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

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Little is known about how lead banks in the syndicated loan market use their private information about loan quality. We formulate and test two opposing hypotheses, the *Signaling Hypothesis* and *Sophisticated Syndicate Hypothesis*. To measure private information, we use Shared National Credit (SNC) internal loan ratings which are made comparable across lead banks using concordance tables. We find that favorable private information is associated with higher loan retention by lead banks for term loans, *ceteris paribus*, consistent with the *Signaling Hypothesis*, while neither hypothesis dominates for revolvers. Differences in syndicate structure at least partially explain this disparity.

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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 commercial loan customers by screening before loans are made, by monitoring borrowers after loans are made, and in some cases, from prior relationships that include both 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 to others. This model is often used for commercial loans for which no one bank provides all of the financing to reduce credit and/or liquidity risks, comply with capital requirements and/or legal lending limits, reduce funding cost disadvantages, or other reasons.[2] Rather, the lead bank distributes part of the loans to other banks and nonbank institutions through syndication.[3]

This paper focuses on the syndicated loan market, which provides an ideal setting for studying private information for three reasons. First, syndicated loans comprise a multi-trillion

[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] 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.

[3] 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.

dollar market in which many firms are funded. Second, a broad spectrum of borrowing firms is represented – both public and private firms, with variety of different credit ratings as well as unrated firms, and many different firm sizes. Third and most important, direct measures of private information that may be made comparable across lead banks and loans have recently become available, allowing for meaningful regression analysis.

The literature on syndicated lending in some cases constructs indirect proxies for the extent of private information using publicly-available data, such as borrower's public listing status and public rating availability. For example, using such proxies, Sufi (2007) finds that lead bank loan retention is greater when the lead bank has more private information. It has recently become 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 measures may indicate that the private information is favorable or unfavorable – i.e., the lead banks may view the loans as higher or lower quality than would be expected based on publicly-available information.

In this paper we ask: How do 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 of the loans. We focus on lead banks as opposed to syndicate participants who purchase parts of the loans, since lead banks 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 the private information.

We formulate and test two hypotheses which are based on the knowledge of the lead banks relative to the syndicate participants and the extent to which these participants are able to divine the private information of the lead bank on loans of different quality. If participants are

relatively uninformed about loans of any quality, the lead bank may have to signal the quality of the loans. Signaling is costly, but can be accomplished by the lead bank investing more of its own funds by retaining greater ownership. In equilibrium, the lead bank retains more of higher-quality loans (Leland and Pyle, 1977). Thus, under the *Signaling Hypothesis*, lead banks retain *higher* proportions of loans when they have more favorable private information, *ceteris paribus*.[4]

Alternatively, syndicate participants may be relatively "sophisticated" and be able determine much of the private information about some of the loans. Assuming that the participants know more about the higher-quality loans than the lower-quality loans, they may demand more of the higher-quality loans about which they are better informed, *ceteris paribus*.[5] The greater demand for higher-quality loans by participants results in lower retention of these loans remaining on the balance sheets of the lead banks. This is more likely to hold for syndicate participants that have built up loan evaluation expertise or "sophistication" through their own lead lender experience on other loans. In contrast to the *Signaling Hypothesis*, under the *Sophisticated Syndicate Hypothesis*, lead banks retain *lower* proportions of loans when they have more favorable private information, *ceteris paribus*.

Each hypothesis may hold for different subsets of syndicates, so we also test which hypothesis empirically dominates for different subsets of syndicates. Importantly, the extent to which the two hypotheses hold may also differ systematically by loan type. We run the tests separately for "pure" term loans (loans of fixed amounts with fixed maturities) and "pure"

[4] The *Signaling Hypothesis* is 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).

[5] The assumption that loan opacity and quality are inversely related is almost certainly true on average. For example, borrowers that are less opaque due to greater longevity, being publicly listed, and/or have bond ratings available tend to have loans that are safer than loans to younger, unlisted firms without bond ratings.

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).[6] The pure term loans and revolvers have very different properties, and, as will be shown, very different syndicates that differ in their degree of "sophistication."

This separate treatment 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 combine them, justifying our separate treatment. We are able to find at least a partial explanation for the difference in results across loan types by examining syndicate structure.

The data requirements for testing 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 data on loan syndicates 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. Most of these banks do so on an annual basis, but a subset of 18 "expanded reporters" (described in Section 2) provide this information on a quarterly basis. Since 2011:Q1, a total of 32 SNC banks – which includes most of the Comprehensive Capital Analysis and Review (CCAR) stress test banks plus a small number of other lead banks – also

[6] 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.

provide concordance tables to the Federal Reserve (along with their Y14 reports).[7] We use these tables to map their "raw" internal loan ratings scale 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 ratings. We use the concordance-mapped internal loan ratings as lead banks' private information measures. Such usage is validated by evidence that these concordance-mapped ratings strongly predict loan default (Gutierrez-Mangas, Ivanov, Lueck, Luo, and Nichols, 2015).

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 either the lead bank or a participant. 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, and we do so 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

[7] 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.

strength of the lead bank-borrower relationship; borrower characteristics; and borrower public bond ratings. We also include fixed effects for borrower industry and time.

We find that for pure term loans, favorable private information is associated with higher loan retention by lead banks, consistent with the *Signaling Hypothesis*, while for pure revolvers, neither hypothesis empirically dominates. Further investigation suggests that at least part of the difference may be explained by the generally higher proportion of other concordance banks in the syndicates for pure revolvers. This result is intuitive, because the *Sophisticated Syndicate Hypothesis* is more likely to hold when a greater proportion of syndicate participants may be able to divine at least some of the private information. Other concordance banks are generally large banks with screening and monitoring technologies that are superior to those of other parties, and are often lead banks and syndicate members on many other deals. Thus, these banks are more likely to be the type of "sophisticated" syndicate participants as described by the *Sophisticated Syndicate Hypothesis*.

Our hypotheses have not been investigated in the extant literature. They cannot be addressed using the DealScan dataset, which most studies of the syndicated loan market use, since DealScan contains only publicly available 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; Bharath, Dahiya, and Hallak, 2013; Firestone and Rezende, 2013; 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).

Some of these SNC papers use raw probabilities of default (PDs) as reported by the banks as measures of private information, while investigating issues other than lead bank loan retention (e.g., Plosser and Santos, 2014; Aramonte, Lee, and Stebunovs, 2015). A drawback of this approach is that raw PDs may not be comparable across banks, since they are not matched to a common scale. We argue that concordance-mapped internal loan ratings are superior to PDs for other reasons as well. In one of our analyses below, we attempt to improve on the raw PDs by replacing them with concordance PDs using the mean probability of default across all sample loans with the same granular loan rating assigned to each loan with that rating.

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

2. Methodology, data, and regression variables

This section describes our methodology, data, and regression variables.

2.1 Methodology

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:

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

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 loan ratings in our main specification, discussed further in Section 2.3.2. Because such ratings are likely highly correlated with publicly-available information about loan quality, we include a strong set of controls to try to ensure that the coefficients on the loan ratings reflect only the effects of the private information. Equation (1) includes several sets of control variables (described in Section 2.3.3): 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, which measures the net effect of the two competing hypotheses. Under the *Signaling Hypothesis*, the B_1 coefficients are more positive for more favorable ratings (i.e., the lead bank keeps more when it has more favorable private information), while under the *Sophisticated Syndicate Hypothesis*, the B_1 coefficients are more negative for more favorable ratings (i.e., the lead bank keeps less when it has more favorable private information).

2.2. Sample banks and loans

The Shared National Credit (SNC) program was set up by bank regulators in 1977 to provide an efficient and consistent review of the largest syndicated loans.[8] 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.[9] These banks were designated as "expanded reporters," and have been required to report more information on a quarterly basis since then. Table 1 highlights differences in reporting requirements of SNC 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 make "raw" internal loan ratings comparable across lead banks.[10] 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. As discussed above, to facilitate apples-to-apples comparisons, we focus on pure term loans (3,057 cases) and pure revolvers

[8] 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.

