

Banks' Competitor-Specific Knowledge in Loan Markets

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Abstract

This study examines the effect of banks' competitor-specific knowledge, whether a bank has lent money to a firm's product-market competitors (i.e., rivals), on the matching of firms to lenders. We find an increased propensity of firms obtaining a loan from a bank that has also lent to firms' rivals. We find that this relation is accentuated for firms with high levels of financial reporting opacity and attenuated for firms with high proprietary costs. These cross-sectional results are consistent with the benefits of information efficiencies being greater when borrowers' financial reporting opacity is higher and the costs of leaking information being higher when firms have greater potential proprietary information. We also assess the economic consequences of our main findings by examining the pricing of bank loans. Consistent with lenders being able to leverage their inside knowledge of firms within the same product market and transfer the information efficiencies to borrowers, we document a reduction in the spread over LIBOR when firms borrow from banks that have previously lent to their rivals.

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1. Introduction

Although a large literature exists on how loan characteristics are determined by the characteristics of the borrowing firm, the question of whether borrowing firms' external relationship with other stakeholders, for example, competitors, customers, or suppliers, also affects loan characteristics is largely unexplored. Our study addresses this gap by investigating the effect of banks' competitor-specific knowledge, measured as whether a bank has lent money to a firm's product-market competitors (i.e., "rivals"), on borrower-lender matchups.

There are potential benefits and costs to banks and firms when rivals borrow from a common bank. From a bank's perspective, a potential benefit is that by providing debt financing to multiple competitors in the same product market, lenders are able to develop expertise in better evaluating firms in that particular market. As a result, information acquisition and processing costs by lenders could decrease for several reasons. For example, through banks' due diligence in regularly monitoring borrowers, and banks' access to borrowers' private information, banks that have already lent to a firm's rival will be familiar with the firm's business along a number of dimensions, such as its product-market dynamics, detailed product and market profitability, order backlog, product development status, and long-term technology trends. This knowledge could help banks interpret borrowers' disclosures and financial reports, and also help assess the risks of lending to a firm by directly comparing its prospects with that of its rivals. In turn, these banks could create information efficiencies by reducing information acquisition and processing costs, and thereby offer loans at a lower rate. A potential cost of this type of lending, however, is less diversification in their portfolio of loans.

From a firm's perspective, in addition to the potential pricing advantage resulting from

the transfer of information efficiencies from lenders, a firm could also benefit directly in the form of reduced managerial effort in preparing and communicating information with banks when dealing with knowledgeable lenders. A potential cost of firms borrowing from the same lender as a rival, however, is the possibility that banks will pass on proprietary information to rivals. Information could be leaked explicitly, implicitly, or accidentally, during an information exchange between the bank and a rival (Ivashina et al., 2005; Acharya and Johnson, 2007; Massa and Rehman, 2008), thereby giving firms a disincentive to share a lender with rivals.

Based on the arguments presented above, we predict that whether a bank has previously lent to a firm's product-market rivals will affect the firm's propensity to form a lending relationship with the bank. Cross-sectionally, we focus on how the borrower's information environment affects this relation. Specifically, we argue that a lending relationship between banks and multiple rivals is more likely when the information synergies are greater. We thus predict that a borrowing firm is more likely to obtain a loan from a bank that lends to its rivals if the financial reporting opacity of the borrower is greater. When financial information is more opaque, a bank should place more weight on information from other sources. In particular, when borrowers have less transparent financial reporting, knowledge acquired via the lending relationship with a rival becomes particularly useful in helping banks interpret borrowers' public financial reports and private disclosures. In this situation, the information-synergy benefits to a bank from product-market expertise gained from lending to rivals are higher. We further predict that firms with more proprietary information are less likely to obtain financing from a bank that lends to its rivals because these firms will be concerned about potential leakage of private information.

Using a sample of 12,959 unique firm-bank pairs between 1993 and 2011, we present

evidence supporting our predictions. We find an increased propensity of firm-bank matching when the bank has previously lent to the firm's product-market competitors. From the banks' perspective, this result is consistent with the benefits of information synergies outweighing the potential costs of a less-diversified loan base. From the borrowers' perspective, this result is consistent with firms' concerns of leaking proprietary information being less important than the potential cost reduction of using the same bank. We further find that the propensity of firms to obtain loans from banks that have previously lent to the firm's product-market competitors is greater when firms' financial accounting information is more opaque, measured as the first principal component of three accrual quality measures following the approach in Bharath et al. (2008). This finding is consistent with the notion that the benefit of informational synergies of sharing a bank with rivals is greater when borrowers' financial reporting opacity is higher. It is also consistent with banks' private or other information about rivals substituting for firms' public reporting information. In addition, this propensity to share a bank with rivals decreases with proprietary costs, measured as research and development expenditures and level of intangibility, suggesting that the potential leakage of proprietary information is a concern for some firms when choosing banks. These results are robust to a battery of robustness and additional analyses.

We also examine the loan pricing implications of rival firms sharing a common lender. Using a sample of 1,395 bank loans, we examine whether the spread over LIBOR for loans depends on whether banks have previously lent to rivals. If lending to rivals generates more information synergies, such as reduced lender information acquisition and processing costs, then some of these economic benefits could be shared with firms by lowering the interest charged on the loans. This represents a benefit that could offset the concern about the leaking of proprietary information. We document that the cost of borrowing is lower when firms borrow from a bank

that has lent to their rivals, particularly for firms with high financial reporting opacity, suggesting that information synergy is greater when borrowers have lower reporting opacity. In additional analyses, we further examine the dynamics of the pricing of loans to document when the cost savings are more likely passed along to borrowers. As expected, we find that the cost savings generated from banks' lending to multiple product-market rivals are more likely to be passed on to borrowers with relatively higher bargaining power.

The findings of this study are potentially of interest for several reasons. First, we add to the scant literature on how providers of loan financing are matched up with borrowers. To the best of our knowledge, this literature has focused exclusively on banks' expertise in processing firms' hard versus soft (i.e., easy versus more difficult to verify) information. Prior research has shown that small banks have a comparative advantage over large ones in lending to small firms where the processing of soft information is needed more while large banks tend to lend to large firms where information can be costlessly "hardened" and passed along (Stein, 2002; Berger et al., 2005; Agarwal and Hauswald, 2012). Our study extends these studies in that we examine how banks' information about rivals affects the matching of lenders with borrowers and whether this information interplays with firms' information environment, as opposed to the sole focus on borrower's information environment *per se*.

Second, our study is related to Asker and Ljungqvist (2010) who find that firms rarely share investment banks with product-market competitors because of concerns that proprietary information will be leaked to their competitors despite the informational benefits of sharing the same investment bank. Their results contrast with ours because we document that firms are both more likely to share a lender with rivals and benefit from lower pricing. In our setting, banks regularly monitor firms throughout the life of the loan, likely causing the repetitive informational

benefits of borrowing from the same lenders to outweigh the information leakage concerns. In contrast, investment banks have no obligation to monitor or exchange information with issuing firms after the financing event, and therefore, the one-time informational advantage of information sharing is more limited in that setting.

Third, we contribute to the literature on the capital market effects of product-market competition. Valta (2012) documents that the cost of bank debt is systematically higher for firms that operate in more competitive product markets due to reduced cash flows that arise from greater competitive rivalry. Our paper differs from Valta (2012) in that we focus on the interaction between product-market competitors and lender-borrower pairing and its effect on the cost of debt. Furthermore, while Valta (2012) demonstrates a negative aspect of competition, our results suggest a potential positive externality of having product-market competitors due to information synergies experienced by banks. Our results are consistent with the notion proposed by De Franco et al. (2011), among others, that increased comparability provides positive benefits in terms of reduced information acquisition and processing costs by external stakeholders.

