

Information Asymmetries and the Effects of Banking Mergers on Firm-Bank Relationships

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ABSTRACT

This study examines the effects of mergers between commercial banks and investment banks on firm-bank relationships and the pricing of loan contracts, focusing on the role of information asymmetries. I find that, prior to a public securities issuance, junk rated firms are more likely to switch lenders to a merged commercial-investment bank when their existing lenders are pure commercial banks. Borrowers that issue public securities and are in local lending relationships are less likely to switch lenders after their bank merges with an investment bank. Also, when issuing public debt, junk-rated firms and companies in local lending relationships are likely to select their commercial-investment bank as underwriter. The revealed preference by firms that issue informationally sensitive securities for commercial-investment bank relationships suggests that there are benefits from the bank's ability to use private information from lending in investment banking. After merging with investment banks, commercial banks raise the interest rates of their junk rated and local continuing borrowers, but only when the firm has a single lending relationship, consistent with banks having information monopolies that allow for the extraction of merger-related gains. Mergers between commercial and investment banks do not affect firm-bank relationships or borrowing costs when the bank is less likely to acquire private information through lending or when firms are unlikely to issue public securities. Additional tests show that the findings are not likely due to mergers between commercial banks, changes in economic conditions, or poor ex-post performance of borrowers.

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1. Introduction

Relationships with banks are well known to be valuable to firms. Through screening and monitoring activities, banks are able to collect private information that allows them to overcome information asymmetries and fund firms even when borrower quality is difficult to assess (see e.g. Diamond (1984, 1991), Ramakrishnan and Thakor (1984), Fama (1985), Boyd and Prescott (1986)). The acquisition of information over time allows banks to increase the availability of credit and reduce collateral requirements for their borrowers (see e.g. Boot and Thakor (1994), Petersen and Rajan (1994), Berger and Udell (1995), Cole (1998)). Through an ongoing relationship, a firm can develop a credit record to obtain a sound reputation that helps convey its quality to outside markets (Diamond (1991)).¹

Until recently, relationships between firms and banks were restricted in scope by the 1933 Glass-Steagall Act, which prohibited commercial banks from engaging in investment banking activities, such as securities underwriting. However, during the 1990s, many restrictions were relaxed and the Glass-Steagall Act was eventually repealed, spurring a wave of mergers between commercial and investment banks (“CB-IB mergers”) that allow banks to offer a full range of financial products and services.² Given the significance of relationships to firms, it is important to assess how these mergers affect relationships and if these mergers benefit or harm firms.

One reason to expect that CB-IB mergers will affect firm-bank relationships results from the merged commercial-investment bank’s (“CB-IB”) ability to use private information from lending relationships in investment banking. Existing empirical evidence suggests that when commercial banks underwrite public securities, they can use this private information to reduce information asymmetries between the firm and investors, achieving higher security prices particularly when the company is lower rated or relatively unknown to public markets (see e.g. Puri (1996), Gande et. al (1997), Schenone (2004)). Further, the ability to use private

¹ Consistent with this theory, empirical studies find that new loans, loan renewals, and lender identity convey private information to the outside equity market about a firm’s financial condition (see e.g. James (1987), Lummer and McConnell (1989), Best and Zhang (1993), and Billett, Flannery, and Garfinkel (1995)).

² While commercial banks could engage in investment banking activities without merging with pre-established investment banks, with the notable exception of J.P. Morgan, commercial banks had limited success with internally created investment banks. Mergers were the primary method for commercial banks’ entering into investment banking. See Carow and Kane (2002) for a review of the relaxation of the Glass-Steagall Act and event study evidence related to key events in the deregulation process.

information from commercial banking activities in investment banking may limit the duplication of screening and monitoring activities. This can create efficiency gains due to informational economies of scope, which could lower overall costs (see e.g. Benston (1990), Saunders and Walter (1994), Drucker and Puri (2004b)). As a result of these potential benefits, CB-IB mergers may affect relationships between firms and banks in both the traditional lending environment as well as in investment banking. Specifically, if firms expect to receive future benefits from bank underwriting, then having a lending relationship with a bank that can provide investment banking services may be particularly important for companies that need their quality to be certified or when informational economies of scope are large. Also, when accessing public markets, these firms may benefit from selecting their lender as underwriter, thereby expanding the firm-bank relationship.