[9] 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.

[10] As noted above, the 32 concordance banks include most of the CCAR stress test banks plus a small number of other lead banks.

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

2.3 Regression variables

Table 2 Panel A provides definitions, mnemonics, and data sources for the regression variables, and Panel B gives key summary statistics for these variables for both pure term loans and pure revolvers. Since we use confidential supervisory data, it is not possible to report minimums and maximums. Panel C shows the numbers of borrowers, loans, and lead banks over time, and Panel D displays the proportions of loans retained over time. The following subsections discuss these variables.

2.3.1. Dependent variable

The dependent variable used to test the hypotheses 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.

[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).

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

This avoids artificial drops 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]

2.3.2 Key independent variables

The key independent variables capture the lead bank's private information favorability about the loan. In most tests, we use a concordance-mapped rating – the bank's raw internal rating 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, which illustrate 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 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

[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.

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]

Additional tests substitute probabilities of default (PDs) for the concordance-mapped loan ratings. We use three alternative PD definitions. First, we use the definition commonly used in the existing literature: the loan's raw PD as reported by the bank, which is available for 54 percent of term loans and for 71 percent of the revolvers. Second, we use the concordance PD alone, allows us to assign a PD to 86 percent of the term loans and 97 percent of the revolvers. Third, we use a combination of the loan's raw PD (if available) and a concordance PD, the average PD of sample loans with the same loan rating (if available) calculated using the concordance tables. This approach allows us to assign a PD to far more loans (89 percent of the term loans and 98 percent of the revolvers). The concordance PD and the mixed case are intended to improve upon the raw PD by making them more comparable across lead banks and more often available.

2.3.3. 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. LGD information is only available for 55% of the pure term loans and 71 percent of the revolvers. The dummy accounts for the average difference in loan retention between banks that have LGD available and those

[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.

that do not. Inclusion of the dummy ensures that observations with missing information do not drop out of the regressions.[15]

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 does not agree with the bank's assessment. 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. One category must be omitted from the regressions to avoid perfect collinearity. We omit Pass because the other categories are less frequently used around the origination date.

Loan characteristics. 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).

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 (45.0 percent of loan observations) and the next 27 (46.0 percent of loan observations).

[15] This logic of including the LGD dummy applies analogously for several data availability dummies below, but for brevity, we do not explain this logic multiple times.

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. These are measured at the highest holder level (i.e., the highest BHC to which a lead arranger belongs), because the proportion of the loan retained variables are also measured at this 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 leverage, profitability, and size of the borrower. The SNC database does not include borrower characteristics, so this information is only available for publicly-traded firms from Compustat for domestic firms and from Bloomberg for foreign firms.[16] We also include a dummy if the firm is publicly traded.[17]

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 rating available flag.

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

[17] To identify public borrowers, we employ a three-step approach. First, we try to match each sample firm's tax identification number to that in Compustat. Second, we try to match unmatched firms with Compustat based on company name and NAICS code using the COMPGED function in SAS. The COMPGED 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.

3. Regression results

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

3.1 Main results using the coarse loan ratings

Table 4 examines whether banks retain more or less of loans when their private information is more favorable, i.e., when the loans are rated as higher quality. 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, lines of credit, and other loans) in the same regression, with additional dummies for pure term loans and pure revolvers. This table shows regressions of 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 also include time fixed effects and different sets of control variables from Equation (1). 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)), plus the lead bank's condition (Column (4)), plus bank-borrower relationship strength (Column (5)), plus borrower characteristics and industry fixed effects (Column (6)), plus borrower public debt ratings (Column (7)). In the interest of brevity, 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 Column (7) from Panels A and B for easy comparison of pure term loans and pure revolvers with the full specification for all syndicated loans combined.

The results from Table 4 Panel A suggest that lead banks tend to keep more of pure term loans when they have favorable private information, controlling for other factors, 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 control variables 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 empirical dominance of the *Signaling Hypothesis*. The results are also economically significant. The coefficient of 0.078 on LOANRATINGHIG in Column (7) suggests that 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 when evaluated at the mean of 25% 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 4.0% (0.78 – 0.38).

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* dominating 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.

It is not surprising that we find very different results for pure term loans and pure revolvers, both because they are such different types of credit, and because their syndicate structures are quite different. For example, as shown in Table 2 Panel B, pure term loan syndicates have a mean and median of 36% and 33%, respectively, of other concordance banks as participants, versus 52% and 56%, respectively, for pure revolver syndicates. Thus, the syndicate participants for the revolvers may be thought of as generally more "sophisticated" than participants on term loans because of their greater experience as lead banks on other syndicates. We investigate further below whether this difference in syndicate structure may help explain the differences in results between term loans and revolvers.

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. Similarly, the two worst regulatory risk ratings are also negative and statistically significant, suggesting that lead banks retain less of lowest quality loans (recall that PASS is the excluded base case). Loan size has a negative effect, possibly because the lead bank more often runs into concentration risk problems or legal lending limits for larger loans, and is therefore able to retain less of them. Lead banks also appear to retain less of long-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. Banks that are in the top three 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 more loan loss reserves retain much more of the loans they originate, possibly because high reserves hurt their reputations for making quality loans, reducing demand. 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 have no significant effects, but very high borrower public debt ratings result in greater loan retention by the lead banks. This last result highlights the importance of including a strong set of controls in the regressions. Controlling for public ratings in the regressions allows us to interpret the effects of banks' internal ratings as reflecting the effects of private information, rather than public information that is correlated with the private information.

Most of the control variable results are similar for revolvers in Panel B Column (7), but there are notable exceptions. Fewer of the loan purpose variables are significant. 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 when including all of the syndicated loans in Column (3) compared with the pure term loans and pure revolvers in Columns (1) and (2), respectively. Column (3) shows a regression with 12,011 total loan observations, almost four times as many as the pure term loans in Column (1), 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. This suggests 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 analysis below in which we analyze the effects of differences in the "sophistication" of the syndicates for pure term loans and pure revolvers that appears to explain at least part of the differences in results across the two loan types would not be possible without the separate samples for them.

3.2 Robustness check excluding unrated loans

As a robustness check, in Table 5, we rerun the main regressions, but exclude loans that are not rated and substitute 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 results are again statistically and economically significant. The coefficient on LOANRATINGHIG in the full specification for term loans in Table 5 Panel A is a statistically significant 0.043. This suggests that lead banks retain 4.3% more of loans rated as high investment grade than low sub-investment grade, *ceteris paribus*, almost the same as the 4.0% difference between the high investment grade and low sub-investment grade coefficients in the main specification in Table 4 Panel A. The LOANRATINGHIG coefficient in the full specification for term loans in Table 5 Panel B is a statistically insignificant 0.005, almost the same as the 0.007 difference between the high investment grade and low sub-investment grade coefficients in the main specification in Table 4 Panel B.

3.3 Robustness check using granular loan ratings

For robustness, we next show loan retention results using granular loan ratings. Table 6 Panels A and B show the findings for pure term loans and pure revolvers, respectively. 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 – with the sole exception of the AA rating, which makes up only one percent of the observations – they are statistically significant and monotonically decreasing. 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 there are very few observations in some of the granular ratings categories.

3.4 Additional implication of the hypotheses and a partial explanation for the differences in results between term loans and revolvers

An additional implication of the hypotheses is that the informational opacity problem is that the *Sophisticated Syndicate Hypothesis* is more likely to hold when there is a larger share of concordance banks among the syndicate participants. This is because these banks by virtue of their experiences as lead banks on other syndicates may be better able to discern more of the private information of the lead bank than other participants and therefore demand more of the loans with favorable private information. In contrast, the *Signaling Hypothesis* is more likely to

hold when dealing with a smaller proportion of concordance banks, since informational opacity is likely more severe and requires a greater use of signaling.