Last, our study relates to an emerging stream of research that examines peer firms. For example, a related study examines how the bankruptcies of firms affect their industry rivals' cost of debt financing and stock prices (i.e., Benmelech and Bergman, 2011). Further, peer firms are used by a wide variety of stakeholders. Examples include: financial analysts to support their valuation multiples, earnings forecasts, and overall stock recommendations (e.g., Bradshaw et al. 2010); investors to judge the merits and comparability of investments (e.g., De Franco et al., 2011); fund managers in structuring their investment portfolios (e.g., Chan et al., 2007); compensation committees in setting executive compensation (e.g., Albuquerque 2009; Albuquerque et al., 2012); management in making capital expenditure decisions (e.g., Beatty et

al., 2013) in determining valuation multiples (e.g., Bhojraj and Lee 2002); and, researchers in choosing estimation samples to detect earnings management (e.g., Ecker et al., 2011).¹

The next section develops our hypotheses related to the matching of rival firms with lenders. Section 3 details the sample selection and describes the research design for our firm-bank matching tests. In Section 4 we discuss and estimate the economic consequences of rivals sharing a common lender by examining the pricing of these loans. Section 5 concludes.

2. Related Literature and Hypotheses Development

2.1. BANKS' USE OF INFORMATION ABOUT BORROWERS

During the lending process banks can obtain various types of information from borrowers to assess their creditworthiness. This information includes both public information that is widely available (e.g., public filings such as the annual 10-K filing), and private information that is covered by a confidentiality undertaking or subject to a bank's duty of confidence to a borrower (Spiro, 2007). According to the Loan Syndications and Trading Association (LSTA), in addition to periodic financial statements, lenders require private information from a borrower prior to making the initial lending decision and then also require periodic reporting of public and private information once a loan has been made. In addition, borrowers may need to report material information or news in a timely manner (Bobrow et al., 2007). Access to borrowers' private information is one of the largest advantages of bank debt financing compared to public debt markets. Banks can use this access to private information to mitigate information asymmetry at

¹ We also contribute to the literature on product-market competition by introducing a new measure of competitors to the literature. Specifically, we identify and acquire a listing of competitor information as reported by a firm in their 10-K filings. Prior studies have documented concerns with other measures of competition such as Compustat-based measures (Ali et al., 2008) or industry-based measures (Bens et al., 2011; Rauh and Sufi, 2012). Our measure may be useful in future research when examining the dynamics and implication of product-market competition. It also complements the firm-specific competition measure in Li et al. (2012).

the initiation of the loan and to assist in the monitoring of borrowers after loan initiations (Sufi, 2007; Beatty et al., 2010; Hauswald and Marquez, 2006; Xie et al., 2011).

Notwithstanding the informational advantages of bank financing, the standards for the separation of public and private information are largely discretionary (Ivashina and Sun, 2011), thereby giving rise to the possibility of banks leaking important private information. For example, it was not until October 2006 that the LSTA drafted and circulated among its members a set of principles designed to help loan-market participants appraise confidential information. Ivashina and Sun (2011) argue that despite LSTA's efforts to eliminate the confusion between public versus private information, the debate of what constitutes private information continues. Hence, the potential confusion of what constitutes private information that is subject to confidentiality requirements and public information that is not subject to those requirements leads to the possibility that banks leak private information.

Information leakage is further facilitated by the fact that most bankers in charge of loan syndications are working at banks' headquarters. Ross (2010) observes that banks' headquarters are the "primary places of work for a majority of the corporate bankers who maintain relationships with large, public borrowers in the syndicated loan market." It is plausible that bankers working in the same headquarters are more likely to share proprietary information that increases the likelihood of information leakage.

2.2. COSTS AND BENEFITS OF SHARING LENDERS WITH RIVALS

We argue that an alternative channel to help banks assess a firm's credit risk is via the lending relationship with a firm's rivals. There are at least two possible avenues through which a bank can leverage their experience in lending to multiple rival firms in the same product market. First, a bank is able to develop expertise in interpreting public information or private disclosures

for firms operating in that market. For example, a bank that has already lent to a firm's rival may be familiar with the firm's product-market dynamics, detailed product and market profitability, and long-term technology trends that help them interpret borrowers' financial reports or private disclosures.

Second, banks can directly use private information obtained about a rival to better evaluate the prospects of the firm requesting financing. For example, if a bank knows that a rival is expecting an increase in demand for their products, this information could also indicate a change in demand for the borrower's products. A rival's information, such as order backlog, product development status (e.g., Xie et al., 2011), could also be informative in evaluating the success (and eventual repayment prospects) of the firm. In addition, the information acquired by lending to multiple rivals can serve as confirmatory evidence regarding a bank's prior knowledge about the product market. This private knowledge could increase the bank's confidence that it has appropriately assessed the risks of lending to firms in that market.² To the extent that the benefits from the reduction in banks' information acquisition and processing costs through either channel can be passed on to the borrowers, borrowers have an incentive to share banks with their rivals.³

In addition to potential savings that a bank could pass on to a firm in the form of reduced interest costs, sharing a lender with a rival could also benefit borrowing firms through other related mechanisms. If a bank is more knowledgeable about the product market within which

² This channel of using rivals' information to assess a potential debtor is consistent with Standard and Poor's (S&P) statement that they compare issuers with their peers, qualitatively and quantitatively, in determining credit ratings (S&P, 2012).

³ In a similar spirit to our argument, Greenbaum et al. (1989) analytically show that lenders with a pre-existing relationship with a potential debtor have an informational advantage over other potential lenders. This relationship and related informational advantage results in a lower interest rate, which implies that the lender will more likely be chosen by the firm. This notion is consistent with the empirical study of Bharath et al. (2011) who document that repeated borrowing from the same lender results in lower spreads on loans. The difference between these ideas and our argument is that their source of information is the firm itself while our source of information is a firm's rivals.

their clients operate, the bank could streamline the lending process for those firms by requiring less background information and follow-up communication. This streamlining could lead to a firm's management spending less time and costs on borrowing-related activities.

There are also reasons why firms could be less likely to borrow from a bank that has lent to rivals. From the bank's point of view, a potential cost of lending to multiple firms within the same industry is a potentially less-diversified portfolio of loans. A common negative shock among rivals could cause the bank to bear accentuated downside risk when holding a less-diversified portfolio.

From the firm's point of view there are several reasons why it would not be beneficial to borrow from a bank that lends to the firm's product-market competitors. When borrowing from these banks, firms could experience additional costs in the form of banks leaking proprietary information obtained during the lending relationship to rivals, whether explicitly, implicitly, or accidentally. The potential for information leakage is heightened given, as discussed above, banks' confusion of the separation between private and public information.

Prior research has documented information leakage by lenders in other, relevant settings. For example, Ivashina et al. (2005) find that lenders may leak private information to potential acquirers that borrow from the same banks. Anecdotally, the auto-parts maker Dana Corp filed a lawsuit in 2003 against a former lender, UBS, claiming that UBS used confidential information to help its rival ArvinMeritor Inc. to launch a \$2.2 billion unsolicited bid for Dana Corp. Further, Ivashina and Sun (2011) find that institutional lenders trade on private information acquired in the lending process. In addition, Acharya and Johnson (2007) document evidence consistent with banks trading in clients' securities in the credit default swap market. Massa and Rehman (2008) show that mutual funds increase their holdings in the firms that borrow from affiliated banks

based on information obtained within the financial conglomerate. Further, the findings of Asker and Ljungqvist (2010) document that concerns about leaking proprietary information is the likely explanation for why firms avoid sharing investment banks with firms in their industry. Based on the above discussions, our first hypothesis is as follows:

H1: The propensity of a firm obtaining a loan from a bank is associated with whether the bank lends to the firm's product-market competitors.

Next we explore cross-sectional variation in this relation.⁴ First, we expect the relation between product-market competition and borrower-lender pairing to vary with firms' financial reporting quality. The potential benefits to a bank of lending to a rival are likely greatest when the potential information synergies to lenders are greater. Because banks rely primarily on periodic financial accounting reports, along with private information, to assess the creditworthiness (Spiro, 2007), if a firm's financial reporting is more opaque, then the demand for private information and other supplemental information that help interpret financial statements will be greater. Hence, banks that lend to rivals will experience the greatest informational synergies from lending to a rival when a firm's financial accounting information is of lower quality. This leads to our second hypothesis:

H2: The propensity of a firm obtaining a loan from a bank who lends to the firm's product-market competitors is greater for firms with more opaque financial reporting.

