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 hypotheses, the Signaling Hypothesis and Sophisticated Syndicate Hypothesis. To measure private information, we use Shared National Credit (SNC) internal loan ratings, which we make comparable across banks using concordance tables. We find that favorable private information is associated with higher loan retention by lead banks for term loans, consistent with empirical domination of 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 their loan customers in order to make informed credit decisions (e.g., Diamond, 1984; Ramakrishnan and Thakor, 1984). Banks generate private information about their commercial loan customers from screening before the loans are made, from subsequent monitoring of the borrowers, and in some cases, from prior relationships that include both lending and other connections. In the traditional originate-to-hold model, 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. This model is often used for large 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, 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 dollar market in which many firms are funded. Second, a broad spectrum of borrowing firms is represented – both public and private firms, firms with different credit ratings as well as unrated

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[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 clear 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).
[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.

firms, and a wide variety of firm sizes. Third, as described below, comparable direct measures of private information have recently become available.

The existing syndicated loan market literature 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. He argues that this supports the moral hazard hypothesis – since screening and due diligence efforts are costly and unobservable, lead banks would otherwise have incentives to shirk.

It has recently become possible to go further by using direct measures of private information provided to the Federal Reserve by a number of large lead banks. This information may be 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 since they 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.

To address this question, we formulate and test two hypotheses which are based on the extent to which the syndicate participants are able to divine the private information of the lead bank. If these 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 putting up 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, if the syndicate participants are relatively "sophisticated" and are able determine much of the private information about higher-quality loans, but know less about lower-quality loans, they demand an adverse selection discount – i.e., they are willing to pay less for the loans about which they are less informed, all else equal. This discount is greater for the lower-quality loans. As a result, the lead bank prefers to distribute more of the higher-quality loans for which the adverse selection discount is smaller (as in Greenbaum and Thakor, 1977). Thus, 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 a different subset of syndicates, and we test which hypothesis empirically dominates the other. Importantly, the extent to which the two hypotheses hold may differ systematically by loan type. In all cases, we run the tests separately for term loans (loans of fixed amounts with fixed maturities) and revolvers (credits for which the borrower may draw down and repay any amount up to a fixed maximum as many times as desired over the maturity of the agreement). These two loan types have very different properties, and, as will be shown, very different syndicate structures. 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

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[4] The Signaling Hypothesis is analogous to some of the theories on 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).

coefficients to differ. Our empirical results differ substantially for the two loan types, justifying our separate treatment. We are able to find at least a partial explanation for the difference in results.

The data requirements for testing these hypotheses are challenging. It is necessary to have access to the lead banks' private information about loan quality. These data must also be 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. SNC banks 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 provide to the Federal Reserve (along with their Y14 reports) concordance tables.[5] 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. We use the concordance-mapped internal loan ratings as lead banks' private information measures. Such usage is validated by existing evidence that these concordance-mapped ratings strongly predict loan default (Gutierrez-Mangas, Ivanov, Lueck, Luo, and Nichols, 2015).

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[5] 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.

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 (when the concordance tables were first reported) through 2014:Q4 (the last date for which the data are currently available).

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 term loans and revolvers. We use a strong set of controls because the concordance-mapped loan ratings are likely highly correlated with public information about loan quality, and we want the coefficients on the concordance-mapped ratings to reflect only the effects of private information. Our control variables include reported loss given default; regulatory risk ratings; loan characteristics; the market rank and condition of the lead bank; the strength of the lead bank-borrower relationship; borrower characteristics; and borrower public bond ratings. We include fixed effects for borrower industry and time.

An additional analysis examines the extent to which the favorability of the private information affects syndicate structure in terms of composition and size. As discussed below, we expect that when the private information is more favorable, the concordance bank and overall bank proportions in the syndicate are higher and syndicate size is smaller. These effects are expected to be weaker for revolvers than for term loans.

By way of preview, we find that for term loans, favorable private information is associated with higher loan retention by lead banks, supporting the empirical domination of the

Signaling Hypothesis over the Sophisticated Syndicate Hypothesis. For 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 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 are more likely to be the type of "sophisticated" syndicate members described above in the Sophisticated Syndicate Hypothesis. The additional analysis of the effects of private information on syndicate structure also yields intuitive results that are consistent with expectations.

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 like we do, 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 Sebunovs, 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 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; and Aramonte, Lee, and Stebunovs, 2015). As discussed in more detail below, a drawback of this approach is that 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. Consistent with these arguments, we find more intuitive results using concordance-mapped loan ratings than when we try using PDs.

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, explains the data, and discusses the 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:

$$PROPRETAIN_{i,j,k,t} = \beta_0 + B_1 \; Bank \; private \; info \; favorability_{i,j,k,t} + B_2 \; Loss \; given \; default_{i,j,k,t}$$
$$+ B_3 \; Regulatory \; loan \; risk \; ratings_{i,j,k,t} + B_4 \; Loan \; Characteristics_{i,j,k,t}$$

$+ B_5 \text{ Bank reputation}_{j,MostRecent} + B_6 \text{ Bank condition}_{j,t-1} + \beta_7 \text{ Relationship strength}_{j,k,t-1}$

$+ B_8 \text{ Borrower characteristics}_{k,t} + B_9 \text{ Borrower Public Ratings}_{k,t}$

$+ B_{10} \text{ Borrower Industry FE}_{k,t} + B_{11} \text{ Time FE}_t + \varepsilon_{i,j,k,t}$ *(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 coarse concordance-mapped loan ratings in our main specification (see Section 2.3.2 for further details). Because such ratings are likely highly correlated with publicly-available information about loan quality, we include a strong set of controls in an attempt to ensure that the coefficients on the loan ratings reflect only the effects of the private information. The full specification shown in 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 public ratings, and borrower industry fixed effects. All regressions include time fixed effects (Time FE_t) to control for the business cycle, interest rate cycle, regulatory conditions, and other economic conditions that vary over time, but affect lead banks equally.

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).

As indicated in the Introduction, the regressions are run separately for term loans and revolvers because these two types of loans have very different properties and very different syndicate structures.

2.2. Sample banks and loans

Our syndicated loan data are from the Shared National Credit (SNC) program, which was set up by bank regulators in 1977 to provide an efficient and consistent review of the largest syndicated loans.[6] Toward this goal, each loan's syndicated loan agent, called 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 who also serve as lead agents on a significant number of syndicated loans.[7] These banks were designated as "expanded reporters," and have been required to report more information on a quarterly basis ever since. Table 1 highlights differences in reporting requirements of SNC basic reporters and SNC expanded reporters. Important for our purposes, the SNC expanded reporter information contains data on all SNC syndicates for which 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. The 32 concordance banks include most of the Comprehensive Capital Analysis and Review (CCAR) stress test banks plus a small number of other lead banks.. Because our tests require information on the syndicates from the SNC expanded reporters dataset

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[6] 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.
[7] 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.

and internal loan ratings which are standardized using the concordance tables, our sample contains loan syndicates for which the lead bank is one of the 32 concordance banks and at least one of the 18 expanded reporters is either the lead bank or a participant.

The SNC database includes information on different types of term loans, lines of credit (revolvers and non-revolving credit lines), and other loans. To facilitate apples-to-apples comparisons, we eliminate several types of term loans: Term Loan A tranches (generally amortizing loans that are largely syndicated to banks: 144 cases); Term Loan B tranches (typically loans with longer maturities than Term Loan A tranches, with bullet payments, and syndicated to institutional investors: 178 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 (523 cases); revolvers converting to term loans (197 cases); debtor-in-possession revolvers (3 cases); non-revolving lines of credit (721); and non-revolving lines of credit that convert to term loans (131 cases). Finally, we delete other loans (1,887 cases). We focus on the remaining "pure" term loans (2,962 cases) and "pure" revolvers (6,329 cases) in our main regressions. Our results are robust to including all the term loans and (separately) all the lines of credit, but we prefer to focus on the "pure" loan types to have relatively clean samples of comparable loans.[8]

2.3 Regression variables

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[8] Shockley and Thakor (1997) and Sufi (2009) examine lines of credit, which include both revolvers (which we study) and non-revolving lines of credit.

This section discusses the regression variables. Table 3 Panel A provides variable definitions, mnemonics used in the regressions, and data sources. Table 3 Panel B gives key summary statistics for term loans and revolvers on the regression variables, including the mean, standard deviation, 25th percentile, median, and 75th percentile. Since we use confidential supervisory data, it is not possible to report minimums and maximums. Table 3 also shows the number of borrowers, the number of loans, and the number of lead arrangers (Panel C); and the proportions of loans retained over time (Panel D).