Further, CB-IB mergers may affect the pricing of loan contracts. If there are gains related to the CB-IB's ability to use private information from lending relationships in investment banking, then these gains are likely to be pronounced among firms for which their commercial banks have acquired "soft" information about their prospects through the lending process that is unavailable to outsiders.³ Sharpe (1990) and Rajan (1992) show theoretically that a commercial bank may be able to extract rents by charging higher interest rates to borrowers due to an "information monopoly" that can arise when a firm has difficulty conveying its quality to other banks. Due to the potential gains available after a CB-IB merger, the CB-IB may be able to extract additional rents by charging higher loan rates when the bank has private information about a firm's prospects that is difficult for outsiders to ascertain. However, if firms can convey their quality to other banks, then information monopolies should not exist, and competition would not allow for rent extraction. In fact, if informational economies of scope produce lower costs for the bank, then firms may actually receive lower interest rates.

However, it is not entirely clear that the CB-IB's ability to use information from lending relationships in investment banking will substantially affect firm-bank relationships. CB-IBs are large banks, and the literature documents that large banks tend to rely on "hard," verifiable information when extending loans (see e.g. Berger and Udell (1996), Cole, Goldberg, and White

³ Soft information is information that cannot be directly verified by anyone other than the agent who produces the information, so it is hard to convey through documentation. For example, through repeated interaction, a loan officer can learn about the quality and integrity of a firm's management, but may have difficulty in conveying capturing this in records. See Petersen (2002) and Stein (2002) for more complete discussions of soft information.

(1999), Berger et al. (2004)). These banks have been shown to primarily focus their lending business on medium to large borrowers, for which hard information exists (see e.g. Berger, Kashyap, and Scalise (1995), Peek and Rosengren (1996), Strahan and Weston (1996)).⁴ If outsiders and the lender have access to similar information, then the bank will not be important in resolving information asymmetries and the CB-IB merger may not influence firm-bank relationships.

Do mergers between commercial banks and investment banks affect firm-bank relationships? Is there evidence that suggests that these mergers increase the value of relationships for firms? Can CB-IBs extract information rents or are any potential cost savings passed along to firms? In this paper, I empirically examine these questions by studying the effects of CB-IB mergers on firms' lending relationships, their choice of underwriter, and the pricing of loan contracts. I construct a unique data set that is carefully assembled and hand-matched from multiple databases. I gather data on individual loan contracts, including the identities of the borrowers and lenders and the price and contract terms of the loans. I supplement the loan data with each borrower's financial characteristics and lending history, information on commercial bank lenders, and data on the economic environment. Further, I collect data on public debt issues made by borrowers of CB-IBs, including firms' prior underwriting relationships and each potential underwriter's market share. Importantly, the disaggregated data set allows me to isolate borrowers that are likely to be most impacted by these mergers.

The empirical results show that CB-IB mergers have a significant effect on relationships between banks and firms when a bank's private information is likely to be useful in investment banking. First, junk rated firms that issue public securities are significantly more likely to start a new lending relationship with a CB-IB prior to the securities issuance when they do not have a prior lending relationship with a CB-IB. This result is consistent with the hypothesis that the benefits of borrowing from a CB-IB outweigh the switching costs for the firm when a CB-IB is likely to acquire important private information that can be used across product lines. Also,

⁴ Stein (2002) reasons that large banks focus on larger companies because the banks are better equipped to handle hard information rather than "soft" information that is needed to assess the quality of small businesses. Petersen (2002) argues that this occurs for efficiency reasons. Hard information is easier to standardize than soft information, which requires interpretation by the loan officer. Therefore, hard information is more easily incorporated into automated loan procedures and is more durable because it can be interpreted without context, allowing for distribution to many parts of the organization.

among firms that issue public securities after receiving a loan, borrowers that have a lending relationship with a commercial bank that has a branch in the same state that the firm has its headquarters (“local lending relationships”) are less likely to start a new relationship with another CB-IB instead of stay with their current lender when their current lender is a CB-IB as opposed to a pure CB. In these cases, the prior lender is likely to have valuable private information about the firm that will be useful when the firm issues its public securities. In contrast, the CB-IB mergers do not affect the likelihood of switching lenders for the sample of borrowers that do not go on to issue public securities. Second, when accessing the public debt markets, lower rated firms and companies with local lending relationships are significantly more likely to select their CB-IB as underwriter, even after controlling for prior underwriting relationships, underwriter reputation, and firm characteristics. The revealed preference by these firms for relationships with CB-IBs suggests that these types of companies, where the bank is more likely to have “soft” information about the firm’s prospects, place a higher value on relationships with a CB-IB than with a stand-alone bank. This may be due to the CB-IB’s ability to resolve information asymmetries between the firm and investors when the company issues public securities.