Additionally, as discussed above, prior studies document evidence that banks can leak private proprietary information to competitors (Ivanshina et al., 2005), that firms avoid the

⁴ Our tests focus on cross sectional variation from the borrower's perspective. We do not explore cross-sectional variation from banks' perspective because this alternative perspective, e.g., the diversification concern, would require us to consider banks' risk taking policy and banks' asset portfolio beyond commercial loans. This will inevitably make the empirical tests quite complex. As the first study to investigate the effect of product-market competition on banking relationship, for parsimony we intentionally focus on borrowers' information environments. Nonetheless, to provide some empirical insights on the effect of diversification concerns, we interact the main test variable with a bank's syndicated-loan diversification measure. We find that diversification concerns reduce the likelihood of sharing banks with rivals. Details are discussed in the sections below.

sharing of investment banks with their product-market competitors (Asker and Ljungqvist, 2010), and that banks use information obtained through lending relationships to trade in the credit default swap and stock markets (Acharya and Johnson, 2007; Ivashina and Sun, 2011). Therefore, a concern that proprietary information obtained during the lending relationship could be leaked to rivals may lead to a reduced propensity to share a bank with rivals. These arguments lead to our third hypothesis:

H3: The propensity of a firm obtaining a loan from a bank who lends to the firm's product-market competitors is lower when a firm has more proprietary information.

3. Empirical Analysis – Matching of Firms with Lenders

3.1. SAMPLE

We obtain our primary sample using data from multiple sources. First, we compile private bank loan information from the DealScan database for bank loans included in the database that are originated between 1993 and 2011. We only include the first loan to each firm arranged by each lead bank to rule out the possible confounding effects associated with the repetitive nature of lender-borrower relationships in the loan market. Next, we identify and acquire the borrower's competitor information from the Capital IQ database, where competitors are self-identified by firms in their 10-K filings. The intersection of these two databases generates 1,354 firms with competitor information. Finally, we obtain other firm-level variables from COMPUSTAT. After requiring non-missing data for the necessary firm characteristics, our final sample consists of 12,959 firm-bank combinations representing 982 unique firms.

We believe the use of firms' self-reported list of competitors is desirable in our setting because we are interested in the borrowing behavior of firms as a result of the dynamics of rivalry and because managers are most cognizant of their own competitors. Given that this self-

reported measure is potentially subject to managerial bias, we attempt to validate it. We calculate the correlations of earnings as well as returns between firms and their self-reported rivals. We find that firms and their rivals are reasonably correlated in both earnings and returns with spearman correlations of 0.20 and 0.42, respectively. As a benchmark, we also calculate the correlations of earnings as well as returns between firms in the same two-digit SIC industry, another commonly used measure to identify product-market competitors. Both earnings and returns are positively correlated among firms within the same two-digit SIC codes with spearman correlations of 0.06 and 0.26, respectively. The relatively high earnings and returns correlations among rivals for our sample firms provide some comfort in the validity of our measure.⁵

3.2. RESEARCH DESIGN

3.2.1. Rivals and Matching of Firms with Lenders. To investigate whether rivals' borrowing behavior affects the matching of a firm to a lender, we run the following probit estimation:

$$LEND_{ij} = \beta_0 + \beta_1 LEND_COMP + \beta_2 S_SIZE + \beta_3 S_MTB + \beta_4 S_LEV + \beta_5 S_EARN + \beta_6 SIZE + \beta_7 BANK_EXP + \beta_8 COMOVE + \varepsilon \quad (1)$$

$LEND_{ij}$ is an indicator variable that equals one if the loan that firm i takes on is arranged by bank j , zero otherwise. In order to perform our analysis we require both observations where $LEND = 1$ (i.e., a loan was agreed upon) and observations where $LEND = 0$ (i.e., the firm does not borrow from the bank). That is, in addition to the actual lending relationships captured by Dealscan

⁵ One drawback of using firms' self-competitor disclosures to identify rivals is that this voluntary disclosure starts from 2007. To ensure that this database is appropriate for our analysis and can be used retroactively, we randomly checked some firms' disclosures. We find that firms' disclosures are highly consistent from 2007 to 2011; that is, competitors identified by firms in one year remain the same in future years, which is consistent with the Li et al.'s (2012) argument that competition is constant through time. Second, we re-estimate the analysis using a sample period that is closer to the enactment of this disclosure from 2004. We continue to find similar results. Finally, we use an alternative proxy for competitors based on De Franco et al.'s (2011) comparability measure. We continue to find similar results. More details are discussed in the robustness section below.

where $LEND_{ij} = 1$, we must identify potential benchmark firm-bank pairings that do not result in a loan (i.e., $LEND_{ij} = 0$). Our methodology is similar to one of Asker and Ljungqvist's (2010) analyses and has been used in a number of prior studies. For example, Faulkender and Yang (2010), Bizjak et al. (2011), and Albuquerque et al. (2012) use this methodology to model the selection of firms as compensation group peers.

To construct the benchmark group where $LEND_{ij} = 0$, at inception of each loan, we compile a group of $J - 1$ potential lenders for each firm. Alternatively stated, when choosing a bank to borrow from, we assume firm i has J bank choices and picks one bank from the J choices as the lead bank arranging the loan. When forming the $LEND_{ij}$ relationships, we identify the ten banks that have the greatest market share during the sample period within the same two-digit SIC code as the borrowing firm to construct possible firm-lender pairing combinations. These potential lenders are highly visible and have substantial experience in the firm's industry. For consistency we only include firms that actually borrow from the top banks in the analysis.

As alternative methods exist to determine banks not paired with firms, we conduct several robustness checks on this research design. Results and inferences are similar when using the top five, top fifteen or top twenty banks in a certain industry to form the possible combinations.⁶ We also perform our analyses using a random sample of banks and observe results that are qualitatively and quantitatively similar. (More robustness checks are provided in Section 3.6.)

The test variable of interest in the probit model is $LEND_COMP$, an indicator variable equal to one if any rival of the firm that has been identified in the 10-K filings has borrowed

⁶ The market share of bank loans syndicated by top five, 10, 15, and 20 banks is 41%, 58%, 66%, and 71%, respectively. We select ten banks for our primary analysis as the addition of banks beyond the top ten adds relatively little to the total market share covered in our sample and could create more noise in the analysis as discussed in the following sections.

from bank j in the past five years. We include a large set of control variables in our model to capture other factors that could affect lender choice. Our controls help address an alternative explanation for our finding: that we are simply capturing the similarity in firm characteristics between firm i and other firms that borrow from bank j . That is, we control for the possibility that bank j lends to both firm i and other firms operating in their product market primarily because of the similarity of the firm characteristics but not rivalry *per se*.

We construct several variables to capture this similarity. We start by including a measure of the similarity of firm size between firm i and bank j 's other borrowers. Specifically, S_SIZE is measured as negative one multiplied by the absolute value of the difference between firm i 's $SIZE$ and the median $SIZE$ of the firms that bank j lent to within the five years prior to firm i 's decision to take on new bank debt. Based on prior research (e.g., Berger et al., 2005), we expect the coefficient on S_SIZE to be positive because large (small) banks tend to lend to large (small) firms. Other similarity control variables are defined in an analogous manner. We include a control for the similarity of firms' market-to-book ratio (S_MTB), leverage (S_LEV), and earnings (S_EARN).

We also control for firm size ($SIZE$), bank expertise ($BANK_EXP$), and the comovement of earnings between firm i and bank j 's portfolio of syndicated loans ($COMOVE$) to partially capture the effect of diversification on lending relationships. We expect a positive coefficient on $BANK_EXP$ because expert banks are able to lend to more firms and a negative coefficient on $COMOVE$ because banks are more likely to lend to a firm whose performance is less closely aligned with other firms in the bank's portfolio in order to diversify. We do not have a prediction on $SIZE$. Detailed variable definitions are presented in Appendix A.

