005	0.011***	0.009***	0.003	0.005	0.013***	0.003
	(1.40)	(1.28)	(3.43)	(3.82)	(1.42)	(1.49)	(4.49)	(1.58)
Loss given default	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regulatory risk ratings	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank market ranking	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank condition	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Relationship strength	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower characteristics	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Borrower Public Ratings	Yes	Yes	Yes	Yes	No	Yes	No	Yes
LGD available flag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Packaged loan flag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower public flag	No	No	No	No	Yes	Yes	Yes	Yes
Borrower industry FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,076	548	1,854	1,865	1,341	283	2,730	989
Adjusted R-squared	0.339	0.472	0.470	0.563	0.401	0.519	0.515	0.687

Table 10: Tests of the Second Conjecture – Loan Retention

This table examines our second conjecture related to loan retention using Equation (3). Our second conjecture is that for both pure term loan and pure revolver syndicates, syndicates with a low proportion of sophisticated investors will adhere to the *Signaling Hypothesis* while syndicates with a high proportion of sophisticated investors will adhere to the *Sophisticated Syndicate Hypothesis*. Our results only consider pure term loans (loans of fixed amounts with fixed maturities) and pure revolvers (credits for which the borrower may draw down and repay any amount up to a fixed maximum as often as desired over the maturity of the agreement) in the SNC database. To measure the presence of sophisticated investors within the syndicate, we create dummies indicating if the syndicate has a low or high proportion of sophisticated investors and we interact these dummies with our coarse internal loan ratings. We regress the proportion retained against our coarse internal loan rating variables interacted with our low and high sophisticated syndicate proportion dummies (with the medium proportion excluded), uninteracted low and high sophisticated syndicated proportion dummies, and our full set of control variables. We use two proportions of sophisticated investors: the dollar proportion of banks in the syndicate ranked in the Top 3 of the syndicated league tables and the dollar proportion of banks in the syndicate ranked in the Top 30. The *League Table Proportion HIGH* and *League Table Proportion LOW* dummies are based on whether the syndicate proportions are above the means for the pure revolver sample and equal to or below the means for the pure term loan sample using the retention dataset. Thus, *League Table Proportion HIGH* equals one if PARTICIPTOP3 or PARTICIPTOP30 > 0.130 or > 0.510, respectively, and *League Table Proportion LOW* equals one if PARTICIPTOP3 or PARTICIPTOP30 ≤ 0.076 or ≤ 0.329, respectively, depending on whether Top 3 or Top 30 is considered sophisticated. Column (1) and Column (3) contain the results for the dollar proportion of banks in the syndicate ranked in the Top 3 of the league tables for pure term loans and pure revolvers respectively. Column (2) and Column (4) contain the results for the Top 30 for pure term loans and pure revolvers respectively. Regressions include an intercept, time fixed effects, and all the control variables (not shown for brevity). All variables are defined in Table 2, Panel A. t-statistics based on robust standard errors clustered by bank are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Sample:	Pure Term Loans	Pure Term Loans	Pure Revolvers	Pure Revolvers
	(1)	(2)	(3)	(4)
	Top 3	Top 30	Top 3	Top 30
Dependent variable:	RETAIN	RETAIN	RETAIN	RETAIN
LOANRATINGHIG * League table proportion HIGH	0.090*	-0.029	0.018	-0.006
	(1.83)	(-0.62)	(0.91)	(-0.31)
LOANRATINGLIG * League table proportion HIGH	-0.005	-0.065	0.009	-0.017
	(-0.10)	(-1.49)	(0.47)	(-0.87)
LOANRATINGHSG * League table proportion HIGH	-0.023	-0.088**	0.006	-0.019
	(-0.53)	(-2.02)	(0.31)	(-1.02)
LOANRATINGLSG * League table proportion HIGH	-0.001	-0.048	0.018	-0.019
	(-0.03)	(-1.02)	(0.88)	(-0.98)
LOANRATINGHIG * League table bank proportion LOW	0.049**	0.063**	-0.012	0.098**
	(2.08)	(1.97)	(-0.43)	(2.44)
LOANRATINGLIG * League table proportion LOW	0.075***	0.099***	-0.042	0.048
	(4.39)	(5.19)	(-1.58)	(1.31)
LOANRATINGHSG * League table proportion LOW	0.066***	0.075***	-0.027	0.034
	(4.31)	(4.87)	(-1.04)	(1.00)
LOANRATINLSG * League table proportion LOW	0.041**	0.046**	-0.006	0.042
	(2.30)	(2.40)	(-0.21)	(1.17)
League table bank proportion HIGH	0.049	0.044	0.031	-0.007
	(1.11)	(1.02)	(1.57)	(-0.39)
League table bank proportion LOW	0.002	-0.081***	0.100***	-0.011
	(0.13)	(-5.27)	(3.83)	(-0.31)
Loss given default	Yes	Yes	Yes	Yes
Regulatory risk ratings	Yes	Yes	Yes	Yes
Loan characteristics	Yes	Yes	Yes	Yes
Bank market ranking	Yes	Yes	Yes	Yes
Bank condition	Yes	Yes	Yes	Yes
Relationship strength	Yes	Yes	Yes	Yes
Borrower characteristics	Yes	Yes	Yes	Yes
Borrower Public Ratings	Yes	Yes	Yes	Yes
LGD available flag	Yes	Yes	Yes	Yes
Packaged loan flag	Yes	Yes	Yes	Yes
Borrower public flag	Yes	Yes	Yes	Yes
Borrower industry FEs	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes
Observations	3,056	3,056	6,476	6,476
Adjusted R-squared	0.347	0.342	0.503	0.490