2.3.1. Main dependent variable

The dependent variable used to test the hypotheses is the proportion of the loan retained by the lead bank at 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 (using SNC ID, report date, and top holder RSSD ID) and assign that as the lead bank's total exposure for that loan. 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 holding company takes the loan on its books.[9]

Dependent variables used to test related issues include the proportion of concordance banks (excluding the lead bank) in the syndicate, the proportion of non-concordance banks in the syndicate, and syndicate size (the log of the number of syndicate members).

2.3.2 Key independent variables

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[9] 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.

The key independent variables capture the bank's private information favorability. In most tests, we use the bank's internal rating of the loan. As highlighted above, we do not use the raw internal loan ratings provided by the bank, since they are not comparable across banks. For instance, one bank may use a ten-point scale, while another may use an eighteen-point scale. In addition, some scales are alphanumeric, while others are entirely numeric. We instead use the concordance-mapped internal loan ratings that are comparable across banks. We obtain such loan ratings using concordance tables, which map each bank's internal loan ratings scale to the commonly-used S&P credit ratings scale (i.e., they use the S&P scale, but do not obtain loan ratings from S&P). An example of a hypothetical concordance table is given in Table 2. The main regressions use five coarse loan ratings categories: 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 the granular ratings ranging from AAA to D and unrated, with unrated again being the omitted category. As discussed below, we prefer the coarse ratings because there are very few loans in some of the granular categories.

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 the lead bank may incur signaling costs or adverse selection costs as discussed in our hypotheses. The internal ratings are proprietary information and cannot be shared with others, so the information is confidential.

Additional tests do not use the internal loan ratings, but instead use the probability of default (PD), PD squared, and a dummy = 1 if the PD is available. We use three alternative PD

definitions. First, we use the definition used in the existing literature: the loan's raw PD as reported by the bank. This information is available for 54 percent of term loans and for 72 percent of the revolvers. Second, we use the loan's raw PD (if available) and 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). Third, we use the average PD of sample loans with the same loan rating (if available) calculated using the concordance tables for every loan in the sample. This approach allows us to assign a PD to 86 percent of the term loans and 97 percent of the revolvers.

We strongly prefer the concordance-mapped internal loan ratings, which have multiple categories that are comparable across banks, do not force any functional form on the effects of private information favorability, as well as include more dimensions of credit risk – such as the likelihood of late payments, restructuring, and renegotiation.

2.3.3. Control variables

We briefly describe the control variables here. The variable definitions and summary statistics are in Table 3.

Loss given default (LGD) variables. We include two variables, 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 52.9% of the observations. The dummy accounts for the average difference in loan retention between banks that have LGD available and those that do

not. Inclusion of the dummy ensures that observations with missing information do not drop out of the regressions.[10]

Regulatory risk ratings. Banks are required by regulators to assign loans to one or more of five regulatory risk ratings: (1) pass: the loan has 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: the loan has potential weaknesses that may lead to future repayment problems; (3) substandard: the loan is inadequately protected and there is a distinct possibility that the bank will sustain some future losses; (4) doubtful: the loan is inadequately protected and repayment of full is highly questionable; and (5) loss: the loan is considered 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 of the five categories must be omitted from the regressions to avoid perfect collinearity. We omit Pass because the other categories are not very frequently used around the origination date. As above for LGD, the regulatory risk ratings are not necessarily comparable across banks, since both banks and regulators may differ in their degree of conservatism.

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. These are 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

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

bank. We include dummies for the top 3 (46.7 percent of all loan observations) and the next 27 (43.2 percent of all loan observations).

Bank condition variables. We include several proxies: the equity capital ratio[11], a bank liquidity ratio, and the allowance for loan and lease losses ratio. All of these variables 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 bank holding companies (BHCs) in our sample, the relevant 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 this, 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 viewed to be strong.

Borrower characteristics. We include leverage, profitability, and size. The SNC database does not include borrower characteristics, so this information is only available for publicly-traded firms. We obtain such data from Compustat for domestic firms and from Bloomberg for foreign firms.[12] We also includes a dummy = 1 if the firm is publicly traded to indicate that such information is available. 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

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[11] The current draft focuses on shareholder's equity. Future drafts will include robustness checks using regulatory capital.

[12] The Federal Reserve's Compustat subscription is restricted to domestic entities.

try to match unmatched firms with Compustat based on company name and NAICS code using the COMPGED function in SAS.[13] Finally, remaining firms are hand matched.

Borrower public ratings. We use coarse or granular senior public debt ratings, which correspond with whether the concordance-mapped internal loan ratings are coarse or granular, respectively. We also add a borrower debt rating available flag.

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 favorable, i.e., when the loans are rated as higher quality. Panel A gives the results for term loans, while Panel B shows findings for revolvers. As discussed above, these two types of loans differ in many ways, so we do not impose any restrictions on the coefficients of the key exogenous variables or controls. The 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 a constant term, and different sets of control variables and fixed effects from Equation (1). Column (1) includes as controls only the other private information variables – the

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[13] 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.

loss given default variables plus regulatory risk ratings – which may not be comparable across lead banks and regulators. The other columns add the lead bank's market rank (Column (2)), plus the lead bank's condition (Column (3)), plus bank-borrower relationship strength (Column (4)), plus borrower characteristics (Column (5)), plus borrower public debt ratings (Column (6)),[14] plus loan characteristics (Column (7)). Time fixed effects for every quarter are included in all regressions, and Column (6) introduces borrower industry fixed effects (not shown for brevity).

The results from Table 4 suggest that lead banks tend to keep more of term loans when they have favorable private information, controlling for other factors, consistent with the empirical dominance of the Signaling Hypothesis over the Sophisticated Syndicate Hypothesis. However, there are no significant effects for revolvers, suggesting that neither hypothesis dominates for these loans. Looking first at term loans in Panel A, the loan rating coefficients suggest that lead banks retain more of rated loans than non-rated loans, the left out 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, the effects are monotonic – the higher the private loan rating, the higher the loan retention –providing statistically and economically significant evidence in favor of the empirical dominance of the Signaling Hypothesis over the Sophisticated Syndicate Hypothesis. The coefficient of 0.077 on LOANRATINGHIG in that column, for example, suggests that banks hold 7.7% 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 24%.

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[14] For consistency, the regressions here include coarse borrower public debt ratings, which use the same categories as the loan ratings (HIG, LIG, HSG, LSG, and NOTRATED). Also included is a dummy = 1 if the borrower's public debt rating is available. Its inclusion avoids dropping all the observations for which we do not have such information.

Looking next at the full specification for revolvers in Panel B Column (7), there are no statistically or economically significant effects of the coarse loan ratings variables on lead bank loan retention, consistent with neither hypothesis dominating for these loans. Moreover, in the other columns in Panel B with fewer control variables included, the coefficient estimates often go in the opposite direction from those for term loans. As noted above, it is not surprising that we find very different results for the two types of credit, both because they are such different types of credit, and as shown below, their syndicate structures are quite different.[15]

Turning to the effects of the control variables on loan retention, we focus first on the full specification for term loans in Panel A Column (7), and then note the key differences for revolvers in Panel B Column (7). For term loan retention, LOANLGD has a negative, statistically significant coefficient, consistent with a higher retention of higher quality loans, but we are cautious in interpreting this variable because it may not be fully comparable across banks. The regulatory risk ratings also suggest that lead banks retain more of higher quality loans (recall that PASS is the excluded base case). When lead banks are ranked more highly in the league tables, they retain less, possibly because their ranking assures syndicate members of loan quality, requiring them to hold less. Lead bank with more loan loss reserves retain more, possibly because it suggests that the bank made worse loans on average. 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. Core borrower characteristics have little effect and borrower public debt ratings have mixed effects. Loan size has a negative effect, possibly because the lead bank more

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[15] As a robustness check, we rerun these regressions excluding loans that are not rated from the term loan and revolver samples, because there are generally few observations, in particular for revolvers. In these regressions, we use the low sub-investment grade loan ratings as the omitted base category. The results are generally consistent with our main results: for term loans, retention is higher for loans with higher ratings, and there is little variation by rating for revolvers.

often runs into concentration risk problems or legal lending limits for larger loans. Lead banks also appear to retain more of short-maturity loans, possibly because they are safer, other things equal. The coefficients of the loan purpose variables are all statistically significant, but are difficult to interpret.

Most of the control variable results are similar for revolvers in Panel B Column (7), but there are notable exceptions. The lead bank condition variables suggest that those with higher capital ratios retain more, rather than those with high loan loss reserves. All of the borrower characteristics become statistically significant: retention is higher when the borrower has lower leverage and is more profitable, suggesting that lead banks retain more of loans with higher quality as measured by the public information; lead banks retaining less when the borrower is bigger likely has to do with loan concentration risk and legal lending limits. Most of the loan purpose variables are statistically insignificant.