As discussed above, the mean and median concordance bank proportions of syndicate participants are much higher for revolver syndicates – 52% and 56%, respectively – than for term loan syndicates – 36% and 33%, respectively. This raises the possibility that these differences may partially explain our main finding that the *Signaling Hypothesis* tends to dominate for pure term loans while neither hypothesis dominates for pure revolvers. That is, the *Signaling Hypothesis* may empirically dominate for pure term loans because the typical syndicate for these loans is relatively uninformed and requires the lead bank to retain more of the better loans to signal their quality, while for pure revolvers, there are typically more sophisticated syndicates with more concordance banks that demand more of the better loans, offsetting the signaling effect so that neither hypothesis empirically dominates.

To address this in a more substantive manner, we rerun our full specification main regressions from Table 4 Panels A and B Columns (7) while adding Concordance bank proportion LOW and HIGH dummies for whether the concordance bank proportion is less than or equal to the median for pure term loans of 0.33 and higher than the median for revolvers of 0.56, respectively. The findings are shown in Table 7 Panels A and B for pure term loans and pure revolvers, respectively. In both columns, the interaction terms with the LOW dummy are all positive, and the interaction terms with the HIGH dummy are all negative, and in most cases, these terms are statistically significant. This suggests that for both types of loans, the *Signaling Hypothesis* empirically dominates for syndicates with small proportions of other concordance banks, and the *Sophisticated Syndicate Hypothesis* empirically dominates when other concordance banks have large shares. Thus, in our main results, the *Signaling Hypothesis* may

dominate for pure term loans while the two hypotheses cancel each other out for pure revolvers because of the difference in the proportions of concordance banks in the syndicates for the two loan samples.

3.5 Extra analysis using probabilities of default (PDs) as alternative measures of private information

The existing literature sometimes measures banks' private information using probabilities of default (PDs) instead of the banks' internal loan ratings and focuses on topics other than lead banks' loan retention. The main reason for using PDs is that until recently, concordance tables that allow one to consistently compare banks' internal ratings were not available. We now examine whether using PDs yield similar results to our method of using concordance-mapped internal loan ratings.

Table 8 shows the results based on three alternative proxies for the loan's PD, using both linear models of PD and quadratic models that include both PD and PD^2 (e.g., Plosser and Santos, 2014). Panels A and B show the results for pure term loans and pure revolvers, respectively. In each panel, Columns (1) and (2) show the linear and quadratic functional forms for the loan's raw PD as reported by the bank, the measure used in the literature. The other columns focus on measures we construct to make the PDs more comparable across banks. Columns (3) and (4) use the concordance tables to assign the average PD of similarly-rated loans in the sample (if available) to every loan in the sample. Columns (5) and (6) use the loan's raw PD (if available) and use the concordance tables to assign the average PD of similarly-rated loans in the sample (if available) to the remaining loans.

The significant coefficient of 0.174 in the linear model for raw PD in Panel A Column (1) suggests that for pure term loans, lead banks retain more of the loans with unfavorable private

information. This is consistent with the dominance of the *Sophisticated Syndicate Hypothesis* and in direct conflict with our finding of consistency with the *Signaling Hypothesis* when using the concordance-mapped loan ratings. In the other models with the concordance PD and the mixed case, the results show insignificant coefficients in the linear models and conflicting coefficients in the quadratic models, which do not support our main findings, but are in less conflict with them. The reduced conflict with our main findings is expected, given that the concordance PDs are at least partially comparable across lead banks. The findings in Panel B suggest that neither hypothesis empirically dominates for pure revolvers, consistent with our main results, but it is hard to draw strong conclusions from what are essentially non-results.

We strongly prefer our concordance-mapped loan ratings to the PDs because of the comparability across lead banks. In addition, the concordance-mapped ratings have multiple categories and do not force a linear or quadratic functional form on the effects of private information favorability. The loan ratings also incorporate more dimensions of credit risk – such as the likelihood of late payments, restructuring, and renegotiation costs – as well as the probability of default.

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 in their interactions with other syndicate members. We formulate and test hypotheses about how the favorability of the private information about loan quality affects the proportion of the loan retained by the lead bank, differentiating between pure term loans and pure revolvers. We employ concordance tables that

map individual banks' internal loan ratings scales into a standardized scale so that comparable data can be used to test the hypotheses.

We find that for pure term loans, favorable private information is associated with higher loan retention by lead banks, consistent with the *Signaling Hypothesis*, while for pure revolvers, neither hypothesis empirically dominates. We further investigate why the results may differ for the two types of loans, and find that at least part of the difference may be explained by the higher proportions of concordance banks – banks which are often lead banks on other loans – in the syndicates for pure revolvers. We also find that the standardized internal loan ratings have advantages over the probabilities of default (PDs) that are sometimes used as measures of private information in the literature.

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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: Variable descriptions and summary statistics

The analyses use loan-level data on syndicated loans (pure term loans and pure revolvers) from the Shared National Credit (SNC) database from 2011:Q1 to 2014:Q4. Panel A briefly describes the regression variables and their sources. Panel B displays summary statistics of all these variables separately for pure term loans and pure revolvers. The dependent variables are directly obtained from SNC. The key explanatory variables are from SNC, in most cases are converted using concordance tables. Specifically, the analyses do not use the original raw loan ratings assigned by a bank, since they are based on the bank's internal rating system. Instead, concordance tables (provided by each bank to its regulators) are used to map these loan ratings to the commonly-used Standard and Poor's (S&P) rating scale that allows for a uniform comparison of loan ratings across banks. The control variables use data from SNC, Bloomberg, Compustat, and Y-9C Filings. Since SNC, Bloomberg, and Compustat do not share a common identifier, Tax Identification Number (TIN) and borrower name are used in Levenshtein algorithms to match the datasets. Data on unmatched borrowers are hand collected and merger-adjusted. Since our Compustat subscription is restricted to domestic entities, data for foreign borrowers are extracted from Bloomberg. Y-9C Filings contain data for domestic highest holders; for foreign highest holders, data are obtained from Bloomberg. Panel C contains the numbers of borrowers, loans, and lead arrangers over time. Panel D shows the loan proportions retained over time.

Panel A: Variable descriptions

Variable	Mnemonic	Description	Source
DEPENDENT VARIABLE			
Proportion of Loan Retained	PROPRETAIN	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
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
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

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Variable	Mnemonic	Description	Source
Probability of Default			
Probability of Default from SNC			
Probability of Default Raw	PDRAW	Probability of default assigned internally by the lead bank if available	SNC
Probability of Default Raw Available Flag	PDRAWAVAIL	Dummy = 1 if PDRAW available	SNC
Probability of Default from SNC, concordance table, and own calculations			
Probability of Default Mixed	PDMIXED	PDRAW if available. PDCONCORDANCE otherwise.	SNC, concordance tables
Probability of Default Mixed Available Flag	PDMIXED	Dummy = 1 if PDMIXED available	SNC, concordance tables
Probability of Default from SNC, concordance table, and own calculations			
Probability of Default Concordance	PDCONCORDANCE	Mean probability of default across all sample loans with the same granular loan rating, assigned to each loan with that rating.	SNC, concordance tables
Probability of Default Concordance Available Flag	PDCONCORDANCEAVAIL	Dummy = 1 if PDCONCORDANCE available	SNC, concordance tables
CONTROL VARIABLES			
Loss Given Default Variables from SNC			
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
Bank Market Rank			
Top 3 US Syndicated Loan League Table Dummy	LEAGUETOP3	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	LEAGUENEXT27	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
US Syndicated Loan League Table Rank Unranked	UNRANKED	A dummy variable = 1 if the bank is not in the top 30. This variable is omitted from the regressions to avoid perfect collinearity.	