3.2.2. Matching of Firms with Banks: Financial Reporting Opacity and Proprietary

Costs. We test the cross-sectional predictions from hypothesis 2 and hypothesis 3 using the following probit model.

$$\begin{aligned}
 LEND_{ij} = & \beta_0 + \beta_1 LEND_COMP + \beta_2 OPAQ_D + \beta_3 OPAQ_D \times LEND_COMP \\
 & + \beta_4 PC_D + \beta_5 PC_D \times LEND_COMP + \beta_6 S_SIZE + \beta_7 S_MTB + \beta_8 S_LEV \\
 & + \beta_9 S_EARN + \beta_{10} SIZE + \beta_{11} BANK_EXP + \beta_{12} COMOVE + \varepsilon
 \end{aligned} \tag{2}$$

OPAQ_D is our proxy for financial reporting opacity. Following Bharath et al. (2008) and Beatty et al. (2010), *OPAQ_D* is an indicator variable that equals one if the first principal component of absolute value of discretionary accruals estimated from three different accrual models is greater than the median of the sample, zero otherwise. The detailed estimation procedure is provided in Appendix B. Following prior studies (Ellis et al., 2011; Jones, 2007), we use research and development (R&D) expenditures as our first proxy for proprietary costs. *PC_D* is an indicator variable equal to one if R&D expenditures of firm *i* are greater than the sample median.

Based on hypothesis 2 we expect the coefficient on the interaction term *OPAQ_D* × *LEND_COMP* to be positive. This prediction is consistent with a greater propensity for firms to form a banking relationship with the same bank as their rivals when financial reporting opacity is higher. Based on hypothesis 3 we expect the coefficient on the interaction term *PC_D* × *LEND_COMP* to be negative. This prediction is consistent with a reduced propensity for firms to obtain loans from the same bank as their rivals when firms' proprietary costs are higher.

3.3. UNIVARIATE COMPARISON

We provide descriptive statistics of our variables for our lender choice sample in Table 1. All continuous variables for this and all remaining analyses are winsorized at the top and bottom 1%. The observations are partitioned on whether firm *i* borrows from bank *j* (i.e., *LEND_{ij}* = 1 versus *LEND_{ij}* = 0). Consistent with hypothesis 1 that banks' lending relationships with rivals

affect the matching of banks with borrowing firms, we find that firms are more likely to borrow from the same bank that has lent to their rivals in the past five years. For the $LEND_{ij} = 1$ sample, $LEND_COMP$ is 0.478 versus 0.315 for the $LEND_{ij} = 0$ sample, with the difference being statistically significant. Consistent with our expectations, the characteristics (i.e., firm size, leverage ratio, and earnings) of firm i are closer to the characteristics of firms borrowing from the bank that lends to firm i than banks that do not lend to firm i . This finding is consistent with the findings of prior studies that firms with similar characteristics (i.e., size) tend to borrow from the same banks.

Table 2 presents the Pearson correlations among these variables. Again, consistent with our predictions, $LEND_{ij}$ and $LEND_COMP$, S_SIZE , S_LEV , S_EARN and $BANK_EXP$ are positively correlated. In addition, the greatest correlation between any pair of variables is 0.46, suggesting that collinearity is not a serious issue in our regression analysis.

3.4. MULTIVARIATE TESTS

3.4.1. Rivals and Matching of Firms with Lenders. Table 3 presents the tests of hypothesis 1. In the first column, we observe a significant and positive coefficient on the variable of interest, $LEND_COMP$. The observed coefficient is consistent with the notion that firms are more likely to borrow from a bank that has previously lent to their rivals than from a bank who has not lent to their rivals. This result is also economically significant. If one of firm i 's rivals borrows from bank j , then the chance that firm i also borrows from bank j is 8.0% higher than if no rival uses bank j . This finding suggests that the information synergies and related cost savings seem to dominate borrowers' concerns of potential leakage of proprietary information and banks'

diversification concern.⁷

As for the control variables, we show that firms are more likely to borrow from a bank that lends to other firms with similar firm size, and level of accounting earnings. In addition, firms are more likely to borrow from banks that have more expertise in the same two-digit SIC code industry. Finally, when the firm's earnings tend to co-move with bank j 's portfolios the firm is less likely to borrow from that bank.

3.4.2. Matching of Firms with Banks: Financial Reporting Opacity and Proprietary Costs. We investigate cross-sectional variation in the propensity to borrow from the same bank as product market rivals by estimating Model 2. These results, presented in column 2 of Table 3, provide evidence consistent with hypothesis 2. That is, the likelihood of borrowing from the same bank as rivals increases with the opacity of borrowers' financial reporting. This finding is suggestive of the notion that the more opaque the information environment, the more beneficial it is to borrow from a bank that has experience with firms in the related product market. This result also suggests that public financial information and other information such as product market knowledge acquired via lending to rivals seem to act as substitutes, rather than complements. This implication is consistent with banks using private and public accounting information as substitutes to monitor borrowers (Beatty et al., 2010).

We also observe results consistent with the predicted cross-sectional variation from hypothesis 3 in column 2 of Table 3. The likelihood of borrowing from the same bank as rivals

⁷ An alternative interpretation of this finding is that because banks have proprietary information about the operations of a firm's rivals, the willingness to lend to the firm could be an indication that the firm's prospects are positive based on the bank's evaluations. On the other hand, banks may not be willing to lend to firms that they think are less competitive compared to rivals based on the bank's superior information about the rivals. This alternative explanation for our findings is still consistent with our hypotheses. Private information about rivals leaked to the firm could be mutually beneficial to the firm and the bank (although potentially not the rival). We explore this issue in greater depth in our hypothesis and tests related to proprietary costs.

decreases with R&D expenditures. This finding suggests that firms with higher levels of proprietary information are more likely to avoid borrowing from the same banks that lend to rivals operating within the same product market to reduce the possibility of information leakage to competitors.

3.5. ADDITIONAL ANALYSIS

3.5.1 The Effect of Competitiveness. In this section, we allow the effect of rivalry on firm-bank pairings to vary with the level of inter-firm competition by augmenting model 2 as follows:

$$\begin{aligned}
 LEND_{ij} = & \beta_0 + \beta_1 LEND_COMP + \beta_2 COMPETITION + \beta_3 OPAQ_D \\
 & + \beta_4 OPAQ_D \times LEND_COMP + \beta_5 OPAQ_D \times LEND_COMP \times COMPETITION \\
 & + \beta_6 PC_D + \beta_7 PC_D \times LEND_COMP + \beta_8 PC_D \times LEND_COMP \times COMPETITION \\
 & + \beta_9 S_SIZE + \beta_{10} S_MTB + \beta_{11} S_LEV + \beta_{12} S_EARN + \beta_{13} BANK_EXP \\
 & + \beta_{14} COMOVE + \varepsilon
 \end{aligned} \tag{3}$$

We measure competition using the proxy developed by Li et al., (2012). The measure of competition is based on management’s disclosures and compiled using a count of the number of references to “competition” in the firm’s 10-K filing scaled by the total number of words in the document, and then divided by the number of segments. Specifically, our variable *COMPETITION* is measured as an indicator equal to one if the ratio of the word “competition” to other words in the 10-K, scaled by the number of segments, is greater than the sample median. Ratios are averages for the sample period to avoid measurement errors. All other variables are defined as in models 1 and 2. Due to availability of the *COMPETITION* measure we lose 3,187 observations from our initial sample.

We expect that the effect of both financial reporting opacity and proprietary costs to be more pronounced when competition is fiercer. When the product market is more competitive, avoiding the leakage of proprietary information would be more important for firms. Further, banks’ information synergies via lending to multiple competitors would become more beneficial

because more similarity in operations among rival firms should lead to greater information efficiencies.