3.2 Robustness check using the granular loan ratings

Table 5 Panels A and B show the loan retention regressions with granular ratings for term loans and revolvers, respectively. For brevity, we show only the coefficients for the concordance-mapped internal loan ratings and suppress the coefficients on the controls. The results are largely consistent with those for the coarse ratings in Table 4. In the full specification in Column (7) of Table 3 Panel A, all of the ratings from AAA to B are positive and five out of six are statistically significant, with the greatest coefficient and significance for the AAA rating. In Column (7) of Panel B, none of the loan ratings (except for the D rating) have statistically significant coefficients. 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.

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

One additional implication of the hypotheses is that the informational opacity problem is likely to be less severe and the Sophisticated Syndicate Hypothesis is more likely to hold when there is a large share of concordance banks in the syndicate. As discussed in the Introduction, these concordance banks are more likely to be sophisticated syndicate members that are able to discern some of the private information. In contrast, the Signaling Hypothesis is more likely to hold when dealing with a smaller proportion of such players since informational opacity is likely more severe and requires a greater use of signaling when the proportion of concordance banks is low.

As a first check, we examine if there are important differences in the proportions of other concordance banks in the syndicates for the two loan types and conclude there are: the mean (median) proportion is 0.36 (0.33) for term loans and 0.52 (0.56) for revolvers. This raises the possibility that these differences may partially explain our main finding that the Signaling

Hypothesis tends to dominate for the term loans while neither hypothesis dominates for revolvers.

To address this in a more substantive manner, we rerun our main regressions from Table 3 Columns (7), i.e., we regress the proportion of the loan retained on the concordance-mapped internal loan ratings in coarse form plus all of the control variables from Equation (1) and time fixed effects, while adding a dummy and interaction terms. The dummy indicates whether the proportion of concordance banks in the syndicate is above the median for term loans of 0.33, and this dummy is also interacted with the coarse ratings. We keep the same dummy cutoff of 0.33 for both term loans and revolvers for consistency. For brevity, we again suppress the coefficients of the controls.

The findings in Table 6 Columns (1) and (2) for term loans and revolvers, respectively, are consistent with these additional implications of the hypotheses and help us understand better why the main results for term loans and revolvers are so different. In both columns, the coefficients on the loan ratings are positive and the coefficients on the loan ratings interacted with the above-median share of other concordance banks in the syndicate dummy are negative and larger in magnitude. This suggests that for both term loans and revolvers, 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. Taken together, these regression results and the generally greater proportion of concordance banks in the syndicates for revolvers helps explain our main results. That is, the Signaling Hypothesis may dominate for term loans while the two hypotheses cancel each other out for revolvers because term loans tend to have smaller proportions of concordance banks in the syndicate.

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

The existing literature usually 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. As noted above, the main reason for using PDs is that until recently, concordance tables that allow one to consistently compare banks' internal rating systems were not available. We now examine whether using PDs yield similar results to our method of using concordance-mapped internal loan ratings.

Table 7 shows the results based on three alternative proxies for the loan's PD (in place of the bank's internal loan ratings), 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 term loans and 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 commonly 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 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. Columns (5) and (6) use the concordance tables to assign the average PD of similarly-rated loans in the sample (if available) to every loan in the sample.

The linear model results in Panel A Columns (1), (3), and (5) show that the PD coefficient is only statistically significant in the linear models for term loans using the raw PD. The significant coefficient of 0.113 suggests that for term loans, lead banks retain more of the loans with unfavorable private information. In the quadratic models, the raw PD is positive and significant, with an insignificant raw PD^2, and opposing signs on PD and PD^2 for the other PD

measures. The raw PD results suggest empirical dominance of the Sophisticated Syndicate Hypothesis, contrary to our main results, and the concordance PD results suggest that neither hypothesis empirically dominates. Both of these findings are contrary to our main results, which are based on concordance-mapped loan ratings.

These findings suggest that the conventional approach that focuses on the raw PD, as well as using the concordance PD may yield misleading results. As discussed in Section 2.3.2, we strongly prefer the concordance-mapped internal loan ratings.

3.5 The effects of private information on syndicate structure in terms of composition and size

As noted in the introduction, we also examine the extent to which the favorability of the private information affects syndicate structure in terms of composition and size. We postulate that when the lead bank signals more favorable private information by retaining more of the loan, all potential participants (other concordance banks, non-concordance banks, and non-banks) have greater demand. The lead bank likely awards greater shares to other concordance and non-concordance banks because of potential reciprocity on future deals. As a result, the other concordance bank and non-concordance bank proportions are expected to be greater, and the proportion of non-banks and syndicate size are expected to be smaller. This effect is likely weaker for revolvers since the proportions of other concordance banks and non-concordance banks are generally higher, and the proportion of non-banks and syndicate size are smaller, resulting in lesser potential effects of private information favorability on syndicate structure.

Table 8 Panels A and B examine for term loans and revolvers, respectively, the effects of lead bank private information favorability on syndicate structure in terms of composition and size. Columns (1) – (4) show regressions using the proportion of other concordance banks in the

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syndicate, the proportion of non-concordance banks in the syndicate, the proportion of non-banks in the syndicate, and the natural log of syndicate size as the dependent variables, respectively. The key exogenous variables are the coarse private information favorability measures, while the control variables and borrower industry and time fixed effects are identical to those in the full specification in Table 4.

Turning first to term loans in Panel A, the results suggest that when private information is favorable, there are higher shares for other concordance and non-concordance banks, lower shares for non-banks, and fewer syndicate members overall, consistent with expectations that lead banks award higher shares to other banks to curry favor on future deals. Also as expected, the results are considerably weaker for revolvers in Panel B, likely because the shares of other banks are generally larger and syndicate sizes are generally smaller for this loan type.

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 term loans and revolvers. We employ concordance tables that map individual banks' internal loan ratings scales into the Standard and Poor's (S&P) ratings scale so that standardized private information data can be used to test the hypotheses. We find that favorable private information is associated with higher loan retention by lead banks for term loans, consistent the empirical domination of the Signaling Hypothesis over the Sophisticated Syndicate Hypothesis, while for 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 in the syndicates for 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. Finally, additional results suggest that private information is also an important factor in determining syndicate structure.

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Table 1: SNC reporting requirements for basic reporters and expanded reporters

This table shows the Shared National Credit (SNC) reporting requirements of the original program (applied to basic reporters) and the rules for the 18 expanded reporters.

	Rules of the original program (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: Hypothetical concordance mapping

This table shows a hypothetical concordance mapping. The bank's "raw" internal loan ratings scale is shown on the left. The corresponding standardized ratings based upon the S&P ratings scale from the bank's concordance table are shown on the right.

Bank's "raw" internal loan ratings scale	Corresponding standardized ratings based upon the S&P ratings scale from the bank's concordance table
1A	AAA
1B	AA
1C	A
2A	BBB
2B	BB
2C	B
3	CCC
4	CC
5	C
6	D

Table 3: Variable descriptions and summary statistics

The analyses use loan-level data on syndicated loans (term loan and revolvers) from the Shared National Credit (SNC) database from 2011:Q1 to 2014:Q4. Panel A briefly describes the regression variables employed and indicates their data sources. Panel B displays summary statistics of all the regression variables separately for term loans and revolvers. The dependent variables are directly obtained from SNC. The key explanatory variables are from SNC and some variables are converted using concordance tables. Specifically, the analyses do not use the original loan ratings assigned by a bank, since they use the bank's internal rating system. Instead, concordance tables (provided by each bank to its regulators) are used to map these loan ratings to a universal credit ratings 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 the Federal Reserve's 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 proportion retained over time.