Interestingly, further analysis suggests that following CB-IB mergers, banks extract additional rents from firms that continue to borrow from the bank in cases where the bank is likely to have more private information. Junk rated borrowers and borrowers with local lending relationships pay significantly higher interest rates when continuing to borrow post-merger relative to pre-merger, even after controlling for borrower and bank characteristics, the strength of firm-bank relationships, loan contract terms, and economy-wide influences, as well as using firm fixed effects that control for unobservable firm heterogeneity. The increase in borrowing costs is statistically significant and economically substantive, with junk rated borrowers facing interest rates that are 40 basis points higher, a borrowing cost increase of approximately \$300,000 for the average loan, and local borrowers paying interest rates that are approximately 24 basis points higher. Interestingly, the higher borrowing costs faced by junk rated borrowers and firms with local lending relationships are concentrated among those borrowers that maintain single lending relationships. This is a particularly noteworthy finding because it is consistent with the analyses in Sharpe (1990) and Rajan (1992), where existing lenders may have information monopolies over firms when the bank is likely to have soft, private information that

is difficult for the firm to convey to outsiders. If these firms have difficulty conveying their quality to other banks, then the current lender can extract rents. These additional rents arise from the expected gains that can result from the CB-IBs ability to use information from the lending relationship in investment banking.

Other findings reinforce the view that the effects of CB-IB mergers are related to the CB-IB's ability to use its private information from lending in its new area of business. First, when the bank is likely to have less private information, such as when the firm is investment-grade rated or the bank does not have a branch in the same state that the firm has its headquarters, CB-IB mergers do not have a significant effect on the decision to switch lenders, underwriter selection, or interest rates. Second, the results do not appear to be driven by general consolidation in the banking industry that occurs during the sample period. The evidence shows that commercial banking mergers between the fifty largest commercial banks do not have a significant effect on either the likelihood a borrower will switch lenders or on the pricing of loan contracts. Third, there is a possibility that some of the findings could be driven by a selection bias. For example, it may be the case that the better performing firms switch to CB-IBs and the incumbent banks are left with poor performers, leading to higher loan prices following CB-IB mergers. Additional tests do not provide support for this view, as the higher loan prices among junk rated firms and firms that have local lending relationships remain even after controlling for ex-post firm characteristics as well as the use of a two-stage procedure developed by Heckman (1979) that controls for such sample biases. In fact, it appears that firms that perform better in the future are at least marginally more likely to maintain their existing lending relationships. Finally, the results show that the highly significant increase in loan interest rates found among junk rated firms and firms that have local lending relationships is robust to various specifications that account for changes in market conditions that occur during the early-2000s.

While there is a vast literature on banking mergers, there has been little research on the direct effects of banking mergers on firm-bank relationships.⁵ One exception is Sapienza (2002), who uses individual loan contracts to analyze the effects of commercial bank mergers on loan interest rates and lending relationships between commercial banks and Italian small business

⁵ The research on commercial banking mergers tends to focus on the ex-post performance of merged banks, wealth effects for bank shareholders, and the effects on the supply of credit to small businesses. See Berger, Demsetz, and Strahan (1999) and Walter (2004) for excellent reviews of the literature and discussion of the causes and consequences of banking consolidation.

borrowers. My focus is quite different than Sapienza (2002). I provide the first analysis of the effects of mergers between commercial banks and investment banks on firm-bank relationships. Also, I concentrate on relationships between banks and medium to large firms, which have largely been ignored in studies of relationship banking, primarily because these firms tend to have access to outside sources of funding and tend to have financial statements and other sources of hard information available.⁶ The results in this paper suggest that a bank's private information is an important aspect of the firm-bank relationship and can influence loan prices, even for medium to large firms.