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Variable	Mnemonic	Description	Source
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
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. Borrowers are matched to Compustat and Bloomberg using a Levenshtein algorithm or by hand.	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
Public Debt Not Rated	BORROWNOTRATED	Dummy = 1 if the senior debt is not rated by S&P	Compustat
Borrower Debt Rating Available Flag	BORROWRATINGAVAIL	Dummy = 1 if borrower public debt rating is available from Compustat. Borrowers are matched to Compustat using a Levenshtein algorithm or by hand. This variable is included in robustness checks 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 BB	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
Borrower Debt Rating Available Flag	BORROWRATINGAVAIL	Dummy = 1 if borrower public debt rating is available from Compustat. Borrowers are matched to Compustat using a Levenshtein algorithm or by hand. This variable is included in robustness checks only.	Compustat

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Variable	Mnemonic	Description	Source
FIXED EFFECTS			
Industry FEs		7 dummies = 1 for the 7 industries	
Time FEs		16 dummies = 1 for the 16 sample quarters (2011:Q1 – 2014:Q4)	

Panel B: Summary statistics for pure term loans and revolvers

		Pure Term						Pure Revolvers					
Variable	**Mnemonic**	**N**	**Mean**	**Std Dev**	**P25**	**Median**	**P75**	**N**	**Mean**	**Std Dev**	**P25**	**Median**	**P75**
DEPENDENT VARIABLE													
Proportion of Loan Retained	PROPRETAIN	3057	0.25	0.18	0.11	0.23	0.36	6477	0.25	0.15	0.13	0.21	0.34
KEY EXPLANATORY VARIABLES: BANK PRIVATE INFO FAVORABILITY													
Loan Ratings													
Loan Ratings from SNC and concordance table (coarse, constructed by authors from granular ratings)													
Loan Rating High Investment Grade	LOANRATINGHIG	3057	0.04	0.19	0.00	0.00	0.00	6477	0.13	0.34	0.00	0.00	0.00
Loan Rating Low Investment Grade	LOANRATINGLIG	3057	0.17	0.38	0.00	0.00	0.00	6477	0.26	0.44	0.00	0.00	1.00
Loan Rating High Sub-Investment Grade	LOANRATINGHSG	3057	0.53	0.50	0.00	1.00	1.00	6477	0.45	0.50	0.00	0.00	1.00
Loan Rating Low Sub-Investment Grade	LOANRATINGLSG	3057	0.13	0.34	0.00	0.00	0.00	6477	0.14	0.35	0.00	0.00	0.00
Loan Not Rated	LOANNOTRATED	3057	0.13	0.33	0.00	0.00	0.00	6477	0.01	0.11	0.00	0.00	0.00
Loan Ratings from SNC and concordance table (granular)													
Loan Rating AAA	LOANRATINGAAA	3057	0.00	0.05	0.00	0.00	0.00	6477	0.00	0.06	0.00	0.00	0.00
Loan Rating AA	LOANRATINGAA	3057	0.01	0.07	0.00	0.00	0.00	6477	0.03	0.17	0.00	0.00	0.00
Loan Rating A	LOANRATINGA	3057	0.03	0.17	0.00	0.00	0.00	6477	0.10	0.29	0.00	0.00	0.00
Loan Rating BBB	LOANRATINGBBB	3057	0.17	0.38	0.00	0.00	0.00	6477	0.26	0.44	0.00	0.00	1.00
Loan Rating BB	LOANRATINGBB	3057	0.53	0.50	0.00	1.00	1.00	6477	0.45	0.50	0.00	0.00	1.00
Loan Rating B	LOANRATINGB	3057	0.11	0.32	0.00	0.00	0.00	6477	0.12	0.32	0.00	0.00	0.00
Loan Rating CCC	LOANRATINGCCC	3057	0.01	0.08	0.00	0.00	0.00	6477	0.01	0.11	0.00	0.00	0.00
Loan Rating CC	LOANRATINGCC	3057	0.00	0.06	0.00	0.00	0.00	6477	0.01	0.07	0.00	0.00	0.00
Loan Rating C	LOANRATINGC	3057	0.00	0.04	0.00	0.00	0.00	6477	0.00	0.03	0.00	0.00	0.00
Loan Rating D	LOANRATINGD	3057	0.01	0.10	0.00	0.00	0.00	6477	0.00	0.06	0.00	0.00	0.00
Loan Not Rated	LOANNOTRATED	3057	0.13	0.33	0.00	0.00	0.00	6477	0.01	0.11	0.00	0.00	0.00
Probability of Default													
(Regressions include zeros for missing values and the flag equals one for these observations)													
Probabilities of Default from SNC													
Probability of Default Raw	PDRAW	1666	0.02	0.08	0.00	0.01	0.01	4620	0.02	0.08	0.00	0.00	0.01
Probability of Default Raw Available Flag	PDRAWAVAIL	3057	0.54	0.50	0.00	1.00	1.00	6477	0.71	0.45	0.00	1.00	1.00
Probabilities of Default from SNC, concordance tables, and own calculations													
Probability of Default Mixed	PDMIXED	2709	0.02	0.10	0.00	0.01	0.02	6320	0.02	0.07	0.00	0.00	0.01
Probability of Default Mixed Available Flag	PDMIXED	3057	0.89	0.32	1.00	1.00	1.00	6477	0.98	0.15	1.00	1.00	1.00

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		Pure Term						Pure Revolvers					
Variable	**Mnemonic**	**N**	**Mean**	**Std Dev**	**P25**	**Median**	**P75**	**N**	**Mean**	**Std Dev**	**P25**	**Median**	**P75**
Probabilities of Default from SNC, concordance tables, and own calculations													
Probability of Default Concordance	PDCONCORDANCE	2610	0.03	0.11	0.00	0.01	0.02	6270	0.02	0.07	0.00	0.01	0.01
Probability of Default Concordance Available Flag	PDCONCORDANCE	3057	0.85	0.35	1.00	1.00	1.00	6477	0.97	0.18	1.00	1.00	1.00
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	0.30	0.16	0.21	0.34	0.42	4611	0.35	0.13	0.28	0.37	0.44
Loan Loss Given Default Available Flag	LOANLGDAVAIL	3057	0.55	0.50	0.00	1.00	1.00	6477	0.71	0.45	0.00	1.00	1.00
Regulatory Risk Ratings													
Proportion of Pass	PASS	2996	0.94	0.23	1.00	1.00	1.00	6384	0.95	0.23	1.00	1.00	1.00
Proportion of Special Mention	SPECIALMENTION	3057	0.03	0.18	0.00	0.00	0.00	6477	0.04	0.20	0.00	0.00	0.00
Proportion of Substandard	SUBSTANDARD	3056	0.02	0.14	0.00	0.00	0.00	6477	0.01	0.11	0.00	0.00	0.00
Proportion of Doubtful	DOUBTFUL	3057	0.00	0.05	0.00	0.00	0.00	6477	0.00	0.04	0.00	0.00	0.00
Proportion of Loss	LOSS	3057	0.00	0.04	0.00	0.00	0.00	6477	0.00	0.01	0.00	0.00	0.00
Loan characteristics													
Facility Size ($ mln) *(regressions use natural log)*	FACILITYSIZE	3057	321	936	50	125	300	6477	437.2	783	70	180	500
Maturity (years) *(regressions use natural log)*	MATURITY	3057	5.02	1.79	4.14	5.12	5.41	6477	4.43	1.71	4.08	5.09	5.13
Loan Purpose: General Corporate	LOANPURPGENERAL	3057	0.24	0.43	0.00	0.00	0.00	6477	0.30	0.46	0.00	0.00	1.00
Loan Purpose: Acquisition Financing	LOANPURPACQFIN	3057	0.19	0.39	0.00	0.00	0.00	6477	0.04	0.20	0.00	0.00	0.00
Loan Purpose: Debt Refinancing	LOANPURPDEBTREFIN	3057	0.13	0.34	0.00	0.00	0.00	6477	0.03	0.16	0.00	0.00	0.00
Loan Purpose: Working Capital	LOANPURPWC	3057	0.18	0.38	0.00	0.00	0.00	6477	0.42	0.49	0.00	0.00	1.00
Loan Purpose: Other	LOANPURPOTHER	3057	0.26	0.44	0.00	0.00	1.00	6477	0.22	0.41	0.00	0.00	0.00
Bank Market Rank													
Top 3 US Syndicated Loan League Table Dummy	LEAGUETOP3	3057	0.45	0.50	0.00	0.00	1.00	6477	0.50	0.50	0.00	0.00	1.00
Next 27 US Syndicated Loan League Table Dummy	LEAGUENEXT27	3057	0.46	0.50	0.00	0.00	1.00	6477	0.44	0.50	0.00	0.00	1.00
Bank Condition													
Bank Equity Capital Ratio	BANKEQUITYR	3057	0.09	0.03	0.08	0.10	0.11	6477	0.10	0.03	0.08	0.11	0.11
Bank Cash to Total Assets Ratio	BANKCASHR	3057	0.07	0.04	0.04	0.06	0.08	6477	0.07	0.04	0.04	0.07	0.09
Bank Allowance for Loan & Lease Loss Ratio	BANKALLLR	3057	0.01	0.00	0.01	0.01	0.01	6477	0.01	0.00	0.01	0.01	0.01
Relationship Strength													
Strong Relationship Dummy	STRONGRELSHIP	3057	0.43	0.50	0.00	0.00	1.00	6477	0.45	0.50	0.00	0.00	1.00