Table 11: Tests of the Second Conjecture – Loan Pricing

This table examines our second conjecture related to loan pricing using Equation (4). Our second conjecture is that for both pure term loan and pure revolver syndicates, syndicates with a low proportion of sophisticated investors will adhere to the *Signaling Hypothesis* while syndicates with a high proportion of sophisticated investors will adhere to the *Sophisticated Syndicate Hypothesis*. Our results only consider pure term loans (loans of fixed amounts with fixed maturities) and pure revolvers (credits for which the borrower may draw down and repay any amount up to a fixed maximum as often as desired over the maturity of the agreement) in the SNC database. Furthermore, for the pricing regressions, we only consider observations where pricing information is available. To measure the presence of sophisticated investors within the syndicate, we create dummies indicating if the syndicate has a low or high proportion of sophisticated investors and we interact these dummies with our coarse internal loan ratings. We regress the interest rate spread against our coarse internal loan rating variables interacted with our low and high sophisticated syndicate proportion dummies (with medium excluded), uninteracted low and high sophisticated syndicate proportion dummies, and our full set of control variables. We use two proportions of sophisticated investors: the dollar proportion of banks in the syndicate ranked in the Top 3 of the syndicated league tables and the dollar proportion of banks in the syndicate ranked in the Top 30. The *League Table Proportion HIGH* and *League Table Proportion LOW* dummies based on whether the syndicate proportions are above the means for the pure revolver sample and equal to or below the means for the pure term loan sample using the pricing dataset. Thus, for these tests, *League Table Proportion HIGH* equals one if PARTICIPTOP3 or PARTICIPTOP30 > 0.138 or > 0.544, respectively, and *League Table Proportion LOW* equals one if PARTICIPTOP3 or PARTICIPTOP30 ≤ 0.075 or ≤ 0.337, respectively, depending on whether Top 3 or Top 30 is considered sophisticated. Columns (1) and (3) contain the results for the dollar proportion of banks in the syndicate ranked in the Top 3 of the league tables for pure term loans and pure revolvers respectively. Columns (2) and (4) contain the results for the dollar proportion of banks in the syndicate ranked in the Top 30 of the league tables for pure term loans and pure revolvers respectively. Regressions include an intercept, time fixed effects, and all the control variables (not shown for brevity). All variables are defined in Table 2, Panel A. t-statistics based on robust standard errors clustered by bank are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Sample:	Pure Term Loans	Pure Term Loans	Pure Revolvers	Pure Revolvers
	(1)	(2)	(3)	(4)
Dependent variable:	Top 3 SPREAD	Top 30 SPREAD	Top 3 SPREAD	Top 30 SPREAD
LOANRATINGHIG * League table proportion HIGH	-0.006	-0.013**	-0.006**	-0.004
	(-1.49)	(-2.07)	(-1.97)	(-1.48)
LOANRATINGLIG * League table proportion HIGH	-0.002	-0.008	-0.003	-0.001
	(-0.43)	(-1.27)	(-1.00)	(-0.21)
LOANRATINGHSG * League table proportion HIGH	0.004	-0.004	0.002	0.005*
	(0.94)	(-0.66)	(0.71)	(1.72)
LOANRATINGLSG * League table proportion HIGH	0.010**	0.006	0.010***	0.012***
	(1.98)	(0.92)	(3.08)	(3.94)
LOANRATINGHIG * League table bank proportion LOW	-0.017***	-0.017***	-0.010***	-0.004
	(-6.52)	(-2.87)	(-3.60)	(-0.73)
LOANRATINGLIG * League table proportion LOW	-0.012***	-0.009***	-0.006**	0.001
	(-6.44)	(-3.13)	(-2.04)	(0.19)
LOANRATINGHSG * League table proportion LOW	-0.005***	-0.004***	0.003	0.008*
	(-3.68)	(-2.63)	(1.17)	(1.82)
LOANRATINLSG * League table proportion LOW	0.004**	0.005***	0.010***	0.014***
	(2.04)	(2.62)	(3.53)	(2.99)
League table bank proportion HIGH	-0.003	0.002	0.000	-0.005*
	(-0.67)	(0.38)	(0.06)	(-1.75)
League table bank proportion LOW	0.011***	0.010***	0.005*	-0.003
	(7.72)	(7.07)	(1.82)	(-0.70)
Loss given default	Yes	Yes	Yes	Yes
Regulatory risk ratings	Yes	Yes	Yes	Yes
Bank market ranking	Yes	Yes	Yes	Yes
Bank condition	Yes	Yes	Yes	Yes
Relationship strength	Yes	Yes	Yes	Yes
Borrower characteristics	Yes	Yes	Yes	Yes
Borrower Public Ratings	Yes	Yes	Yes	Yes
LGD available flag	Yes	Yes	Yes	Yes
Borrower public flag	Yes	Yes	Yes	Yes
Borrower industry FEs	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes
Observations	1,624	1,624	3,719	3,719
Adjusted R-squared	0.436	0.446	0.554	0.510