This paper also adds to the literature on the implications of combining commercial banking with investment banking.⁷ Much of the empirical literature that examines when banks lend and underwrite investigates the effect of bank lending, and the private information contained therein, on the banks' underwriting of public securities. These effects are ascertained through the pricing of underwritten securities (see e.g. Puri (1996), Gande et al. (1997), Schenone (2004)) or through long run performance (see e.g. Ang and Richardson (1994), Kroszner and Rajan (1994), Puri (1994), Benzoni and Schenone (2004)). An important but less explored issue is the reverse question: how does the ability of banks to provide investment banking services influence commercial banks' core business – commercial lending? Drucker and Puri (2004b) provide some analysis on this topic. They show that the ability to underwrite allows banks to lend concurrently with firms' securities issuances, which produces substantial benefits for both issuers and banks. In this paper, I also provide empirical evidence on the impact of underwriting opportunities on lending. My findings underscore that the ability to underwrite allows banks to forge new lending relationships with borrowers that are likely to benefit from bank underwriting, and in certain instances, charge higher loan interest rates.

The remainder of this paper is organized as follows. Section 2 describes the data and sample selection process. The major empirical findings are presented in Section 3. Section 4 concludes.

⁶ See Boot (2000) for a survey of the relationship banking literature.

⁷ See Drucker and Puri (2004a) for a detailed review of the literature on the interaction between commercial banks and capital markets.

2. Data and Sample Selection

This paper analyzes mergers between commercial banks and investment banks that occur between 1997 through 2002. Largely due to the Glass Steagall Act, there were no significant mergers between U.S. commercial banks and investment banks prior to 1997. However, in late 1996 and early 1997, the Federal Reserve relaxed major provisions of the Act, substantially increasing the amount of revenue that commercial banks could earn from investment banking activities and relaxing firewalls between the commercial bank and its investment banking division. Mergers between commercial and investment banks followed soon after. In almost all cases, commercial banks did not have highly active investment banking practices prior to their mergers with investment banks, so most companies did not have the ability to use the same institution for all of their commercial and investment banking needs until 1997.⁸ I identify mergers between commercial banks and investment banks using SDC *Platinum*'s mergers and acquisitions database. To ensure that I capture mergers with viable investment banks, I only include mergers where the investment bank had underwritten at least one equity or bond offering during the three years prior to the merger, which can be determined by examining SDC *Platinum*'s new issues database. Table 1 provides a listing of the U.S. commercial banks that merge with investment banks and the dates of the mergers. There are 17 such mergers with the first occurring in January 1997 and the last in July 2001.

I construct a unique database of firm-bank lending relationships using six databases with some data sources matched by hand. All variables are defined in detail in Appendix A. I collect data on individual loan contracts from LPC *DealScan* for the period January 1992 through December 2002, where the lender is one of the fifty largest U.S. commercial bank lenders of commercial and industrial (“C&I”) loans as of the end of 1996 based on data from the FDIC

⁸ This is particularly true for firms that wished to issue public equity. By 1996, commercial banks had only achieved a 2% market share by dollar volume (Gande, Puri, and Saunders (1999)). Internally created investment banks made more progress in debt underwriting. However, only JP Morgan achieved a significant market share by 1996 (7.3% by dollar volume of non-financial non-convertible public debt) and no other commercial bank had more than 1.5% of the market share according to Securities Data Corporation. Cadette (1996) attributes this to Glass-Steagall restrictions that were “crimping the ability of American commercial banking organizations to meet their customers’ needs.” In the empirical tests, I treat J.P. Morgan as a CB-IB, but the results are economically and statistically similar if I treat it as a pure commercial bank.

Reports of Condition and Income (“Call Reports”).⁹ To determine the top-50 banks, I consolidate the C&I loans of each of the individual commercial banks owned by the same banking organization, as indicated by the highest level of the organizational structure. LPC *DealScan* collects its loan data from SEC filings, large loan syndicators, and a staff of reporters, and the majority of companies in the LPC database are medium to large firms. For each lending facility, LPC provides the identities of the borrower and lender, the borrower’s industry through the standard industrial classification (“SIC”) code, the contract active and maturity date, the notional value of the facility, the type and purpose of the lending facility, as well as price and some other non-price terms of each loan. However, LPC does not provide borrower-specific financial characteristics that are likely to affect a firm’s choice of bank and loan pricing. Since LPC does not provide a reliable identifier that can be used to match the loan data with other sources, I supplement the loans with financial data by hand matching the firms in LPC to Compustat Industrial Annual by using the borrower name. Using data from the year prior to the loan year, I construct measures of firm size (logarithm of assets), profitability (return on assets), and leverage (debt-to-asset ratio), and I also collect the Standard and Poor’s long-term credit rating of the borrower. All notional figures are deflated by the GDP implicit price deflator so that the values are in January 1992 dollars.