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Variable	Mnemonic	Pure Term N	Pure Term Mean	Pure Term Std Dev	Pure Term P25	Pure Term Median	Pure Term P75	Pure Revolvers N	Pure Revolvers Mean	Pure Revolvers Std Dev	Pure Revolvers P25	Pure Revolvers Median	Pure Revolvers P75
Borrower Characteristics													
(Regressions include zeros for missing values and the flag equals one for these observations)													
Borrower Leverage	BORROWERLEV	893	0.62	0.30	0.51	0.62	0.76	2774	0.61	0.23	0.48	0.62	0.74
Borrower Return on Assets	BORROWERROA	893	-0.07	1.21	0.00	0.01	0.01	2773	-0.04	1.14	0.00	0.01	0.02
Borrower Total Assets ($ billion) *(regressions use natural log)*	BORROWERTA	893	24.5	162	1.2	2.9	7.2	2774	23.22	129	1.26	3.61	12.28
Borrower Publicly-Traded Flag	BORROWERPUBLIC	3057	0.29	0.45	0.00	0.00	1.00	6477	0.43	0.49	0.00	0.00	1.00
Borrower Public Debt Ratings													
Borrower Public Debt Ratings (coarse, constructed by authors from granular ratings)													
Borrower Public Rating High Investment Grade	BORROWPUBRATINGHIG	429	0.06	0.24	0.00	0.00	0.00	1450	0.24	0.43	0.00	0.00	0.00
Borrower Public Rating Low Investment Grade	BORROWPUBRATINGLIG	429	0.29	0.45	0.00	0.00	1.00	1450	0.37	0.48	0.00	0.00	1.00
Borrower Public Rating High Sub-Investment Grade	BORROWPUBRATINGHSG	429	0.40	0.49	0.00	0.00	1.00	1450	0.25	0.43	0.00	0.00	0.00
Borrower Public Rating Low Sub-Investment Grade	BORROWPUBRATINGLSG	429	0.26	0.44	0.00	0.00	1.00	1450	0.15	0.36	0.00	0.00	0.00
Borrower Not Rated	BORROWNOTRATED	429	0.00	0.00	0.00	0.00	0.00	1450	0.00	0.00	0.00	0.00	0.00
Borrower Rating Available Flag	BORROWRATINGAVAIL	3057	0.14	0.35	0.00	0.00	0.00	6477	0.22	0.42	0.00	0.00	0.00
Borrower Public Debt Ratings (granular)													
Borrower Public Rating AAA	BORROWPUBRATINGAAA	429	0.00	0.00	0.00	0.00	0.00	1450	0.01	0.10	0.00	0.00	0.00
Borrower Public Rating AA	BORROWPUBRATINGAA	429	0.00	0.07	0.00	0.00	0.00	1450	0.03	0.17	0.00	0.00	0.00
Borrower Public Rating A	BORROWPUBRATINGA	429	0.06	0.23	0.00	0.00	0.00	1450	0.20	0.40	0.00	0.00	0.00
Borrower Public Rating BBB	BORROWPUBRATINGBBB	429	0.29	0.45	0.00	0.00	1.00	1450	0.37	0.48	0.00	0.00	1.00
Borrower Public Rating BB	BORROWPUBRATINGBB	429	0.40	0.49	0.00	0.00	1.00	1450	0.25	0.43	0.00	0.00	0.00
Borrower Public Rating B	BORROWPUBRATINGB	429	0.25	0.43	0.00	0.00	0.00	1450	0.15	0.35	0.00	0.00	0.00
Borrower Public Rating CCC	BORROWPUBRATINGCCC	429	0.00	0.07	0.00	0.00	0.00	1450	0.00	0.05	0.00	0.00	0.00
Borrower Public Rating CC	BORROWPUBRATINGCC	429	0.00	0.05	0.00	0.00	0.00	1450	0.00	0.03	0.00	0.00	0.00
Borrower Public Rating C	BORROWPUBRATINGC	429	0.00	0.00	0.00	0.00	0.00	1450	0.00	0.00	0.00	0.00	0.00
Borrower Public Rating D	BORROWPUBRATINGD	429	0.00	0.00	0.00	0.00	0.00	1450	0.00	0.00	0.00	0.00	0.00
Borrower Not Rated	BORROWNOTRATED	429	0.00	0.00	0.00	0.00	0.00	1450	0.00	0.00	0.00	0.00	0.00
Borrower Rating Available Flag	BORROWRATINGAVAIL	3057	0.14	0.35	0.00	0.00	0.00	6477	0.22	0.42	0.00	0.00	0.00

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		Pure Term						Pure Revolvers					
Variable	**Mnemonic**	**N**	**Mean**	**Std Dev**	**P25**	**Median**	**P75**	**N**	**Mean**	**Std Dev**	**P25**	**Median**	**P75**
FIXED EFFECTS													
Borrower Industry FEs	Production	3057	0.33	0.47	0.00	0.00	1.00	6477	0.34	0.47	0.00	0.00	1.00
	Sales, transportation, utilities	3057	0.16	0.37	0.00	0.00	0.00	6477	0.21	0.41	0.00	0.00	0.00
	Financial services	3057	0.19	0.39	0.00	0.00	0.00	6477	0.20	0.40	0.00	0.00	0.00
	Professional business services	3057	0.16	0.37	0.00	0.00	0.00	6477	0.16	0.36	0.00	0.00	0.00
	Healthcare and education	3057	0.06	0.24	0.00	0.00	0.00	6477	0.04	0.20	0.00	0.00	0.00
	Leisure and hospitality	3057	0.07	0.26	0.00	0.00	0.00	6477	0.05	0.21	0.00	0.00	0.00
	Other	3057	0.01	0.12	0.00	0.00	0.00	6477	0.01	0.11	0.00	0.00	0.00
Time FEs													

Panel C: Numbers of borrowers, loans, and lead arrangers over time

	Panel C1: Pure Term			Panel C2: 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	721	26	1502	1754	29
2012	635	759	28	1379	1576	31
2013	635	738	26	1307	1465	30
2014	674	813	28	1440	1576	30

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**
	3057	0.25	0.18	0.11	0.23	0.36	6477	0.25	0.15	0.13	0.21	0.34
2011	723	0.23	0.17	0.11	0.20	0.35	1783	0.22	0.14	0.11	0.18	0.3
2012	765	0.25	0.18	0.11	0.24	0.37	1606	0.26	0.16	0.13	0.22	0.35
2013	747	0.25	0.18	0.11	0.23	0.36	1491	0.26	0.15	0.14	0.24	0.36
2014	822	0.25	0.19	0.10	0.23	0.38	1597	0.26	0.16	0.13	0.23	0.36

Table 3: Hypothetical concordance mappings

This table shows three hypothetical examples of concordance mappings, one alphanumeric, one numeric, and one alphabetic. 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 regression results on loan retention