Panel A: Variable descriptions

Variable	Mnemonic	Description	Source
DEPENDENT VARIABLES			
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
Proportion of Concordance Banks (excl. Lead Bank)	SYNDPROPCONCORD	Proportion of banks with concordance table info (excluding lead bank).	SNC
Proportion of Non-Concordance Banks	SYNDPROPNONCONC	Proportion of banks excluding concordance banks in the loan syndicate	SNC
Proportion of Non-Banks in Syndicate	SYNDPROPNONBANK	Proportion of non-banks in the loan syndicate	SNC
Natural Log of Syndicate Size	LN(SYNDICATESIZE)	Natural log of the size of the loan syndicate	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 table
Loan Rating Low Investment Grade	LOANRATINGLIG	Dummy = 1 if the lead bank internally rates the loan BBB- to BBB+	SNC + concordance table
Loan Rating High Sub-Investment Grade	LOANRATINGHSG	Dummy = 1 if the lead bank internally rates the loan BB- to BB+	SNC + concordance table
Loan Rating Low Sub-Investment Grade	LOANRATINGLSG	Dummy = 1 if the lead bank internally rates the loan D to B+	SNC + concordance table
Loan Not Rated	LOANNOTRATED	Dummy = 1 if the lead bank does not rate the loan	SNC + concordance table
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 table
Loan Rating AA	LOANRATINGAA	Dummy = 1 if the lead bank internally rates the loan AA+ / AA / AA-	SNC + concordance table
Loan Rating A	LOANRATINGA	Dummy = 1 if the lead bank internally rates the loan A+ / A / A-	SNC + concordance table
Loan Rating BBB	LOANRATINGBBB	Dummy = 1 if the lead bank internally rates the loan BBB+ / BBB / BBB-	SNC + concordance table
Loan Rating BB	LOANRATINGBB	Dummy = 1 if the lead bank internally rates the loan BB+ / BB / BB-	SNC + concordance table
Loan Rating B	LOANRATINGB	Dummy = 1 if the lead bank internally rates the loan B+ / B / B-	SNC + concordance table
Loan Rating CCC	LOANRATINGCCC	Dummy = 1 if the lead bank internally rates the loan CCC+ / CCC / CCC-	SNC + concordance table
Loan Rating CC	LOANRATINGCC	Dummy = 1 if the lead bank internally rates the loan CC	SNC + concordance table
Loan Rating C	LOANRATINGC	Dummy = 1 if the lead bank internally rates the loan C	SNC + concordance table
Loan Rating D	LOANRATINGD	Dummy = 1 if the lead bank internally rates the loan D	SNC + concordance table

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	PDRAWAVAILFG	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 table
Probability of Default Mixed Available Flag	PDMIXEDFG	Dummy = 1 if PDMIXED available	SNC + concordance table
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 table
Probability of Default Concordance Available Flag	PDCONCORDANCEFG	Dummy = 1 if PDCONCORDANCE available	SNC + concordance table
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	LOANLGDAVAILFG	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.	

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	BORROWRATINGAVAILFG	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	BORROWRATINGAVAILFG	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

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 term loans and revolvers

Variable	Mnemonic	Term loans						Revolvers					
		N	Mean	Std Dev	P25	Median	P75	N	Mean	Std Dev	P25	Median	P75
DEPENDENT VARIABLES													
Proportion of Loan Retained	PROPRETAIN	2962	0.24	0.18	0.11	0.22	0.36	6329	0.25	0.15	0.13	0.21	0.33
Proportion of Concordance Banks (excl. Lead Bank)	SYNDPROPCONCORD	2962	0.36	0.27	0.03	0.33	0.60	6329	0.52	0.21	0.40	0.56	0.67
Proportion of Non-Concordance Banks	SYNDPROPNONCONC	2962	0.17	0.17	0.00	0.17	0.31	6329	0.21	0.16	0.08	0.22	0.33
Proportion of Non-Banks in Syndicate	SYNDPROPNONBANK	2962	0.25	0.38	0.00	0.00	0.39	6329	0.05	0.11	0.00	0.00	0.00
Syndicate Size *(regressions use the natural log)*	SYNDSIZE	2962	41.24	85.10	4.00	8.00	21.00	6329	9.45	7.21	4.00	7.00	13.00
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	2962	0.04	0.19	0.00	0.00	0.00	6329	0.13	0.34	0.00	0.00	0.00
Loan Rating Low Investment Grade	LOANRATINGLIG	2962	0.17	0.38	0.00	0.00	0.00	6329	0.27	0.44	0.00	0.00	1.00
Loan Rating High Sub-Investment Grade	LOANRATINGHSG	2962	0.54	0.50	0.00	1.00	1.00	6329	0.46	0.50	0.00	0.00	1.00
Loan Rating Low Sub-Investment Grade	LOANRATINGLSG	2962	0.13	0.34	0.00	0.00	0.00	6329	0.14	0.35	0.00	0.00	0.00
Loan Not Rated	LOANNOTRATED	2962	0.13	0.33	0.00	0.00	0.00	6329	0.01	0.10	0.00	0.00	0.00
Loan Ratings from SNC and concordance table (granular)													
Loan Rating AAA	LOANRATINGAAA	2962	0.00	0.04	0.00	0.00	0.00	6329	0.00	0.06	0.00	0.00	0.00
Loan Rating AA	LOANRATINGAA	2962	0.01	0.07	0.00	0.00	0.00	6329	0.03	0.17	0.00	0.00	0.00
Loan Rating A	LOANRATINGA	2962	0.03	0.17	0.00	0.00	0.00	6329	0.10	0.30	0.00	0.00	0.00
Loan Rating BBB	LOANRATINGBBB	2962	0.17	0.38	0.00	0.00	0.00	6329	0.27	0.44	0.00	0.00	1.00
Loan Rating BB	LOANRATINGBB	2962	0.54	0.50	0.00	1.00	1.00	6329	0.46	0.50	0.00	0.00	1.00
Loan Rating B	LOANRATINGB	2962	0.11	0.31	0.00	0.00	0.00	6329	0.12	0.32	0.00	0.00	0.00
Loan Rating CCC	LOANRATINGCCC	2962	0.01	0.08	0.00	0.00	0.00	6329	0.01	0.11	0.00	0.00	0.00
Loan Rating CC	LOANRATINGCC	2962	0.00	0.06	0.00	0.00	0.00	6329	0.01	0.07	0.00	0.00	0.00
Loan Rating C	LOANRATINGC	2962	0.00	0.04	0.00	0.00	0.00	6329	0.00	0.03	0.00	0.00	0.00
Loan Rating D	LOANRATINGD	2962	0.01	0.09	0.00	0.00	0.00	6329	0.00	0.05	0.00	0.00	0.00
Loan Not Rated	LOANNOTRATED	2962	0.13	0.33	0.00	0.00	0.00	6329	0.01	0.10	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	1612	0.02	0.08	0.00	0.01	0.01	4528	0.02	0.07	0.00	0.00	0.01
Probability of Default Raw Available Flag	PDRAWAVAILFG	2962	0.54	0.50	0.00	1.00	1.00	6329	0.72	0.45	0.00	1.00	1.00
Probabilities of Default from SNC, concordance tables, and own calculations													
Probability of Default Mixed	PDMIXED	2628	0.02	0.09	0.00	0.01	0.02	6183	0.02	0.06	0.00	0.00	0.01
Probability of Default Mixed Available Flag	PDMIXEDFG	2962	0.89	0.32	1.00	1.00	1.00	6329	0.98	0.15	1.00	1.00	1.00

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Variable	Mnemonic	Term loans						Revolvers					
		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	2533	0.03	0.10	0.00	0.01	0.02	6141	0.02	0.06	0.00	0.01	0.01
Probability of Default Concordance Available Flag	PDCONCORDANCEFG	2962	0.86	0.35	1.00	1.00	1.00	6329	0.97	0.17	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	1630	0.30	0.16	0.21	0.34	0.42	4520	0.35	0.13	0.28	0.37	0.44
Loan Loss Given Default Available Flag	LOANLGDAVAILFG	2962	0.55	0.50	0.00	1.00	1.00	6329	0.71	0.45	0.00	1.00	1.00
Regulatory Risk Ratings													
Proportion of Pass	PASS	2962	0.94	0.23	1.00	1.00	1.00	6329	0.95	0.23	1.00	1.00	1.00
Proportion of Special Mention	SPECIALMENTION	2962	0.03	0.18	0.00	0.00	0.00	6329	0.04	0.20	0.00	0.00	0.00
Proportion of Substandard	SUBSTANDARD	2961	0.02	0.14	0.00	0.00	0.00	6329	0.01	0.11	0.00	0.00	0.00
Proportion of Doubtful	DOUBTFUL	2962	0.00	0.05	0.00	0.00	0.00	6329	0.00	0.04	0.00	0.00	0.00
Proportion of Loss	LOSS	2962	0.00	0.04	0.00	0.00	0.00	6329	0.00	0.01	0.00	0.00	0.00
Loan characteristics													
Facility Size ($ mln) *(regressions use natural log)*	FACILITYSIZE	2962	320	942	50	128	300	6329	440	787	70	195	500
Maturity (years) *(regressions use natural log)*	MATURITY	2962	5.00	1.76	4.14	5.12	5.33	6329	4.42	1.72	4.08	5.09	5.13
Loan Purpose: General Corporate	LOANPURPGENERAL	2962	0.24	0.43	0.00	0.00	0.00	6329	0.30	0.46	0.00	0.00	1.00
Loan Purpose: Acquisition Financing	LOANPURPACQFIN	2962	0.19	0.39	0.00	0.00	0.00	6329	0.04	0.20	0.00	0.00	0.00
Loan Purpose: Debt Refinancing	LOANPURPDEBTREFIN	2962	0.13	0.33	0.00	0.00	0.00	6329	0.03	0.16	0.00	0.00	0.00
Loan Purpose: Working Capital	LOANPURPWC	2962	0.18	0.38	0.00	0.00	0.00	6329	0.42	0.49	0.00	0.00	1.00
Loan Purpose: Other	LOANPURPOTHER	2962	0.26	0.44	0.00	0.00	1.00	6329	0.22	0.41	0.00	0.00	0.00
Bank Market Rank													
Top 3 US Syndicated Loan League Table Dummy	LEAGUETOP3	2962	0.45	0.50	0.00	0.00	1.00	6329	0.50	0.50	0.00	0.00	1.00
Next 27 US Syndicated Loan League Table Dummy	LEAGUENEXT27	2962	0.47	0.50	0.00	0.00	1.00	6329	0.45	0.50	0.00	0.00	1.00
Bank Condition													
Bank Equity Capital Ratio	BANKEQUITYR	2962	0.09	0.03	0.08	0.10	0.11	6329	0.10	0.03	0.08	0.11	0.11
Bank Cash to Total Assets Ratio	BANKCASHR	2962	0.07	0.04	0.05	0.06	0.08	6329	0.08	0.04	0.05	0.07	0.09
Bank Allowance for Loan & Lease Loss Ratio	BANKALLLR	2962	0.01	0.00	0.01	0.01	0.01	6329	0.01	0.00	0.01	0.01	0.01
Relationship Strength													
Strong Relationship Dummy	STRONGRELSHIP	2962	0.47	0.50	0.00	0.00	1.00	6329	0.48	0.50	0.00	0.00	1.00