I use a subset of these lending contracts in the empirical analysis. Since I wish to study industrial firms, I remove financial firms (companies with a one-digit SIC code of six). Also, I remove syndicated loans where there is more than one lead bank involved in the transaction.¹⁰ Removing these loans ensures that I accurately capture the lender that sets the loan rate and interacts with the borrower. Also, this restricts the sample to relationship-type loans, as larger syndicated loans can be viewed as transactional in nature (Boot and Thakor (2000)).¹¹ Finally, I remove loans to borrowers whose first lending relationship forms during the merger period. Unlike borrowers that have lending relationships prior to the merger period, these firms can

⁹ These banks account for 73% of the commercial and industrial loan market at the end of 1996. By comparison, the next 50 banks only account for only 8% of the market. All mergers between commercial banks and investment banks involve banks ranked in the top-50.

¹⁰ For syndicated loans, *DealScan* identifies lead banks via titles that include the words “arranger” and “agent,” and less active members with titles that include the words “manager” and “participant.”

¹¹ One concern of leaving out syndicated loans that have more than one lead bank is that I may not pick up all of a firm’s relevant lending relationships. As a result, I repeat the tests, leaving out all of the *borrowers* that have a syndicated loan with more than one lead bank. The results are economically and statistically similar and left unreported.

choose an initial lender that can provide a full array of investment banking services. This may bias the results towards finding that borrowers are more likely to borrow from a merged commercial-investment bank and also that borrowers are more likely to use their lender as underwriter. This restriction leaves a sample of loans to firms that borrow from the top-50 banks during the five years prior to the merger period of January 1997 through December 2002 and also receive a subsequent loan from at least one of these banks during the merger period. There are 864 “existing borrowers” and 3,349 loans with the sample banks from 1992 through 2002.

Summary statistics for the loan sample are provided in Table 2. Borrowers tend to be medium sized, with a median asset size of \$183.48 million, and highly leveraged, with a median debt-to-asset ratio of 0.57. The median loan contract is for \$29.31 million with a term length of 36 months. The vast majority of the loans are credit lines (72%), which are thought to be more relationship-based than term loans because lines of credit require more extensive monitoring of the firm. Additional monitoring is needed because the bank offers to lend funds to the firm in the future at pre-specified terms, which can make it more likely for lines of credit to be drawn upon when the firm is performing poorly (Berger and Udell (1995)). Most of the loans are for general corporate purposes and working capital (42.94%) or for debt repayment and recapitalization (36.94%). Approximately 20 percent of loans are between borrowers and commercial banks that have previously merged with investment banks.

In order to isolate the effects of the mergers, I control for factors that are likely to influence a firm’s selection of bank or alter the pricing of loan contracts. I create three bank-specific variables. The reputation of the bank can be an important factor, which I capture through the bank’s market share of total domestic commercial and industrial loans as of the end of the year prior to loan. When a merger between commercial banks occurs, I use the combined market share of the banks for the remainder of the year. For example, Fleet Bank merged with BankBoston in September 1999. At the end of 1998, Fleet Bank had a loan market share of 3.4% and BankBoston’s loan market share was 3.6%. For each loan made by the consolidated bank between the merger date and the end of 1999, I use a market share of 7.0% for the consolidated bank. Also, using the combined market share helps control for any effects that could be attributable to increases in bank size from commercial bank mergers. Further, if borrowers face switching costs in changing lenders, then differences in banks’ cost of funds may be incorporated into loan pricing (Hubbard, Kuttner, and Palia (2002)). As a result, I calculate

the balance sheet liquidity of the bank as the bank's total cash and balances due from depository institutions divided by its total assets using values from the end of the year prior to the year of the loan. I also compute the capital ratio as the bank's total equity capital divided by its total assets. Again, these variables are adjusted for commercial bank mergers.