Results from this specification are presented in column 3 of Table 3 are consistent with the above conjecture. High levels of *COMPETITION* strengthen both the positive relation between financial reporting opacity and borrowing from the same lender as rivals and the negative relation between proprietary costs and borrowing from the same lender as rivals. These results further suggest that our main findings are indeed driven by rivalry, instead of other omitted variables.⁸

3.5.2 Banks' Loan Portfolio Diversification. As another untabulated analysis, we also consider how banks' diversification concerns impact the effect of product market competition on banking relationships. We measure the diversification level as the comovement of earnings within firms that borrow from bank j within five years prior to the firm taking on a new loan. We then interact this measure with *Lend_Comp* in Equation (2), finding that the coefficient on *Lend_Comp* decreases with the comovement within the bank's loan portfolio. This result suggests that banks' diversification concern does play an important role in affecting forming banking relationships.

3.6. ROBUSTNESS CHECKS

In untabulated analyses we perform a battery of tests to substantiate the robustness of our main findings. In all cases we continue to find support for our main findings. These tests are described below:

⁸ In addition to the competition measure based on Li et al. (2012), in untabulated analyses, we also construct an alternative competition measure based on the number of competitor identified by each firm. Specifically, we use an indicator variable in which the log (number of competitors mentioned) scaled by the number of segments is greater than the 75th percentile of the sample. Results are similar.

(a) We use the binomial model in our main analysis for consistency with prior research (see discussion in subsection 3.2.1) and for ease of presentation and interpretation of results. We also test a *multinomial* logit model to study lender-borrower pairings where we allow firms to choose from multiple lenders simultaneously rather than separate ‘borrow-versus-not borrow’ choices for each firm-bank pair. Specifically, we examine if whether the firm’s competitors have borrowed from a specific bank affects the relative probability of the firm’s decisions to use that same bank compared to other banks.

(b) To ensure that the results are not driven by our choice of the empirical measure of rivalry, we repeat our analysis using an alternative proxy for rivalry. We use the firm comparability measure from De Franco et al. (2011).⁹ Although a potential shortcoming of this measure is that it likely represents a more coarse measure of rivalry, this alternative measure does increase our confidence in, and complements, the self-reported competitor measure used in our primary analysis.

(c) We use intangibility as an alternative measure for proprietary costs. Following Ellis et al. (2010), intangibility is defined as one minus the sum of current assets and property, plant, and equipment scaled by total assets. Because the property rights associated with innovations are not perfectly enforceable, we use R&D and intangibility to proxy for proprietary costs. Furthermore, to ensure that our main finding that firms tend to borrow from the same banks as rivals is not completely driven by low R&D industries we perform an additional related robustness test: we repeat our analysis using only firms in high R&D industries.

(d) We employ an alternative measure for reporting opacity. Doyle et al. (2007) argue

⁹ We acquire both returns and earnings comparability measures from De Franco et al. (2011). For each firm i we designate 5 firms that have the highest comparability in returns and 5 firms that have the highest comparability in earnings within the same 2 digit-SIC codes as potential competitors. This analysis includes 7,130 observations.

that firms with internal control weaknesses tend to have lower accounting quality. Therefore, we employ whether firms have internal control weaknesses between 2002 and 2011 (including both SOX 302 and 404 requirements) as an alternative financial reporting opacity proxy.

(e) One could argue that considering only the largest top ten banks in constructing the sample and dependent variables in Equation (1) biases the coefficient on *Lend_Comp* to be more positive because these large banks are more likely to lend to more competitors due to their prominence in the industry. Asker and Ljungqvists' (2010) findings suggest this concern does not have to be the case as their sample includes only the largest investment banks. To further understand whether this concern drives our results, we partition the top ten banks into two subgroups based on their market share. If this concern is valid, then the coefficient on *Lend_Comp* for the top five banks should be higher than that for the next five banks. We do not observe a larger coefficient for the largest 5 banks.

(f) The information content provided by observations where $Lend_{ij} = 1$ could be greater than observations where $Lend_{ij} = 0$ because the former is based on actual lending relationships while the latter is based on hypothetical non-relationships. Therefore, if our finding is driven by the hypothetical non-relationships, then our results are less meaningful. To mitigate this concern, instead of using nine hypothetical observations for each actual bank loan as in the current research design, we include only one hypothetical observation for each actual banking relationship. Specifically, we only include the bank whose market share is the closest to the bank that the firm actually borrows from in the analysis to form the non-relationship dependent variable. That is, we have only one observation where $Lend_{ij} = 0$ in the analysis for each observation where $Lend_{ij} = 1$.

(g) About 40% of rivals self-identified by firms in the Capital IQ database do not have the

same two-digit SIC codes as the firm. Because we use the ten largest banks lending to an industry (defined using two-digit SIC codes) to form the possible firm i -bank j combinations for the dependent variable, there is a possibility that we could draw biased inferences. To address this potential concern, we eliminate rivals with different two-digit SIC codes and repeat our analysis. This results in a reduced sample of 10,977 observations for our supplemental tests.

(h) Finally, prior research documents a negative association between the lender-borrower geographical distance and the propensity of a bank to lend to a firm (Guiso et al. 2004; Agarwal and Hauswald, 2010; Wang 2012). To ensure our findings are not driven by an underlying relation between rivalry and geographic distance, we include a control variable capturing the distance between the bank and the firm's head office.

4. Economic Consequences – Loan Pricing

In this section we examine the loan pricing implications of rival firms borrowing from the same bank. Banks who develop an expertise in a particular product market should be able to exploit this expertise, create efficiencies, and offer loans to their debtors at a lower rate than they would otherwise be able to. While our first hypothesis could still hold even if the cost savings experienced by banks are not passed onto borrowers, we expect banks to pass savings onto borrowers in the form of lower interest costs due to the competitive nature of the lending market.

In addition, if the information synergy to a bank who lends to rivals is greater when borrowers' financial reporting opacity is higher, then more cost savings may be transferred to these high opacity borrowers. Bharath et al. (2011) present findings in a similar spirit as the preceding conjecture. They document that the negative effect of a preexisting lending relationship on the cost of debt increases with information opacity. Further, because firms could also experience additional costs in the form of banks passing proprietary information obtained

during due diligence work to rivals, borrowing firms could demand a greater reduction in interest rates in order to share the same lenders with rivals. Consequently, we predict that firms with high proprietary information that share the same banks as rivals will incur lower interest rates.

4.1. SAMPLE AND RESEARCH DESIGN

To examine the pricing of loans we begin with the data compiled from DealScan, Capital IQ, and COMPUSTAT for the lender choice sample but only include loans that are actually taken by firm i from bank j due to the requirement of loan pricing data. As a result of the further data requirements on loan characteristics, our final sample for the loan pricing tests consists of 1,395 unique loans. We estimate the following ordinary least squares equation:

$$\begin{aligned} Allindrawn_{ij} = & \beta_0 + \beta_1 LEND_COMP + \beta_2 SIZE + \beta_3 MTB + \beta_4 \Delta MTB + \beta_5 LEV + \beta_6 EARN \\ & + \beta_7 RATED + \beta_8 RATING + \beta_9 DEBT_SIZE + \beta_{10} MATURITY \\ & + \beta_{11} SECURITY + \beta_{12} TAKEOVER + \beta_{13} SHORT + \varepsilon \end{aligned} \quad (4)$$

Allindrawn is the all-in-drawn interest charges over LIBOR for firm i , collected from the LPC database. We expect a negative coefficient on *LEND_COMP*, consistent with a decrease in the cost of borrowing for firms that borrow from a bank who lends to the firm's rivals as a result of shared cost savings by the bank. Our selection of control variables follows prior studies (e.g., Bharath et al., 2008; Beatty and Weber, 2003). First, we include firm size (*SIZE*), the market-to-book ratio (*MTB*), financial leverage (*LEV*), and accounting earnings (*EARN*) of firm i . We further include credit ratings to capture the firm's distress risk. Based on the prior studies, we expect larger firms, firms with higher *MTB* ratios, higher accounting earnings, lower leverage, and firms further from bankruptcy (i.e., higher values of *RATING*) to incur a lower cost of debt.

We also control for a number of loan specific characteristics, such as the size of the loan (*DEBT_SIZE*) and the loan's maturity (*MATURITY*). To control for whether or not the loan requires collateral, we set an indicator variable (*SECURITY*) equal to one if collateral is required.