		Term loans						Revolvers					
Variable	Mnemonic	N	Mean	Std Dev	P25	Median	P75	N	Mean	Std Dev	P25	Median	P75
Borrower Characteristics													
(Regressions include zeros for missing values and the flag equals one for these observations)													
Borrower Leverage	BORROWERLEV	838	0.69	1.73	0.51	0.63	0.77	2680	0.62	0.24	0.49	0.62	0.74
Borrower Return on Assets	BORROWERROA	838	-0.02	0.75	0.00	0.01	0.02	2680	0.01	0.03	0.00	0.01	0.02
Borrower Total Assets ($ billion) *(regressions use natural log)*	BORROWERTA	838	26.14	167	1.38	3.30	7.81	2680	23.89	120	1.47	4.15	14.48
Borrower Publicly-Traded Flag	BORROWERPUBLIC	2962	0.28	0.45	0.00	0.00	1.00	6329	0.42	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	408	0.06	0.24	0.00	0.00	0.00	1310	0.24	0.43	0.00	0.00	0.00
Borrower Public Rating Low Investment Grade	BORROWPUBRATINGLIG	408	0.29	0.46	0.00	0.00	1.00	1310	0.37	0.48	0.00	0.00	1.00
Borrower Public Rating High Sub-Investment Grade	BORROWPUBRATINGHSG	408	0.40	0.49	0.00	0.00	1.00	1310	0.24	0.43	0.00	0.00	0.00
Borrower Public Rating Low Sub-Investment Grade	BORROWPUBRATINGLSG	408	0.25	0.43	0.00	0.00	0.00	1310	0.15	0.35	0.00	0.00	0.00
Borrower Not Rated	BORROWNOTRATED	408	0.00	0.00	0.00	0.00	0.00	1310	0.00	0.00	0.00	0.00	0.00
Borrower Rating Available Flag	BORROWRATINGAVAILFG	2962	0.14	0.34	0.00	0.00	0.00	6329	0.21	0.41	0.00	0.00	0.00
Borrower Public Debt Ratings (granular)													
Borrower Public Rating AAA	BORROWPUBRATINGAAA	408	0.00	0.00	0.00	0.00	0.00	1310	0.01	0.10	0.00	0.00	0.00
Borrower Public Rating AA	BORROWPUBRATINGAA	408	0.00	0.07	0.00	0.00	0.00	1310	0.03	0.18	0.00	0.00	0.00
Borrower Public Rating A	BORROWPUBRATINGA	408	0.06	0.23	0.00	0.00	0.00	1310	0.20	0.40	0.00	0.00	0.00
Borrower Public Rating BBB	BORROWPUBRATINGBBB	408	0.29	0.46	0.00	0.00	1.00	1310	0.37	0.48	0.00	0.00	1.00
Borrower Public Rating BB	BORROWPUBRATINGBB	408	0.40	0.49	0.00	0.00	1.00	1310	0.24	0.43	0.00	0.00	0.00
Borrower Public Rating B	BORROWPUBRATINGB	408	0.24	0.43	0.00	0.00	0.00	1310	0.15	0.35	0.00	0.00	0.00
Borrower Public Rating CCC	BORROWPUBRATINGCCC	408	0.00	0.07	0.00	0.00	0.00	1310	0.00	0.04	0.00	0.00	0.00
Borrower Public Rating CC	BORROWPUBRATINGCC	408	0.00	0.05	0.00	0.00	0.00	1310	0.00	0.03	0.00	0.00	0.00
Borrower Public Rating C	BORROWPUBRATINGC	408	0.00	0.00	0.00	0.00	0.00	1310	0.00	0.00	0.00	0.00	0.00
Borrower Public Rating D	BORROWPUBRATINGD	408	0.00	0.00	0.00	0.00	0.00	1310	0.00	0.00	0.00	0.00	0.00
Borrower Not Rated	BORROWNOTRATED	408	0.00	0.00	0.00	0.00	0.00	1310	0.00	0.00	0.00	0.00	0.00
Borrower Rating Available Flag	BORROWRATINGAVAILFG	2962	0.14	0.34	0.00	0.00	0.00	6329	0.21	0.41	0.00	0.00	0.00
Loan characteristics													
Facility Size ($ mln) *(regressions use natural log)*	FACILITYSIZE	2963	319	941	50	128	300	6329	440	787	70	195	500
Maturity (years) *(regressions use natural log)*	MATURITY	2963	5.00	1.76	4.14	5.12	5.33	6329	4.42	1.72	4.08	5.09	5.13
Loan Purpose: General Corporate	LOANPURPGENERAL	2963	0.24	0.43	0.00	0.00	0.00	6329	0.30	0.46	0.00	0.00	1.00
Loan Purpose: Acquisition Financing	LOANPURPACQFIN	2963	0.19	0.39	0.00	0.00	0.00	6329	0.04	0.20	0.00	0.00	0.00
Loan Purpose: Debt Refinancing	LOANPURPDEBTREFIN	2963	0.13	0.33	0.00	0.00	0.00	6329	0.03	0.16	0.00	0.00	0.00
Loan Purpose: Working Capital	LOANPURPWC	2963	0.18	0.38	0.00	0.00	0.00	6329	0.42	0.49	0.00	0.00	1.00
Loan Purpose: Other	LOANPURPOTHER	2963	0.26	0.44	0.00	0.00	1.00	6329	0.22	0.41	0.00	0.00	0.00

		Term loans						Revolvers					
Variable	**Mnemonic**	**N**	**Mean**	**Std Dev**	**P25**	**Median**	**P75**	**N**	**Mean**	**Std Dev**	**P25**	**Median**	**P75**
FIXED EFFECTS													
Borrower Industry FEs	Production	2962	0.33	0.47	0.00	0.00	1.00	6329	0.34	0.47	0.00	0.00	1.00
	Sales, transportation, utilities	2962	0.16	0.37	0.00	0.00	0.00	6329	0.21	0.41	0.00	0.00	0.00
	Financial services	2962	0.19	0.40	0.00	0.00	0.00	6329	0.19	0.39	0.00	0.00	0.00
	Professional business services	2962	0.16	0.37	0.00	0.00	0.00	6329	0.16	0.36	0.00	0.00	0.00
	Healthcare and education	2962	0.06	0.24	0.00	0.00	0.00	6329	0.04	0.20	0.00	0.00	0.00
	Leisure and hospitality	2962	0.07	0.26	0.00	0.00	0.00	6329	0.05	0.21	0.00	0.00	0.00
	Other	2962	0.01	0.12	0.00	0.00	0.00	6329	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: Term loans			Panel C2: Revolvers		
Year	**Number of borrowers**	**Number of loans**	**Number of lead arrangers**	**Number of borrowers**	**Number of loans**	**Number of lead arrangers**
2011	523	603	24	1390	1516	28
2012	576	677	27	1295	1397	31
2013	642	739	26	1247	1432	29
2014	771	927	28	1754	1910	31