Prior literature suggests that the strength of a firm's lending relationships can influence both the selection of lender and the pricing of loans. Theoretically, strong lending relationships may allow banks to exert monopoly power over borrowers and charge higher interest rates (Sharpe (1990), Rajan (1992)). On the other hand, stronger relationships could result in a higher probability of selection and lower interest rates for the borrower if there are scale economies in information production and banks pass along these savings (see e.g. Boot and Thakor (1994), Petersen and Rajan (1994)).¹² To capture the strength of the borrower's lending relationships, I use a number of variables. First, using the LPC loan data, I determine if the borrower has formed multiple lending relationships between January 1992 and the date of the loan. Borrowing from multiple banks may be considered to be an inverse measure of relationship strength and also a means by which a firm can avoid a holdup problem (see e.g. Petersen and Rajan (1994, 1995), Ferri and Messori (2000), Berger, Klapper, and Udell (2001), Ongena and Smith (2001)). Also, a bank is likely to acquire more private information over the course of a longer relationship. Accordingly, using the LPC loan data that begins in 1987, I calculate the duration of the lending relationship, which has been used extensively in other studies as a measure of relationship strength (see e.g. Petersen and Rajan (1994, 1995), Berger and Udell (1995), Angelini, Di Salvo, and Ferri (1998)). Further, a bank that has a local presence in the firm's market may be able to acquire more "soft" information about the firm and develop a stronger relationship (see e.g. Petersen and Rajan (2002)). Also, the distance between the firm and lending bank has been shown to affect loan interest rates (Degryse and Ongena (2005)). Using the FDIC Summary of Deposits, I determine if the lending bank has a branch in the same state as the headquarters of the borrowing firm. Finally, firms that have an existing relationship with an investment bank may be less likely to need to establish a relationship with a CB-IB and also may not be as likely to face a hold-up problem (Rajan (1992)). To capture these potential effects, I

¹² The empirical literature on loan pricing is mixed. For example, Angelini, Di Salvo and Ferri (1998) and Degryse and van Cayseele (2000) find evidence consistent with banks charging higher rates to borrowers with strong relationships while Berger and Udell (1995) and Bharath et al. (2004) find stronger lending relationships result in lower borrowing costs.

use SDC *Platinum*'s new issues database to identify if the firm has issued public debt or equity during the five years prior to the loan and used an underwriter other than the lending bank. When creating these relationship variables, I account for mergers by assuming that the surviving financial institution acquires all of target's prior lending or underwriting relationships.

Further, I create variables to capture market-wide influences on interest rates. Fama and French (1989) show that business conditions are closely related to the bond market credit spread and term spread. From the Federal Reserve Statistical Release H.15, I construct the credit spread as the monthly difference between Moody's seasoned Baa-rated corporate bonds and Aaa-rated corporate bonds. For the term spread, I use the monthly difference between the 10-year Treasury bond and the 6-month Treasury bill rate.

Over the sample period, there are changes in loan market concentration both due to commercial banking mergers and also for other reasons, such as de novo entry of new commercial banks. As some studies show that more concentrated markets have higher loan rates (see e.g. Hannan (1991), Petersen and Rajan (1995), Sapienza (2002)), it is important to control for this effect. These studies focus on small business lending and use the concentration of deposits at the local level, which is captured by the Herfindahl index of deposit market share in the company's metropolitan statistical area. Since the companies in this study are medium to large firms that have access to a larger lending market, I use the concentration of the lending market at the national level, computing the Herfindahl index of domestic commercial & industrial loans from commercial banks in the Call Reports as of the end of the year prior to the loan year.¹³

Also, in order to study borrowers' choice of underwriter, I collect U.S. non-convertible public debt issues from SDC *Platinum*'s new issue database. The issues are made by "continuing borrowers," which are firms that borrow from a top-50 commercial bank before January 1997 and borrow again from the same bank at least once between January 1997 and

¹³ The Herfindahl index is the sum of squared market shares, multiplied by 1000. To calculate the Herfindahl index, each commercial bank is given a market share by consolidating all C&I loans by its individual chartered banks in the Call Report. I also calculated the Herfindahl index of deposit market share at the metropolitan statistical area level using the FDIC Summary of Deposits and at the regional level using both the Summary of Deposits and the Call Reports, but these variables were almost always statistically insignificant in loan pricing models and in many cases, had incorrect signs. The "correct" market definition is heavily debated in the literature (see e.g. Berger and Hannan (1989), Hannan (1997), Kwast, Starr-McCluer, and Wolken (1997), Radecki (1998), Amel and Starr-McCluer (2002)).