The variable *TAKEOVER* controls for the purpose of the loan (i.e., whether the loan is expected to fund takeovers). We also control for whether the loan is a 364-day facility, with the expectation that 364-day facilities should demand lower interests (*SHORT*). We expect that loans with longer maturities, loans that require collateral, and loans funding takeovers to require higher interest rates. Detailed variable definitions are presented in Appendix A.

We examine our cross-sectional predictions about the relations between loan pricing and financial reporting opacity and proprietary costs using the following OLS model.

$$\begin{aligned}
Allindrawn_{ij} = & \beta_0 + \beta_1 LEND_COMP + \beta_2 OPAQ_D + \beta_3 OPAQ_D \times LEND_COMP \\
& + \beta_4 PC_D + \beta_5 PC_D \times LEND_COMP + \beta_6 SIZE + \beta_7 MTB + \beta_8 \Delta MTB + \beta_9 LEV \\
& + \beta_{10} EARN + \beta_{11} RATED + \beta_{12} RATING + \beta_{13} DEBT_SIZE + \beta_{14} MATURITY \\
& + \beta_{15} SECURITY + \beta_{16} TAKEOVER + \beta_{17} SHORT + \varepsilon
\end{aligned} \tag{5}$$

All variables are defined above. We expect the coefficient on the interaction term *OPAQ_D* × *LEND_COMP* to be negative, consistent with a greater reduction in borrowing costs for firms that borrow from the same bank as their rivals when their financial reporting opacity is high. We expect the coefficient on the interaction term *PC_D* × *LEND_COMP* to also be negative based on the notion that firms with high proprietary costs will demand a greater price reduction to use the same banks as their rivals. Note, our predicted coefficients on the interaction terms follow from the analysis presented in section 3. Although not directly of interest in this study, we include a main effect term *OPAQ_D* and expect a positive coefficient, consistent with higher interest spreads on loans to firms with opaque financial information where information efficiencies are less likely to be present (Bharath et al., 2008). We also include the main effect term *PC_D* but do not have a prediction on the sign of the coefficient. If lenders view high proprietary costs as a proxy for risk, these loans could have higher spreads. If lenders view high proprietary costs as a proxy for growth potential, these loans could have lower spreads.

4.2. UNIVARIATE COMPARISON

We provide descriptive statistics of our main variables and control variables for our loan pricing sample in Table 4. The observations are partitioned on whether the loan is originated from a bank that has also lent to the firm's rivals. Consistent with banks passing on savings to borrowers when lending to rival firms, loan spreads over LIBOR (*Allindrawn*) are significantly lower for loans originated from a bank that has also lent to the firm's rivals in the past five years. The mean (median) value of *Allindrawn* is 126.8 (100.0) for *LEND_COMP* = 1 observations compared with 151.9 (125.0) for *LEND_COMP* = 0 observations. Firms who borrow from a bank that has also lent to the firm's rivals are bigger and have significantly higher market-to-book ratios, and have better ratings than firms who do not share a lender with their rivals. Loan level variables are generally similar between the two groups although the *LEND_COMP* = 1 loans tend to be larger.

4.3. MULTIVARIATE TESTS

Table 5 presents the main loan pricing tests. Results from estimating Model 4 are presented in column 1. A significant and negative coefficient on the independent variable of interest, *LEND_COMP*, suggests that loans taken by firms that borrow from a bank that has also lent to their rivals incur a lower interest rate than on loans from a bank who has not lent to their rivals. This result is also economically significant as the coefficient on *LEND_COMP* can be interpreted as firms paying interest spreads that are 11.8 basis points lower when they borrow from the bank that has also lent to their rivals. Alternatively stated, this represents an 8.4% difference when compared to the average spread over LIBOR of 140 basis points. The signs and significance of the coefficients on the control variables are generally consistent with our expectations and findings from prior research. Debt size, credit ratings, and the 364-day facility

indicator (*SHORT*) are significantly negatively associated with loan spreads. A positive and significant coefficient is observed on financial leverage, the requirement for collateral on the loan, and when a takeover is the loan purpose.

We investigate our predicted cross-sectional variation in the pricing of loans for firms who borrow from the same bank as rivals in column 2 of Table 5. These results are consistent with the expected relation between rivals, loan pricing and financial reporting opacity. That is, the reduction in the cost of borrowing for firms who borrow from the same bank as their rivals increases when the firms' financial reporting opacity is high. The economic magnitude is large: for high opacity firms, borrowing from same banks as rivals further reduces the LIBOR spreads by 16.7 basis points compared with low opacity firms. This finding suggests that the more opaque the information environment, the more beneficial it is for the firm to borrow from a bank that has relatively more experience with firms in the related product market. We do not find any evidence that proprietary costs affect the pricing benefit of borrowing from the same banks as rivals in column 2. It is possible that firms that are the most concerned about proprietary information being leaked to rivals are less likely to borrow from a bank who lends to its competitor and hence no pricing discount is observed for these cases in equilibrium. In an untabulated robustness check, we also control for covenant intensity, measured as the number of financial covenants included in the loan contract. The results continue to hold.

4.4. RELATIVE BARGAINING POWER

Based on the findings presented in Section 4.3.1, lenders pass on some of the realized information efficiencies when lending to multiple rivals through a reduction in interest spreads. As an additional untabulated analysis, we examine if the cost savings are passed on to a greater degree when firms have relatively high bargaining power. We re-estimate equation (5) separately

on the subsamples of firms with relatively high versus low borrower bargaining power. We define bargaining power as the ratio of the amount of the loan over the total amount of loans by bank j in the same two-digit SIC industry. Our results suggest that a portion of the cost savings is more likely to be transferred to borrowers when they have higher bargaining power.

5. Conclusion

In this study we examine how providers of private loan financing are matched up with borrowers. Specifically, we examine the effect of banks' competitor-specific knowledge, whether a bank has lent money to a firm's rivals within their product market, on both the firm-bank pairings when borrowing in the loan market and the pricing of the loan. We document evidence consistent with an increased propensity for firms to obtain financing from a bank who has also lent to a firm's rivals. Firms are more likely to pair up with the same bank as their rivals when financial reporting opacity is high and when proprietary costs are low. We also document that the cost of borrowing is lower on loans to a firm that borrows from the same bank as rivals, consistent with banks transferring at least a portion of the cost savings achieved through information efficiencies obtained by lending to multiple rivals. Further, this reduction in borrowing costs is greater when firms' financial reporting opacity is high.

The findings of this study are potentially of interest for several reasons. First, our study extends the literature by examining how product-market competitors' lender choice and lenders' information about competitors impact the matching of banks with borrowers. Our results imply that lenders' knowledge about rival firms appears to substitute for borrowers' public accounting information as an alternative information channel in debt contracting. Our study also extends the literature on the relationship between rivals and their financiers. Prior research has documented that firms rarely share investment banks with rivals due to concerns that proprietary information

will be leaked to their competitors. Our results contrast with this prior finding in that we document that firms are more likely to choose to share a bank with rivals and benefit from lower pricing. Finally, our paper contributes to the emerging stream of research that examines peer firms; we document how banks use peer firm information in the loan granting and pricing processes.

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APPENDIX A
Variable Definitions

Allindrawn: All-in-Drawn interest charges over LIBOR, collected from the LPC database.

BANK_EXP: Bank expertise, measured as the natural log of bank_j's dollar lending to borrowers in the same two-digit SIC codes as firm_i in the five years before the firm_i's decision to take on a new bank debt. (We only include the total amount of each loan deal when bank_j serves as the lead arranger.)

COMOVE: The R-squared of the regression of the change in earnings of the other firms in the bank's portfolio of loans over the past 5 years on the firm's change in earnings (COMPUSTAT data item "ib" over lagged "at").

COMPETITION: A measure of the competitiveness of the firm based on Li, Lundholm and Minnis (2012). An indicator equal to one if the ratio of "competition" to other words in the 10-K scaled by the number of segments is greater than the median and zero otherwise.

DEBT_SIZE: The natural log of the deal size.