Panel D: Loan proportion retained over time

	Panel D1: Term loans						Panel D2: Revolvers					
Year	**N**	**Mean**	**Std. Dev.**	**P25**	**Median**	**P75**	**N**	**Mean**	**Std. Dev.**	**P25**	**Median**	**P75**
	2962	0.24	0.18	0.11	0.22	0.36	6329	0.25	0.15	0.13	0.21	0.33
2011	603	0.22	0.17	0.10	0.19	0.33	1529	0.22	0.14	0.11	0.18	0.30
2012	678	0.25	0.18	0.11	0.24	0.37	1409	0.26	0.16	0.13	0.22	0.35
2013	746	0.25	0.17	0.11	0.24	0.37	1453	0.26	0.15	0.13	0.23	0.36
2014	935	0.25	0.18	0.10	0.23	0.37	1938	0.26	0.16	0.13	0.22	0.36

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 term loans, Panel B on revolvers. All variables are defined in Table 3 Panel A. All regressions include an intercept and time fixed effects (not shown for brevity). The last two columns 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 – 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	0.159***	0.098***	0.090***	0.068***	0.070***	0.081***	0.076***
	(8.58)	(5.31)	(4.77)	(3.51)	(3.66)	(4.17)	(3.95)
LOANRATINGLIG	0.140***	0.068***	0.061***	0.043***	0.045***	0.055***	0.056***
	(9.65)	(4.76)	(4.23)	(2.85)	(2.97)	(3.64)	(3.60)
LOANRATINGHSG	0.170***	0.063***	0.056***	0.037***	0.040***	0.043***	0.045***
	(13.51)	(4.58)	(4.05)	(2.60)	(2.77)	(2.99)	(3.11)
LOANRATINGLSG	0.131***	0.052***	0.042**	0.039**	0.039**	0.039**	0.039**
	(7.33)	(2.99)	(2.42)	(2.23)	(2.24)	(2.24)	(2.23)
LOANLGD	-0.124***	-0.095***	-0.085***	-0.086***	-0.087***	-0.070**	-0.069**
	(-3.89)	(-3.00)	(-2.73)	(-2.74)	(-2.78)	(-2.25)	(-2.24)
LOANLGDAVAILFG	-0.009	0.014	0.034**	0.048***	0.049***	0.046***	0.046***
	(-0.74)	(1.18)	(2.07)	(2.91)	(2.98)	(2.79)	(2.79)
SPECIALMENTION	-0.023	-0.006	-0.006	-0.002	-0.004	-0.005	-0.006
	(-0.80)	(-0.22)	(-0.20)	(-0.09)	(-0.14)	(-0.18)	(-0.21)
SUBSTANDARD	-0.001	-0.056**	-0.051**	-0.058**	-0.056**	-0.057**	-0.057**
	(-0.05)	(-2.22)	(-2.01)	(-2.30)	(-2.26)	(-2.34)	(-2.38)
DOUBTFUL	0.035	-0.106***	-0.103***	-0.095***	-0.097***	-0.086***	-0.086**
	(0.63)	(-2.96)	(-2.85)	(-2.79)	(-2.77)	(-2.44)	(-2.46)
LOSS	0.087**	-0.049	-0.045	-0.058	-0.063	-0.043	-0.043
	(2.11)	(-1.06)	(-0.89)	(-1.17)	(-1.25)	(-1.01)	(-0.98)
LN(FACILITYSIZE)		-0.063***	-0.062***	-0.060***	-0.061***	-0.057***	-0.056***
		(-24.37)	(-23.83)	(-23.33)	(-23.36)	(-20.16)	(-19.81)
LN(MATURITY)		-0.027***	-0.026***	-0.023***	-0.022***	-0.023***	-0.022***
		(-3.65)	(-3.44)	(-3.06)	(-2.99)	(-3.00)	(-2.91)
LOANPURPGENERAL		-0.044***	-0.042***	-0.035***	-0.036***	-0.031***	-0.031***
		(-5.08)	(-4.94)	(-3.97)	(-4.01)	(-3.47)	(-3.46)
LOANPURPACQFIN		-0.032***	-0.033***	-0.032***	-0.032***	-0.029***	-0.028***
		(-3.88)	(-4.02)	(-3.81)	(-3.86)	(-3.33)	(-3.28)
LOANPURPDEBTREFIN		-0.039***	-0.041***	-0.034***	-0.034***	-0.030***	-0.030***
		(-3.88)	(-4.05)	(-3.44)	(-3.44)	(-3.03)	(-3.04)
LOANPURPWC		-0.053***	-0.048***	-0.049***	-0.048***	-0.042***	-0.042***
		(-7.07)	(-6.41)	(-6.57)	(-6.37)	(-5.62)	(-5.59)
LEAGUETOP3			-0.057***	-0.059***	-0.059***	-0.056***	-0.057***
			(-3.72)	(-3.68)	(-3.66)	(-3.50)	(-3.54)
LEAGUENEXT27			-0.038***	-0.019*	-0.019*	-0.018*	-0.019*
			(-3.89)	(-1.89)	(-1.92)	(-1.87)	(-1.89)
BANKEQUITYR				0.125	0.099	0.100	0.093
				(0.99)	(0.78)	(0.78)	(0.73)
BANKCASHR				0.094	0.109	0.099	0.100
				(1.14)	(1.33)	(1.19)	(1.21)
BANKALLLR				5.428***	5.549***	5.360***	5.250***
				(7.21)	(7.38)	(7.14)	(6.98)
STRONGRELSHIP					-0.022***	-0.021***	-0.021***
					(-3.17)	(-3.16)	(-3.03)
BORROWERLEV						0.018	0.021
						(1.14)	(1.29)
BORROWERROA						0.034	0.042
						(0.92)	(1.11)
BORROWERLNTA						0.001	-0.001
						(0.37)	(-0.50)
BORROWERPUBLIC						-0.077	-0.022
						(-1.32)	(-0.36)
BORROWPUBRATINGHIG							0.071***
							(2.68)
BORROWPUBRATINGLIG							0.001
							(0.07)
BORROWPUBRATINGHSG							-0.027**
							(-2.16)
BORROWPUBRATINGLSG							0.011
							(0.49)
Borrower industry FEs	No	No	No	No	No	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2962	2962	2962	2962	2962	2962	2962
Adjusted R-squared	0.101	0.302	0.302	0.316	0.318	0.327	0.328