This table examines if banks retain more or less of the loan when their private information is favorable. It regresses the proportion of the loan retained on our key private information variables, i.e., the concordance-mapped internal loan ratings proxies, and alternative sets of control variables. The main results presented here are based on coarse loan ratings. Panel A focuses on pure term loans; Panel B is based on pure revolvers. The columns of each of these panels contain progressively more control variables to demonstrate robustness, with the full specifications in Columns (7). 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 including all syndicated loans (pure and impure term loans, lines of credit, and other loans) in the same regression, with additional dummies for pure term loans and pure revolvers. All variables are defined in Table 3 Panel A. All regressions include time fixed effects (not shown for brevity). The data availability dummies, LOANLGDAVAIL, BORROWERPUBLIC, and BORROWRATINGAVAIL flags, are included in the appropriate regressions to account for the average difference in loan retention between banks that have LGD, corporate borrower information, and borrower public ratings available, respectively, and those that do not.. These are not reported for brevity. The last two columns of Panels A and B also include industry fixed effects (not shown for brevity). *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 regression results – Pure term loans

Dependent variable:	(1) PROP RETAIN	(2) PROP RETAIN	(3) PROP RETAIN	(4) PROP RETAIN	(5) PROP RETAIN	(6) PROP RETAIN	(7) PROP RETAIN
LOANRATINGHIG	0.163***	0.100***	0.091***	0.068***	0.073***	0.082***	0.078***
	(8.98)	(5.57)	(4.96)	(3.63)	(3.87)	(4.38)	(4.13)
LOANRATINGLIG	0.143***	0.072***	0.065***	0.047***	0.051***	0.060***	0.061***
	(9.95)	(5.10)	(4.57)	(3.17)	(3.40)	(4.05)	(3.95)
LOANRATINGHSG	0.171***	0.062***	0.054***	0.037***	0.041***	0.045***	0.047***
	(13.87)	(4.69)	(4.09)	(2.66)	(2.98)	(3.26)	(3.29)
LOANRATINGLSG	0.127***	0.051***	0.039**	0.036**	0.038**	0.038**	0.038**
	(7.41)	(3.09)	(2.41)	(2.17)	(2.31)	(2.31)	(2.30)
LOANLGD	-0.104***	-0.080**	-0.069**	-0.075**	-0.077**	-0.056*	-0.055*
	(-3.25)	(-2.53)	(-2.23)	(-2.40)	(-2.49)	(-1.81)	(-1.78)
SPECIALMENTION	-0.013	-0.002	-0.001	0.003	0.002	0.002	0.001
	(-0.47)	(-0.06)	(-0.05)	(0.12)	(0.08)	(0.06)	(0.05)
SUBSTANDARD	0.021	-0.043*	-0.039	-0.045*	-0.042*	-0.041*	-0.041*
	(0.84)	(-1.76)	(-1.58)	(-1.85)	(-1.77)	(-1.75)	(-1.75)
DOUBTFUL	0.034	-0.107***	-0.102***	-0.092***	-0.093***	-0.083**	-0.083**
	(0.61)	(-3.03)	(-2.88)	(-2.70)	(-2.65)	(-2.31)	(-2.31)
LOSS	0.128**	-0.011	-0.005	-0.014	-0.021	-0.001	-0.001
	(2.11)	(-0.17)	(-0.07)	(-0.20)	(-0.31)	(-0.02)	(-0.02)
LN(FACILITYSIZE)		-0.063***	-0.062***	-0.060***	-0.060***	-0.056***	-0.055***
		(-25.33)	(-24.74)	(-23.72)	(-23.86)	(-20.82)	(-20.43)
LN(MATURITY)		-0.024***	-0.023***	-0.020***	-0.021***	-0.020***	-0.020**
		(-3.17)	(-2.97)	(-2.67)	(-2.70)	(-2.66)	(-2.57)
LOANPURPGENERAL		-0.050***	-0.048***	-0.042***	-0.042***	-0.037***	-0.036***
		(-5.83)	(-5.64)	(-4.74)	(-4.73)	(-4.16)	(-4.15)
LOANPURPACQFIN		-0.037***	-0.038***	-0.037***	-0.038***	-0.033***	-0.033***
		(-4.43)	(-4.60)	(-4.44)	(-4.55)	(-3.86)	(-3.82)
LOANPURPDEBTREFIN		-0.045***	-0.047***	-0.040***	-0.039***	-0.033***	-0.033***
		(-4.57)	(-4.74)	(-4.07)	(-4.05)	(-3.44)	(-3.43)
LOANPURPWC		-0.053***	-0.048***	-0.049***	-0.048***	-0.042***	-0.041***
		(-6.90)	(-6.21)	(-6.45)	(-6.24)	(-5.45)	(-5.42)
LEAGUETOP3			-0.065***	-0.062***	-0.057***	-0.053***	-0.054***
			(-4.28)	(-3.94)	(-3.69)	(-3.48)	(-3.50)
LEAGUENEXT27			-0.042***	-0.015	-0.012	-0.012	-0.012
			(-4.40)	(-1.48)	(-1.23)	(-1.22)	(-1.26)
BANKEQUITYR				0.166	0.110	0.102	0.101
				(1.26)	(0.83)	(0.77)	(0.76)
BANKCASHR				0.171*	0.183**	0.155*	0.154*
				(1.96)	(2.11)	(1.78)	(1.77)
BANKALLLR				5.190***	5.574***	5.296***	5.185***
				(6.37)	(6.77)	(6.43)	(6.29)
STRONGRELSHIP					-0.032***	-0.031***	-0.030***
					(-4.37)	(-4.21)	(-4.05)
BORROWERLEV						0.001	0.000
						(0.29)	(0.13)
BORROWERROA						0.003	0.003
						(1.18)	(1.43)
BORROWERLNTA						0.002	0.000
						(0.71)	(0.09)
BORROWPUBRATINGHIG							0.061**
							(2.45)
BORROWPUBRATINGLIG							-0.003
							(-0.20)
BORROWPUBRATINGHSG							-0.018
							(-1.46)
BORROWPUBRATINGLSG							0.004
							(0.17)
Borrower industry FEs	No	No	No	No	No	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	0.321	0.332	0.332