EARN: Accounting earnings, measured as earnings before extraordinary items (COMPUSTAT data item "ib") divided by lagged total assets (COMPUSTAT data item "at").

LEND_{ij}: An indicator variable that equals one if the bank loan firm_i takes on is arranged by bank_j; zero otherwise.

LEND_COMP_{ij}: An indicator variable that takes value one if the firm_i's competitors borrow from the bank_j in the five years before the firm_i's decision to take on a new bank debt; and zero otherwise.

LEV: Financial leverage measured as total debt (COMPUSTAT data item "dlc" + "dltt") over total assets (COMPUSTAT data item "at").

MATURITY: Measured as the natural logarithm of maturity in months.

MTB: Market-to-book ratio measured as the market value of total assets (COMPUSTAT data item "prcc_f"* "csho" + "at"- "ceq") divided by total assets (COMPUSTAT data item "at").

ΔMTB: Change in MTB.

OPAQ_D: Financial reporting opacity, measured as an indicator variable that equals one if the first principal component of the absolute value of discretionary accruals from three accruals models is greater than the sample median; zero otherwise. The detailed construction of this variable is provided in Appendix B. .

PC_D: Proprietary costs, measured as an indicator variable that equals one for firms with R&D expenditure, measured as COMPUSTAT data item “xrd” divided by lagged “at”, higher than the sample median; zero otherwise.

RATED: An indicator that equals one for firms rated by S&P; zero otherwise.

RATING: The issuer credit rating for the firm, converted from S&P ratings: the rating is coded 1 if the S&P rating is between AAA and A-, 2 if the rating is between A+ and A-, 3 if the rating is between BBB+ and BBB-, and 4 if the rating is between BB+ and D. If the firm is never rated, this variable is set to be zero.

S_X: Denotes the similarity between a firm and the other borrows the bank lends to. Where similarity in X is measured as negative one multiplied by the absolute difference between firm_i's X and the median X of the firms bank_j lent to within the five years before the firm_i's decision to take on a new bank debt.

SECURITY: Loan security, measured as an indicator equal to one if the facility requires collateral; zero otherwise.

SHORT: An indicator variable for loans whose maturity is shorter than 1 year.

SIZE: Firm size, measured as the natural log of total assets (COMPUSTAT data item “at”).

TAKEOVER: An indicator variable that equals one if the purpose of the bank loan is for takeover; zero otherwise.

APPENDIX B

Construction of the Variable OPAQ_D

ABACCI: the absolute value of current discretionary accruals calculated based on Teoh, Welch, and Wong (1998). The model is estimated annually for each Fama/French (1997) industry group and each industry-year regression requires at least 20 observations. Based on Teoh, Welch, and Wong (1998) we first estimate the following regression to get the estimated coefficients (variables are defined below).

$$\frac{Current_Accr}{LagTA} = \gamma_1 \frac{1}{LagTA} + \gamma_2 \frac{\Delta Rev}{LagTA} + \eta$$

The second step calculates the absolute value of discretionary accruals as:

$$\left| \frac{Current_Accr}{LagTA} - \hat{\gamma}_1 \frac{1}{LagTA} - \hat{\gamma}_2 \frac{(\Delta Rev - \Delta AR)}{LagTA} \right|$$

ABACC2: the absolute value of total discretionary accruals calculated based on Dechow, Sloan, Sweeney (1995). The model is estimated annually for each Fama and French (1997) industry group and each industry-year regression requires at least 20 observations. We first estimate the following regression to get the estimated coefficients (variables are defined below).

$$\frac{Total_Accr}{LagTA} = \alpha_1 \frac{1}{LagTA} + \alpha_2 \frac{(\Delta Rev - \Delta AR)}{LagTA} + \alpha_3 \frac{PPE}{LagTA} + \varepsilon$$

The second step calculates the absolute value of discretionary accruals as:

$$\left| \frac{Total_Accr}{LagTA} - \hat{\alpha}_1 \frac{1}{LagTA} - \hat{\alpha}_2 \frac{(\Delta Rev - \Delta AR)}{LagTA} - \hat{\alpha}_3 \frac{PPE}{LagTA} \right|$$

ABACC3: the absolute value of total current accruals calculated based on Francis et al. (2005). The model is estimated annually for each Fama/French (1997) industry group and each industry-year regression requires at least 20 observations. *ABACC3* is the absolute value of the estimated residual from the following model.

$$\frac{Total_Accr}{LagTA} = \theta_0 + \theta_1 \left(\frac{CFO}{LagTA} \right)_{t-1} + \theta_2 \left(\frac{CFO}{LagTA} \right)_t + \theta_3 \left(\frac{CFO}{LagTA} \right)_{t+1} + \frac{(\Delta Rev - \Delta AR)}{LagTA} + \frac{PPE}{LagTA} + v$$

where

<i>Current_Acc</i>	=	Earnings before extraordinary items – Cash flow from operating activities – Depreciation (COMPUSTAT data items “ib”– “oancf” + “dp”);
<i>Total_Acc</i>	=	Earnings before extraordinary items – Cash flow from operating activities (COMPUSTAT data items “ib” – “oancf”);
<i>LagTA</i>	=	Lagged total assets (COMPUSTAT data item “at”);
<i>CFO</i>	=	Cash flow from operating activities (COMPUSTAT data item “oancf”);
<i>ΔRev</i>	=	Change in sales (COMPUTSTAT data item “revt”);
<i>ΔAR</i>	=	Change in accounts receivables (COMPUSTAT data item “rect”);
<i>PPE</i>	=	Property, plant and equipment (COMPUSTAT data item “ppent”).

After the three accruals metrics are measured we then extract the first principal component from the three proxies. If the first principal component is greater than the sample median then *OPAQ_D* is equal to one, zero otherwise.

TABLE 1
Descriptive Statistics

Variable	<i>LEND</i> = 1 (<i>N</i> = 1,625)		<i>LEND</i> = 0 (<i>N</i> = 11,334)	
	Mean	Median	Mean (<i>t</i> -statistic for the difference)	Median (<i>z</i> -statistic for the difference)
<i>LEND_COMP</i>	0.478	0.000	0.315 (13.15)***	0.000 (13.07)***
<i>S_Size</i>	-0.186	-0.156	-0.221 (8.22)***	-0.192 (8.20)***
<i>S_MTB</i>	-0.555	-0.249	-0.575 (0.94)	-0.270 (-1.82)*
<i>S_LEV</i>	-0.564	-0.453	-0.595 (2.03)**	-0.460 (-0.88)
<i>S_EARN</i>	-1.973	-1.022	-2.283 (3.70)***	-1.170 (-3.00)***
<i>OPAQ_D</i>	0.498	0.000	0.500 (-0.20)	1.000 (-0.19)
<i>PC_D</i>	0.431	0.000	0.433 (-0.13)	0.000 (-0.13)
<i>SIZE</i>	8.036	7.897	8.076 (-0.79)	7.949 (-0.80)
<i>BANK_EXP</i>	24.673	24.991	24.474 (5.83)***	24.568 (6.08)***
<i>COMOVE</i>	0.008	0.002	0.021 (-7.17)***	0.004 (-10.48)***

Descriptive statistics are partitioned on whether the firm borrows from a certain lender (an indicator variable *LEND* that equals one if the bank loan that the firm takes on is arranged by a bank who has lent to the firm's rival, zero otherwise).

***, **, and * represent 1%, 5%, and 10% significance levels, respectively. Variable definitions are presented in Appendix A.