Panel B: Main regression results – 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	-0.028	0.028*	0.019	0.018	0.019	0.018	0.013
	(-1.46)	(1.70)	(1.20)	(1.14)	(1.20)	(1.13)	(0.85)
LOANRATINGLIG	-0.022	0.006	-0.001	-0.001	-0.001	-0.003	-0.003
	(-1.16)	(0.35)	(-0.07)	(-0.07)	(-0.04)	(-0.20)	(-0.17)
LOANRATINGHSG	0.044**	0.007	-0.005	-0.006	-0.005	-0.011	-0.011
	(2.37)	(0.43)	(-0.34)	(-0.37)	(-0.32)	(-0.73)	(-0.70)
LOANRATINGLSG	0.094***	0.025	0.008	0.013	0.013	0.005	0.004
	(4.95)	(1.46)	(0.50)	(0.81)	(0.77)	(0.29)	(0.26)
LOANLGD	-0.134***	-0.047***	-0.047***	-0.058***	-0.057***	-0.040***	-0.040***
	(-8.41)	(-3.55)	(-3.56)	(-4.24)	(-4.21)	(-3.05)	(-2.99)
LOANLGDAVAILFG	-0.016**	0.003	0.027***	0.031***	0.031***	0.027***	0.027***
	(-2.20)	(0.52)	(3.77)	(4.24)	(4.32)	(3.79)	(3.80)
SPECIALMENTION	-0.017	0.003	-0.002	0.003	0.004	0.007	0.006
	(-1.45)	(0.33)	(-0.16)	(0.36)	(0.39)	(0.69)	(0.63)
SUBSTANDARD	-0.004	-0.036**	-0.034**	-0.037**	-0.035**	-0.029*	-0.030*
	(-0.23)	(-2.22)	(-2.12)	(-2.28)	(-2.22)	(-1.82)	(-1.90)
DOUBTFUL	-0.071	-0.114*	-0.103*	-0.109*	-0.107*	-0.109**	-0.110**
	(-1.49)	(-1.88)	(-1.75)	(-1.84)	(-1.84)	(-2.06)	(-2.07)
LOSS	-0.025	-0.037	-0.012	-0.017	-0.026	-0.003	-0.001
	(-0.92)	(-1.13)	(-0.38)	(-0.53)	(-0.81)	(-0.11)	(-0.04)
LN(FACILITYSIZE)		-0.068***	-0.067***	-0.067***	-0.067***	-0.060***	-0.060***
		(-48.73)	(-47.86)	(-48.02)	(-48.08)	(-38.33)	(-38.14)
LN(MATURITY)		-0.040***	-0.038***	-0.037***	-0.037***	-0.032***	-0.031***
		(-11.27)	(-10.79)	(-10.55)	(-10.63)	(-8.99)	(-8.86)
LOANPURPGENERAL		-0.014***	-0.016***	-0.016***	-0.014***	-0.011**	-0.011**
		(-3.57)	(-3.92)	(-3.65)	(-3.35)	(-2.57)	(-2.58)
LOANPURPACQFIN		-0.011	-0.011	-0.014	-0.013	-0.011	-0.011
		(-1.16)	(-1.25)	(-1.49)	(-1.48)	(-1.30)	(-1.23)
LOANPURPDEBTREFIN		0.008	0.001	0.004	0.004	0.006	0.006
		(0.69)	(0.07)	(0.31)	(0.32)	(0.48)	(0.48)
LOANPURPWC		0.002	0.000	-0.003	-0.003	-0.003	-0.003
		(0.52)	(0.09)	(-0.73)	(-0.61)	(-0.69)	(-0.66)
LEAGUETOP3			-0.045***	-0.040***	-0.042***	-0.039***	-0.039***
			(-5.09)	(-4.54)	(-4.71)	(-4.46)	(-4.45)
LEAGUENEXT27			-0.011	-0.002	-0.004	-0.003	-0.003
			(-1.42)	(-0.27)	(-0.46)	(-0.38)	(-0.33)
BANKEQUITYR				0.313***	0.320***	0.311***	0.299***
				(3.81)	(3.90)	(3.83)	(3.67)
BANKCASHR				0.083*	0.085*	0.076*	0.082*
				(1.83)	(1.89)	(1.71)	(1.84)
BANKALLLR				0.115	0.078	0.282	0.281
				(0.25)	(0.17)	(0.61)	(0.61)
STRONGRELSHIP				-0.015***	-0.016***	-0.016***	-0.016***
				(-4.20)	(-4.76)	(-4.71)	
BORROWERLEV						-0.018**	-0.016*
						(-2.14)	(-1.89)
BORROWERROA						0.102**	0.085**
						(2.40)	(2.00)
BORROWERLNTA						-0.008***	-0.008***
						(-5.68)	(-5.55)
BORROWERPUBLIC						0.138***	0.143***
						(4.78)	(4.78)
BORROWPUBRATINGHIG							0.008
							(1.36)
BORROWPUBRATINGLIG							-0.011***
							(-2.64)
BORROWPUBRATINGHSG							-0.025***
							(-4.96)
BORROWPUBRATINGLSG							0.001
							(0.18)
Borrower industry FEs	No	No	No	No	No	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,329	6,329	6,329	6,329	6,329	6,329	6,329
Adjusted R-squared	0.153	0.450	0.450	0.452	0.454	0.473	0.474

Table 5: Robustness check using granular (instead of coarse) loan ratings

Like Table 4, 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 robustness check presented here uses granular loan ratings instead of the coarse loan ratings used in Table 4. Panel A focuses on term loans, Panel B on revolvers. All variables are defined in Table 3 Panel A. Regressions include an intercept, time fixed effects, and alternative sets of control variables and 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: Robustness check using granular (instead of coarse) loan ratings – 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
LOANRATINGAAA	0.220***	0.161***	0.161***	0.127***	0.134***	0.162***	0.172***
	(5.95)	(4.08)	(4.08)	(3.32)	(3.55)	(4.77)	(4.70)
LOANRATINGAA	0.158***	0.064*	0.064*	0.042	0.047	0.055	0.051
	(4.89)	(1.88)	(1.88)	(1.29)	(1.41)	(1.64)	(1.55)
LOANRATINGA	0.154***	0.088***	0.088***	0.067***	0.069***	0.080***	0.074***
	(7.55)	(4.30)	(4.30)	(3.22)	(3.33)	(3.81)	(3.57)
LOANRATINGBBB	0.139***	0.060***	0.060***	0.042***	0.044***	0.055***	0.055***
	(9.61)	(4.16)	(4.16)	(2.78)	(2.91)	(3.60)	(3.56)
LOANRATINGBB	0.170***	0.055***	0.055***	0.037**	0.039***	0.043***	0.045***
	(13.49)	(4.00)	(4.00)	(2.57)	(2.73)	(2.97)	(3.09)
LOANRATINGB	0.131***	0.043**	0.043**	0.041**	0.041**	0.041**	0.040**
	(7.29)	(2.48)	(2.48)	(2.34)	(2.34)	(2.32)	(2.31)
LOANRATINGCCC	0.071	0.003	0.003	-0.003	0.001	-0.002	-0.004
	(1.47)	(0.07)	(0.07)	(-0.06)	(0.02)	(-0.04)	(-0.08)
LOANRATINGCC	0.209***	0.077*	0.077*	0.059	0.061	0.069	0.070
	(4.46)	(1.71)	(1.71)	(1.29)	(1.29)	(1.51)	(1.54)
LOANRATINGC	0.165***	0.019	0.019	-0.020	-0.008	0.013	0.010
	(3.87)	(0.47)	(0.47)	(-0.49)	(-0.20)	(0.32)	(0.26)
LOANRATINGD	0.121**	-0.075	-0.075	-0.080	-0.079	-0.067	-0.066
	(2.40)	(-1.25)	(-1.25)	(-1.41)	(-1.38)	(-1.19)	(-1.19)
Loss given default	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regulatory risk ratings	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan characteristics	No	Yes	Yes	Yes	Yes	Yes	Yes
Bank market ranking	No	No	Yes	Yes	Yes	Yes	Yes
Bank condition	No	No	No	Yes	Yes	Yes	Yes
Relationship strength	No	No	No	No	Yes	Yes	Yes
Borrower characteristics	No	No	No	No	No	Yes	Yes
Borrower public ratings	No	No	No	No	No	No	Yes
Borrower industry FEs	No	No	No	No	No	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,962	2,962	2,962	2,962	2,962	2,962	2,962
Adjusted R-squared	0.100	0.303	0.303	0.317	0.319	0.328	0.329

Panel B: Robustness check using granular (instead of coarse) loan ratings – revolvers

Dependent variable:	(1) PROP RETAIN	(2) PROP RETAIN	(3) PROP RETAIN	(4) PROP RETAIN	(5) PROP RETAIN	(6) PROP RETAIN	(7) PROP RETAIN
LOANRATINGAAA	-0.061**	0.047**	0.034	0.038*	0.040*	0.020	0.016
	(-2.00)	(2.14)	(1.55)	(1.78)	(1.89)	(0.85)	(0.69)
LOANRATINGAA	-0.010	0.048***	0.036**	0.036**	0.035**	0.033*	0.028
	(-0.49)	(2.64)	(2.04)	(2.01)	(2.01)	(1.89)	(1.60)
LOANRATINGA	-0.031	0.023	0.016	0.014	0.015	0.014	0.010
	(-1.62)	(1.41)	(0.98)	(0.90)	(0.96)	(0.92)	(0.66)
LOANRATINGBBB	-0.021	0.007	0.001	0.001	0.001	-0.002	-0.001
	(-1.13)	(0.45)	(0.06)	(0.04)	(0.06)	(-0.11)	(-0.09)
LOANRATINGBB	0.044**	0.009	-0.003	-0.004	-0.003	-0.010	-0.010
	(2.37)	(0.53)	(-0.21)	(-0.26)	(-0.22)	(-0.65)	(-0.62)
LOANRATINGB	0.094***	0.026	0.010	0.015	0.014	0.006	0.006
	(4.90)	(1.56)	(0.63)	(0.91)	(0.86)	(0.37)	(0.34)
LOANRATINGCCC	0.086***	0.021	0.005	0.014	0.015	0.006	0.005
	(3.14)	(0.90)	(0.20)	(0.60)	(0.64)	(0.24)	(0.19)
LOANRATINGCC	0.163***	0.070**	0.055*	0.052*	0.054*	0.046	0.048
	(4.89)	(2.22)	(1.72)	(1.67)	(1.76)	(1.53)	(1.58)
LOANRATINGC	0.077	-0.003	-0.036	-0.038	-0.032	-0.037	-0.036
	(1.55)	(-0.07)	(-0.87)	(-0.91)	(-0.79)	(-0.91)	(-0.90)
LOANRATINGD	0.060	-0.064*	-0.094***	-0.085**	-0.082**	-0.073**	-0.073**
	(1.31)	(-1.78)	(-2.66)	(-2.33)	(-2.24)	(-1.98)	(-1.98)
Loss given default	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regulatory risk ratings	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan characteristics	No	Yes	Yes	Yes	Yes	Yes	Yes
Bank market ranking	No	No	Yes	Yes	Yes	Yes	Yes
Bank condition	No	No	No	Yes	Yes	Yes	Yes
Relationship strength	No	No	No	No	Yes	Yes	Yes
Borrower characteristics	No	No	No	No	No	Yes	Yes
Borrower public ratings	No	No	No	No	No	No	Yes
Borrower industry FEs	No	No	No	No	No	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,329	6,329	6,329	6,329	6,329	6,329	6,329
Adjusted R-squared	0.154	0.445	0.451	0.453	0.455	0.474	0.475