Panel B: Main regression results – Pure revolvers

Dependent variable:	(1) PROP RETAIN	(2) PROP RETAIN	(3) PROP RETAIN	(4) PROP RETAIN	(5) PROP RETAIN	(6) PROP RETAIN	(7) PROP RETAIN
LOANRATINGHIG	-0.044**	0.018	0.010	0.008	0.010	0.013	0.009
	(-2.46)	(1.14)	(0.63)	(0.50)	(0.65)	(0.85)	(0.57)
LOANRATINGLIG	-0.038**	-0.005	-0.011	-0.012	-0.010	-0.007	-0.006
	(-2.20)	(-0.33)	(-0.72)	(-0.81)	(-0.66)	(-0.51)	(-0.42)
LOANRATINGHSG	0.029*	-0.003	-0.015	-0.016	-0.013	-0.015	-0.014
	(1.67)	(-0.22)	(-0.97)	(-1.05)	(-0.89)	(-1.06)	(-0.98)
LOANRATINGLSG	0.080***	0.017	0.002	0.006	0.007	0.003	0.002
	(4.48)	(1.04)	(0.10)	(0.39)	(0.44)	(0.16)	(0.15)
LOANLGD	-0.127***	-0.043***	-0.043***	-0.055***	-0.055***	-0.036***	-0.037***
	(-7.74)	(-3.15)	(-3.24)	(-3.87)	(-3.93)	(-2.65)	(-2.71)
SPECIALMENTION	-0.018	0.001	-0.004	0.000	0.001	0.004	0.003
	(-1.56)	(0.06)	(-0.42)	(0.05)	(0.11)	(0.46)	(0.37)
SUBSTANDARD	-0.007	-0.040***	-0.038**	-0.041***	-0.041***	-0.036**	-0.036**
	(-0.42)	(-2.59)	(-2.50)	(-2.67)	(-2.67)	(-2.40)	(-2.44)
DOUBTFUL	-0.057	-0.101*	-0.089	-0.095*	-0.093*	-0.096*	-0.096*
	(-1.24)	(-1.78)	(-1.62)	(-1.73)	(-1.69)	(-1.84)	(-1.85)
LOSS	-0.034	-0.047	-0.023	-0.024	-0.039	0.028	0.022
	(-1.29)	(-1.52)	(-0.74)	(-0.78)	(-1.29)	(0.87)	(0.69)
LN(FACILITYSIZE)		-0.068***	-0.067***	-0.067***	-0.066***	-0.060***	-0.059***
		(-49.01)	(-47.76)	(-47.65)	(-47.42)	(-38.84)	(-38.35)
LN(MATURITY)		-0.039***	-0.037***	-0.036***	-0.037***	-0.031***	-0.031***
		(-11.30)	(-10.80)	(-10.46)	(-10.74)	(-9.04)	(-8.87)
LOANPURPGENERAL		-0.015***	-0.016***	-0.016***	-0.014***	-0.010**	-0.011**
		(-3.67)	(-3.86)	(-3.69)	(-3.38)	(-2.51)	(-2.56)
LOANPURPACQFIN		-0.012	-0.013	-0.015*	-0.015*	-0.013	-0.012
		(-1.39)	(-1.49)	(-1.68)	(-1.67)	(-1.47)	(-1.36)
LOANPURPDEBTREFIN		0.006	-0.002	0.003	0.004	0.006	0.006
		(0.48)	(-0.13)	(0.25)	(0.32)	(0.54)	(0.52)
LOANPURPWC		0.002	0.001	-0.002	-0.002	-0.002	-0.002
		(0.59)	(0.15)	(-0.60)	(-0.52)	(-0.50)	(-0.49)
LEAGUETOP3			-0.047***	-0.044***	-0.044***	-0.041***	-0.040***
			(-5.38)	(-4.90)	(-4.95)	(-4.67)	(-4.60)
LEAGUENEXT27			-0.013*	-0.005	-0.006	-0.005	-0.004
			(-1.72)	(-0.61)	(-0.73)	(-0.60)	(-0.57)
BANKEQUITYR				0.207**	0.202**	0.193**	0.191**
				(2.33)	(2.29)	(2.22)	(2.20)
BANKCASHR				0.089*	0.083*	0.075	0.074
				(1.89)	(1.77)	(1.63)	(1.60)
BANKALLLR				0.991*	1.070**	1.299**	1.198**
				(1.82)	(1.99)	(2.44)	(2.25)
STRONGRELSHIP					-0.023***	-0.024***	-0.023***
					(-6.10)	(-6.35)	(-6.28)
BORROWERLEV						-0.000	-0.000
						(-0.23)	(-0.22)
BORROWERROA						0.000	0.001
						(0.13)	(0.19)
BORROWERLNTA						-0.008***	-0.008***
						(-7.29)	(-7.01)
BORROWPUBRATINGHIG							0.007
							(1.22)
BORROWPUBRATINGLIG							-0.013***
							(-3.18)
BORROWPUBRATINGHSG							-0.028***
							(-5.36)
BORROWPUBRATINGLSG							0.003
							(0.34)
Borrower industry FEs	No	No	No	No	No	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,477	6,477	6,477	6,477	6,477	6,476	6,476
Adjusted R-squared	0.154	0.442	0.448	0.450	0.454	0.472	0.474

Panel C: Main regression results – Comparison with All Term and Revolvers

Sample:	Pure Term	Pure Revolvers	All Syndicated Loans
	(1)	(2)	(3)
Dependent variable:	PROPRETAIN	PROPRETAIN	PROPRETAIN
LOANRATINGHIG	0.078***	0.009	0.047***
	(4.13)	(0.57)	(4.41)
LOANRATINGLIG	0.061***	-0.006	0.042***
	(3.95)	(-0.42)	(4.11)
LOANRATINGHSG	0.047***	-0.014	0.037***
	(3.29)	(-0.98)	(3.69)
LOANRATINGLSG	0.038**	0.002	0.039***
	(2.30)	(0.15)	(3.62)
LOANLGD	-0.055*	-0.037***	-0.069***
	(-1.78)	(-2.71)	(-5.41)
SPECIALMENTION	0.001	0.003	-0.004
	(0.05)	(0.37)	(-0.42)
SUBSTANDARD	-0.041*	-0.036**	-0.031***
	(-1.75)	(-2.44)	(-2.73)
DOUBTFUL	-0.083**	-0.096*	-0.099***
	(-2.31)	(-1.85)	(-3.02)
LOSS	-0.001	0.022	0.001
	(-0.02)	(0.69)	(0.02)
LN(FACILITYSIZE)	-0.055***	-0.059***	-0.054***
	(-20.43)	(-38.35)	(-18.90)
LN(MATURITY)	-0.020**	-0.031***	-0.028***
	(-2.57)	(-8.87)	(-8.96)
LOANPURPGENERAL	-0.036***	-0.011**	-0.020***
	(-4.15)	(-2.56)	(-5.39)
LOANPURPACQFIN	-0.033***	-0.012	-0.024***
	(-3.82)	(-1.36)	(-4.56)
LOANPURPDEBTREFIN	-0.033***	0.006	-0.008
	(-3.43)	(0.52)	(-1.15)
LOANPURPWC	-0.041***	-0.002	-0.007**
	(-5.42)	(-0.49)	(-2.11)
LEAGUETOP3	-0.054***	-0.040***	-0.049***
	(-3.50)	(-4.60)	(-7.15)
LEAGUENEXT27	-0.012	-0.004	-0.011**
	(-1.26)	(-0.57)	(-2.11)
BANKEQUITYR	0.101	0.191**	0.180***
	(0.76)	(2.20)	(2.64)
BANKCASHR	0.154*	0.074	0.178***
	(1.77)	(1.60)	(4.45)
BANKALLLR	5.185***	1.198**	3.152***
	(6.29)	(2.25)	(7.58)
STRONGRELSHIP	-0.030***	-0.023***	-0.031***
	(-4.05)	(-6.28)	(-9.27)
BORROWERLEV	0.000	-0.000	0.000
	(0.13)	(-0.22)	(0.65)
BORROWERROA	0.003	0.001	0.004
	(1.43)	(0.19)	(1.03)
BORROWERLNTA	0.000	-0.008***	-0.007***
	(0.09)	(-7.01)	(-4.97)
BORROWPUBRATINGHIG	0.061**	0.007	0.009
	(2.45)	(1.22)	(1.63)
BORROWPUBRATINGLIG	-0.003	-0.013***	-0.012***
	(-0.20)	(-3.18)	(-2.79)
BORROWPUBRATINGHSG	-0.018	-0.028***	-0.030***
	(-1.46)	(-5.36)	(-5.99)
BORROWPUBRATINGLSG	0.004	0.003	0.001
	(0.17)	(0.34)	(0.13)
PURE TERM & PURE REVOLVER FLAG	No	No	Yes
Borrower industry FEs	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes
Observations	3,056	6,476	12,011
Adjusted R-squared	0.332	0.474	0.376

Table 5: Main regression robustness check excluding unrated loans

This table provides a robustness check to the main 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. We regress the proportion of the loan retained on our key private information variables, i.e., the concordance-mapped internal loan ratings proxies (with LOANSRATINGLSG omitted), and the full set of control variables. The robustness check results presented here are based on coarse loan ratings. Panel A focuses on term loans, Panel B on revolvers. All variables are defined in Table 3 Panel A. All regressions include an intercept, time fixed effects and all of the control variables (not shown for brevity). 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:	Panel A: Pure Term	Panel B: Pure Revolvers
Dependent variable:	PROP RETAIN	PROP RETAIN
LOANRATINGHIG	0.043**	0.005
	(2.43)	(0.67)
LOANRATINGLIG	0.030**	-0.009
	(2.38)	(-1.33)
LOANRATINGHSG	0.009	-0.017***
	(0.81)	(-2.75)
	0.043**	0.005
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
Borrower industry FEs	Yes	Yes
Time FEs	Yes	Yes
Observations	2,672	6,396
Adjusted R-squared	0.352	0.476