TABLE 2
Correlations

	<i>LEND_COMP</i>	<i>S_SIZE</i>	<i>S_MTB</i>	<i>S_LEV</i>	<i>S_EARN</i>	<i>OPAQ_D</i>	<i>PC_D</i>	<i>SIZE</i>	<i>BANK_EXP</i>	<i>COMOVE</i>
<i>LEND</i>	0.115 (0.001)	0.072 (0.001)	0.083 (0.345)	0.018 (0.043)	0.033 (0.001)	-0.001 (0.850)	-0.001 (0.900)	-0.007 (0.428)	0.051 (0.001)	-0.063 (0.001)
<i>LEND_COMP</i>		0.060 (0.001)	0.033 (0.001)	0.058 (0.001)	0.061 (0.001)	-0.043 (0.001)	0.044 (0.001)	0.137 (0.001)	0.160 (0.001)	-0.132 (0.001)
<i>S_SIZE</i>			0.009 (0.330)	0.084 (0.001)	0.062 (0.001)	-0.025 (0.004)	-0.002 (0.855)	0.029 (0.001)	-0.000 (0.986)	-0.035 (0.001)
<i>S_MTB</i>				0.115 (0.001)	0.463 (0.001)	-0.092 (0.001)	-0.168 (0.001)	0.141 (0.001)	-0.046 (0.001)	0.004 (0.644)
<i>S_LEV</i>					0.129 (0.001)	-0.086 (0.001)	0.038 (0.001)	0.102 (0.001)	-0.005 (0.595)	-0.069 (0.001)
<i>S_EARN</i>						-0.178 (0.001)	-0.093 (0.001)	0.174 (0.001)	-0.008 (0.369)	0.042 (0.001)
<i>OPAQ_D</i>							-0.039 (0.001)	-0.227 (0.001)	-0.086 (0.001)	-0.015 (0.109)
<i>PC_D</i>								0.086 (0.001)	0.193 (0.001)	-0.011 (0.218)
<i>SIZE</i>									0.278 (0.001)	0.006 (0.517)
<i>BANK_EXP</i>										-0.024 (0.006)

Pearson correlations among variables (and p-values). Variable definitions are presented in Appendix A.

TABLE 3

Lender Choice: Probit Model of the Determinants of Firm's Decisions to Take on Bank Loan Arranged by Bank_j

		Model 1	Model2	Model 3
Variables	Predictions	Coefficient (z-statistic)	Coefficient (z-statistic)	Coefficient (z-statistic)
Intercept	?	-2.222 (-7.38)***	-2.313 (-7.11)***	-2.319 (-6.84)***
<i>LEND_COMP</i>	+/-	0.322 (4.14)***	0.377 (3.66)***	0.403 (3.36)***
<i>COMPETITION</i>	?			0.025 (1.71)*
<i>OPAQ_D</i>	?		-0.004 (-0.28)	0.003 (0.10)
<i>OPAQ_D*LEND_COMP</i>	+		0.070 (2.59)***	-0.004 (-0.16)
<i>OPAQ_D*LEND_COMP* COMPETITION</i>	+			0.126 (1.71)**
<i>PC_D</i>	?		0.058 (1.42)	0.080 (1.65)*
<i>PC_D*LEND_COMP</i>	-		-0.205 (-2.67)***	-0.171 (-2.04)**
<i>PC_D*LEND_COMP* COMPETITION</i>	-			-0.134 (-4.28)***
<i>S_SIZE</i>	+	0.731 (5.39)***	0.730 (5.36)***	0.917 (4.92)***
<i>S_MTB</i>	+	-0.000 (-0.01)	-0.003 (-0.16)	-0.003 (-0.12)
<i>S_LEV</i>	+	0.015 (0.52)	0.019 (0.64)	0.046 (1.17)
<i>S_EARN</i>	+	0.016 (1.60)*	0.169 (1.68)**	0.023 (1.93)**
<i>SIZE</i>	?	-0.319 (-0.87)	-0.030 (-0.82)	-0.046 (-1.13)
<i>BANK_EXP</i>	+	0.061 (2.67)***	0.063 (2.66)***	0.070 (2.51)**
<i>COMOVE</i>	-	-0.189 (-3.21)***	-0.191 (-3.24)***	-0.204 (-3.39)***
<i>No of Obs</i>		12,959	12,959	9,772
Pseudo- R^2 (%)		3.32	3.32	4.09

***, **, and * represent 1%, 5%, and 10% significance levels, respectively (two-tailed or one-tailed, as appropriate). The standard errors are two-way clustered at the firm and lender levels. Variable definitions are presented in Appendix A.

TABLE 4

Loan Pricing Descriptive Statistics Partitioned on Lend_Comp (whether lender has lent to rivals in the past five years)

Variable	<i>LEND_COMP</i> = 1 (<i>N</i> = 686)		<i>LEND_COMP</i> = 0 (<i>N</i> = 709)	
	Mean	Median	Mean (<i>t</i> -statistic for the difference)	Median (<i>z</i> -statistic for the difference)
<i>Allindrawn</i>	126.8	100.0	151.9 (-4.14)***	125.0 (-4.16)***
<i>OPAQ_D</i>	0.494	0.000	0.505 (-0.40)	1.000 (-0.40)
<i>PC_D</i>	0.392	0.000	0.440 (-1.82)*	0.000 (-1.82)*
<i>SIZE</i>	8.081	7.959	7.683 (4.16)***	7.560 (4.32)***
<i>MTB</i>	1.950	1.549	1.839 (1.80)*	1.452 (2.67)***
Δ <i>MTB</i>	-0.045	0.016	-0.018 (-0.78)	0.001 (0.81)
<i>LEV</i>	0.268	0.255	0.285 (-1.52)	0.267 (-1.57)
<i>EARN</i>	0.117	0.108	0.111 (1.16)	0.101 (1.21)
<i>RATED</i>	0.656	1.000	0.616 (1.55)	1.000 (1.55)
<i>RATING</i>	1.410	1.000	1.238 (2.58)**	1.000 (2.46)**
<i>DEBT_SIZE</i>	19.617	19.673	19.268 (4.93)***	19.337 (4.78)***
<i>MATURITY</i>	3.603	4.078	3.607 (-0.15)	3.871 (0.06)
<i>SECURITY</i>	0.281	0.000	0.312 (-1.26)	0.000 (-1.26)
<i>TAKEOVER</i>	0.093	0.000	0.079 (0.97)	0.000 (0.97)
<i>SHORT</i>	0.174	0.000	0.159 (0.73)	0.000 (0.73)

***, **, and * represent 1%, 5%, and 10% significance levels, respectively. Variable definitions are presented in Appendix A.

TABLE 5
Loan Pricing OLS Model

		Model 4	Model 5
Variables	Prediction	Coefficient (<i>t</i> -statistic)	Coefficient (<i>t</i> -statistic)
Intercept	?	447.042 (9.16)***	426.924 (8.90)***
<i>LEND_COMP</i>	-	-11.824 (-2.36)***	-9.215 (-1.19)
<i>OPAQ_D</i>	+		23.029 (3.24)***
<i>OPAQ_D*LEND_COMP</i>	-		-16.687 (-1.74)**
<i>PC_D</i>	?		-4.223 (-0.56)
<i>PC_D*LEND_COMP</i>	-		7.871 (1.20)
<i>SIZE</i>	-	0.481 (0.18)	1.053 (0.38)
<i>MTB</i>	?	-7.943 (-3.75)***	-8.839 (-3.91)***
Δ <i>MTB</i>	?	-6.734 (-2.19)**	-5.952 (-1.90)*
<i>LEV</i>	+	82.373 (4.90)***	81.456 (4.86)***
<i>EARN</i>	-	-12.837 (-0.43)	-11.572 (-0.39)
<i>RATED</i>	?	69.221 (6.34)***	69.072 (6.36)***
<i>RATING</i>	-	-12.837 (-8.86)***	-36.412 (-8.93)***
<i>DEBT_SIZE</i>	?	-15.310 (-4.71)***	-15.039 (-4.65)***
<i>MATURITY</i>	+	-6.453 (-0.99)	-5.595 (-0.87)
<i>SECURITY</i>	+	68.781 (10.01)***	67.927 (9.96)***
<i>TAKEOVER</i>	+	7.364 (0.76)	6.896 (0.71)
<i>SHORT</i>	-	-49.210 (-5.11)***	-48.794 (-5.13)***
<i>No of Obs</i>		1,395	1,395
<i>R</i> ² (%)		40.68	41.31

Note: ***, **, and * represent 1%, 5% and 10% significance levels, respectively (two-tailed or one-tailed, as appropriate). The standard errors are clustered at the firm level. Variable definitions are presented in Appendix A.