Table 6: Regressions with above median proportion of concordance banks in the syndicate interactions

This table examines why the main results are so different for term loans and revolvers: lead banks retain more of term loans when their private information is better, but not more of revolvers. The analysis in Panel A focuses on term loans and in Panel B on revolvers. Both regressions replace the uninteracted coarse concordance-mapped internal loan ratings used in prior tables with three dummies indicating whether the proportion of concordance banks is low (≤ 0.33, the median for the term loan sample), medium (> 0.33 but ≤ 0.56, the medium for the revolver sample), or high (> 0.56) and the four coarse concordance-mapped internal loan ratings interacted with these three dummies. The regressions also include an intercept, all the control variables included in Table 4 Column (7), and borrower industry and time fixed effects (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:	Panel B:
	Sample:	Term loans	Revolvers
		(1)	(2)
	Dependent variable:	PROP RETAIN	PROP RETAIN
Concordance bank proportion LOW		0.138***	0.071**
		(3.32)	(2.01)
Concordance bank proportion MEDIUM			
LOANRATINGHIG * Concordance bank proportion LOW		0.050*	0.105***
		(1.85)	(2.88)
LOANRATINGLIG * Concordance bank proportion LOW		0.088***	0.076**
		(4.43)	(2.12)
LOANRATINGHSG * Concordance bank proportion LOW		0.068***	0.077**
		(4.28)	(2.37)
LOANRATINHSG * Concordance bank proportion LOW		0.041**	0.098***
		(2.08)	(2.93)
LOANRATINGHIG * Concordance bank proportion MEDIUM		0.050*	0.105***
		(1.85)	(2.88)
LOANRATINGLIG * Concordance bank proportion MEDIUM		0.088***	0.076**
		(4.43)	(2.12)
LOANRATINGHSG * Concordance bank proportion MEDIUM		0.068***	0.077**
		(4.28)	(2.37)
LOANRATINHSG * Concordance bank proportion MEDIUM		0.041**	0.098***
		(2.08)	(2.93)
LOANRATINGHIG * Concordance bank proportion HIGH		-0.077	-0.115***
		(-1.54)	(-2.88)
LOANRATINGLIG * Concordance bank proportion HIGH		-0.160***	-0.101***
		(-3.67)	(-2.59)
LOANRATINGHSG * Concordance bank proportion HIGH		-0.152***	-0.110***
		(-3.64)	(-3.04)
LOANRATINGLSG * Concordance bank proportion HIGH		-0.113**	-0.121***
		(-2.53)	(-3.25)
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		2,962	6,329
Adjusted R-squared		0.334	0.478

Table 7: 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 two alternative sets of PD variables (instead of the concordance-mapped internal loan ratings). Columns (1), (3), and (5) show linear specifications with PD, and Columns (2), (4), and (6) show quadratic specifications with both PD and PD^2. The regressions also include a dummy =1 if PD information is available, an intercept, all the control variables included in Table 4 Column (7), and borrower industry and time fixed effects (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) – term loans

PD definition used:	Raw PD		Raw PD + Concordance PD		Concordance PD	
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	PROPRETAIN	PROPRETAIN	PROPRETAIN	PROPRETAIN	PROPRETAIN	PROPRETAIN
PD	0.113***	0.434*	-0.085	0.261	-0.002	0.676***
	(2.78)	(1.85)	(-1.56)	(1.09)	(-0.03)	(3.22)
PD^2		-0.347		-0.338		-0.681***
		(-1.51)		(-1.50)		(-3.29)
PDAVAILFG	0.014	0.009	0.039***	0.032***	0.040***	0.028**
	(1.21)	(0.82)	(3.22)	(2.60)	(2.85)	(2.03)
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 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	2,962	2,962	2,962	2,962	2,962	2,962
Adjusted R-squared	0.320	0.320	0.323	0.324	0.322	0.326

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

PD definition used:	Raw PD		Raw PD + Concordance PD		Concordance PD	
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	PROPRETAIN	PROPRETAIN	PROPRETAIN	PROPRETAIN	PROPRETAIN	PROPRETAIN
PD	-0.030	0.278***	0.009	0.374***	-0.021	0.295***
	(-0.92)	(2.74)	(0.24)	(3.11)	(-0.55)	(2.85)
PD^2		-0.334***		-0.385***		-0.349***
		(-3.34)		(-3.39)		(-3.50)
PDAVAILFG	0.015***	0.009*	-0.003	-0.008	0.008	0.004
	(2.83)	(1.75)	(-0.30)	(-0.86)	(0.74+)	(0.35)
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 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	6,329	6,329	6,329	6,329	6,329	6,329
Adjusted R-squared	0.468	0.469	0.467	0.468	0.467	0.468

Table 8: Syndicate structure regression results

This table examines whether the bank's private information affects syndicate structure in terms of composition and size. Columns (1) – (4) regress the proportion of other concordance banks (i.e., excluding the lead bank) in the syndicate, the proportion of non-concordance banks in the syndicate, the proportion of non-banks in the syndicate, and the natural log of syndicate size, respectively, on our key private information variables, concordance-mapped coarse loan ratings. All regressions include an intercept, all the control variables included in Column (7) of Table 4 Panels A and B, and borrower industry and time fixed effects (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: Syndicate structure regression results – term loans

Dependent Variable:	(1) Proportion of other concordance banks	(2) Proportion of non-concordance banks	(3) Proportion of non-banks	(4) ln(syndicate size)
LOANRATINGHIG	0.192***	0.169***	-0.497***	-1.623***
	(7.55)	(8.14)	(-20.18)	(-16.81)
LOANRATINGLIG	0.248***	0.129***	-0.480***	-1.500***
	(14.81)	(10.88)	(-22.00)	(-18.80)
LOANRATINGHSG	0.203***	0.119***	-0.408***	-1.298***
	(14.47)	(12.87)	(-19.29)	(-16.82)
LOANRATINGLSG	0.088***	0.079***	-0.238***	-0.989***
	(5.73)	(7.53)	(-9.90)	(-10.92)
Loss given default	Yes	Yes	Yes	Yes
Regulatory risk ratings	Yes	Yes	Yes	Yes
Loan characteristics	Yes	Yes	Yes	Yes
Bank market ranking	Yes	Yes	Yes	Yes
Bank condition	Yes	Yes	Yes	Yes
Relationship strength	Yes	Yes	Yes	Yes
Borrower characteristics	Yes	Yes	Yes	Yes
Borrower public ratings	Yes	Yes	Yes	Yes
Borrower industry FEs	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes
Observations	2,962	2,962	2,962	2,962
Adjusted R-squared	0.380	0.185	0.647	0.683

Panel B: Syndicate structure regression results – revolvers

Dependent Variable:	(1) Proportion of other concordance banks	(2) Proportion of non-concordance banks	(3) Proportion of non-banks	(4) ln(syndicate size)
LOANRATINGHIG	0.055**	0.025	-0.054***	-0.039
	(2.24)	(1.44)	(-2.71)	(-0.68)
LOANRATINGLIG	0.058**	0.018	-0.054***	0.025
	(2.44)	(1.03)	(-2.72)	(0.45)
LOANRATINGHSG	0.049**	0.020	-0.049**	0.066
	(2.05)	(1.19)	(-2.44)	(1.20)
LOANRATINGLSG	0.028	-0.003	-0.006	-0.036
	(1.12)	(-0.17)	(-0.28)	(-0.62)
Loss given default	Yes	Yes	Yes	Yes
Regulatory risk ratings	Yes	Yes	Yes	Yes
Loan characteristics	Yes	Yes	Yes	Yes
Bank market ranking	Yes	Yes	Yes	Yes
Bank condition	Yes	Yes	Yes	Yes
Relationship strength	Yes	Yes	Yes	Yes
Borrower characteristics	Yes	Yes	Yes	Yes
Borrower public ratings	Yes	Yes	Yes	Yes
Borrower industry FEs	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes
Observations	6,329	6,329	6,329	6,329
Adjusted R-squared	0.174	0.080	0.137	0.573