Table 6: Robustness check using granular (instead of coarse) loan ratings

Like Table 4, this table examines if banks retain more or less of the pure term loans and pure revolvers when their private information is favorable. It regresses the proportion of the loan retained on our key private information variables, i.e., the concordance-mapped internal loan ratings proxies, and the full set of control variables. The robustness check presented here uses granular loan ratings instead of the coarse loan ratings used in Table 4. Panel A focuses on pure term loans, Panel B contains pure revolvers. All variables are defined in Table 3 Panel A. Regressions include an intercept, time fixed effects, and all the control variables (not shown for brevity). 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: Robustness check using granular (instead of coarse) loan ratings

Sample:	Panel A: Pure Term	Panel B: Pure Revolvers
Dependent variable:	PROP RETAIN	PROP RETAIN
LOANRATINGAAA	0.158***	0.014
	(3.97)	(0.62)
LOANRATINGAA	0.049	0.019
	(1.52)	(1.09)
LOANRATINGA	0.075***	0.002
	(3.68)	(0.16)
LOANRATINGBBB	0.061***	-0.008
	(3.93)	(-0.54)
LOANRATINGBB	0.046***	-0.014
	(3.28)	(-0.94)
LOANRATINGB	0.041**	0.003
	(2.41)	(0.17)
LOANRATINGCCC	-0.006	0.008
	(-0.14)	(0.36)
LOANRATINGCC	0.085**	0.056*
	(2.10)	(1.91)
LOANRATINGC	0.007	-0.017
	(0.18)	(-0.45)
LOANRATINGD	-0.045	0.003
	(-0.88)	(0.06)
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 industry FEs	Yes	Yes
Borrower public ratings	Yes	Yes
Time FEs	Yes	Yes
Observations	3,056	6,476
Adjusted R-squared	0.333	0.478

Table 7: Regressions with above median proportion of concordance banks in the syndicate interactions

This table examines why the main results are so different for pure term loans and pure revolvers: lead banks retain more of pure term loans when their private information is better, but not more of pure revolvers. The analysis in Panel A focuses on term loans and the finding in Panel B show revolvers. Both regressions replace the uninteracted coarse concordance-mapped internal loan ratings used in prior tables with dummies indicating whether the proportion of concordance banks is low (≤ 0.33, the median for the pure term loan sample) , medium (> 0.33 but ≤ 0.56, the medium for the revolver sample), or high (> 0.56, the median for the pure revolver sample) and the four coarse concordance-mapped internal loan ratings interacted with these dummies. The regressions also include all the control variables included in Table 4 Column (7) (not shown for brevity). All variables are defined in Table 3 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:	Panel A: Pure Term	Panel B: Pure Revolvers
Dependent variable:	PROP RETAIN	PROP RETAIN
Concordance bank proportion LOW	0.170***	1.396***
	(19.57)	(35.38)
Concordance bank proportion HIGH	1.291***	1.426***
	(20.29)	(42.17)
LOANRATINGHIG * Concordance bank proportion LOW	0.052**	0.065**
	(1.95)	(2.23)
LOANRATINGLIG * Concordance bank proportion LOW	0.093***	0.044
	(5.06)	(1.59)
LOANRATINGHSG * Concordance bank proportion LOW	0.070***	0.045*
	(5.82)	(1.69)
LOANRATINLSG * Concordance bank proportion LOW	0.042***	0.062***
	(3.13)	(2.33)
LOANRATINGHIG * Concordance bank proportion HIGH	-0.009	-0.005
	(-0.29)	(-0.33)
LOANRATINGLIG * Concordance bank proportion HIGH	-0.051**	-0.019***
	(-1.79)	(-1.28)
LOANRATINGHSG * Concordance bank proportion HIGH	-0.066**	-0.028**
	(-2.38)	(-1.89)
LOANRATINGLSG * Concordance bank proportion HIGH	-0.054*	-0.016
	(-1.76)	(-1.01)
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
Borrower industry FEs	Yes	Yes
Time FEs	Yes	Yes
Observations	3,056	6,476
Adjusted R-squared	0.334	0.478

Table 8: Robustness check using probabilities of default (instead of internal loan ratings)

This table examines if banks retain more or less of the loan when their private information is favorable. It regresses the proportion of the loan retained on three alternative sets of PD variables (instead of the concordance-mapped internal loan ratings). Panel A shows pure term loans, and Panel B shows pure revolvers. In each panel, Columns (1) and (2) show the linear and quadratic functional forms for the loan's raw PD as reported by the bank, the measure used in the literature. The other columns focus on measures we construct to make the PDs more comparable across banks. Columns (3) and (4) use the concordance tables to assign the average PD of similarly-rated loans in the sample (if available) to every loan in the sample. Columns (5) and (6) use the loan's raw PD (if available) and use the concordance tables to assign the average PD of similarly-rated loans in the sample (if available) to the remaining loans. The regressions also include a dummy for if PD information is available and all control variables included in Table 4 Column (7) (not shown for brevity). All variables are defined in Table 3 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: Robustness check using probabilities of default (instead of internal loan ratings) – Pure term loans

PD definition used:	Raw PD		Concordance PD		Raw PD + Concordance PD	
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	PROPRETAIN	PROPRETAIN	PROPRETAIN	PROPRETAIN	PROPRETAIN	PROPRETAIN
PD	0.174***	0.419*	0.003	0.635***	-0.078	0.222
	(3.06)	(1.88)	(0.05)	(3.16)	(-1.57)	(1.01)
PD^2		-0.261		-0.631***		-0.293
		(-1.14)		(-3.12)		(-1.37)
PDAVAILFG	0.016	0.012	0.043***	0.032**	0.041***	0.035***
	(1.39)	(1.09)	(3.11)	(2.31)	(3.53)	(2.95)
Loss given default	Yes	Yes	Yes	Yes	Yes	Yes
Regulatory risk ratings	Yes	Yes	Yes	Yes	Yes	Yes
Bank market ranking	Yes	Yes	Yes	Yes	Yes	Yes
Bank condition	Yes	Yes	Yes	Yes	Yes	Yes
Relationship strength	Yes	Yes	Yes	Yes	Yes	Yes
Borrower characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Borrower public ratings	Yes	Yes	Yes	Yes	Yes	Yes
Loan characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,056	3,056	3,056	3,056	3,056	3,056
Adjusted R-squared	0.325	0.325	0.326	0.329	0.327	0.327

Panel B: Robustness check using probabilities of default (instead of internal loan ratings) – Pure revolvers

PD definition used:	Raw PD		Concordance PD		Raw PD + Concordance PD	
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	PROPRETAIN	PROPRETAIN	PROPRETAIN	PROPRETAIN	PROPRETAIN	PROPRETAIN
PD	0.014	0.254***	0.048	0.312***	0.060	0.388***
	(0.45)	(2.59)	(1.24)	(3.13)	(1.38)	(3.40)
PD^2		-0.257***		-0.282***		-0.344***
		(-2.61)		(-2.83)		(-3.11)
PDAVAILFG	0.016***	0.012**	0.013	0.009	-0.002	-0.007
	(3.14)	(2.28)	(1.26)	(0.86)	(-0.18)	(-0.74)
Loss given default	Yes	Yes	Yes	Yes	Yes	Yes
Regulatory risk ratings	Yes	Yes	Yes	Yes	Yes	Yes
Bank market ranking	Yes	Yes	Yes	Yes	Yes	Yes
Bank condition	Yes	Yes	Yes	Yes	Yes	Yes
Relationship strength	Yes	Yes	Yes	Yes	Yes	Yes
Borrower characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Borrower public ratings	Yes	Yes	Yes	Yes	Yes	Yes
Loan characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,476	6,476	6,476	6,476	6,476	6,476
Adjusted R-squared	0.471	0.472	0.471	0.471	0.471	0.472