December 2002. There are 173 debt issues by these borrowers that occur after their commercial bank merges with an investment bank. Again, I create variables for factors that are likely to affect underwriter selection. Prior research shows that underwriter reputation is an important determinant of a firm's choice of underwriter (see e.g. Booth and Smith (1986), Carter and Manaster (1990)). I proxy for reputation using the underwriter's market share in the non-convertible public debt market in the year prior to the debt issuance. For each year, I compute each underwriter's market share by adding the principal amounts of all U.S. non-convertible public debt issues where the bank was a lead underwriter and dividing this total by the principal amounts of all U.S. non-convertible public debt issues during the year. Since the investment grade debt and junk bond markets are quite different, each underwriter is assigned two market shares – one for the junk market and another one for the investment grade market. When a merger between potential underwriters occurs, I use the combined market share of the underwriters for the remainder of the year. Also, prior underwriting relationships have been shown to be important in underwriter selection (see e.g. Baker (1990), Crane and Eccles (1993), Ljungqvist, Marston, and Wilhelm (2004), Drucker and Puri (2004b)). I identify all public debt underwriting relationships for each issuer between January 1992 and the date of the debt issuance. When underwriters merge, I assume that the acquiring institution acquires all of the target's prior underwriting relationships.

3. Methodology and Results

This section provides an empirical analysis of the effects of mergers between commercial banks and investment banks on firm-bank relationships and loan pricing. The mergers provide commercial banks with the ability to use information from lending relationships in investment banking, which could allow the bank to generate higher security prices by reducing information asymmetries between the firm and public markets. The mergers may also produce efficiency gains due to informational economies of scope. If firms expect to receive future benefits from using their bank for investment banking services, then having a lending relationship with a bank that can provide investment banking services may be particularly important. I examine this possibility in Section 3.1 by estimating the likelihood that a firm switches to a CB-IB. Also, after their bank is involved in a CB-IB merger, firms may be likely to choose their bank rather

than other underwriters when issuing public securities to capture these benefits. This possibility is studied in Section 3.2. The revealed preference by firms for CB-IBs as opposed to stand-alone financial intermediaries will help determine which types of firms value relationships with CB-IBs. In Section 3.3., I estimate the effects of CB-IB mergers on the interest rates (inclusive of fees) that banks charge to their continuing borrowers.

A central issue in the analysis is whether any findings that I attribute to CB-IB mergers are due to the bank being able to use its private information in investment banking. Therefore, in all tests, I isolate borrowers for which the bank, through the lending process, is likely to produce information about a firm's prospects that may not be available to outsiders. For this study, I focus on junk rated borrowers, as well as firms that have local lending relationships, which are firms that have lending relationships with a commercial bank that has a branch in the state of the firm's headquarters. I select junk rated borrowers because prior empirical evidence suggests that banks can certify the quality of lower rated borrowers to public markets (see e.g. Puri (1996), Gande et al. (1997)). This could be the result of these firms' being closer to financial distress than investment-grade borrowers, so banks are likely to collect more information about the financial state of junk rated firms, private information that will be particularly valuable to investors. Also, junk rated firms are likely to have higher costs of due diligence so re-using information may create large efficiency gains (see e.g. Drucker and Puri (2004b)). I choose borrowers with local lending relationships because it has been shown that firms that borrow with banks that are closer in distance are firms that tend to be more informationally opaque and are more likely to communicate in person with their lenders (Petersen and Rajan (2002)). This suggests that banks will have more "soft," private information about their local borrowers that could be useful in resolving information asymmetries between these more informationally opaque firms and investors.

3.1. Switching Lenders

This section examines the effect of CB-IB mergers on borrowers' lending relationships. For borrowers, the ability of the CB-IB to use its private information from lending relationships in investment banking may produce benefits when the firm accesses the public markets. Therefore, borrowers may seek lending relationships with banks that have merged with investment banks. I

examine this possibility by comparing the likelihood of starting a new lending relationship with a CB-IB for firms that do not have an existing CB-IB lender with firms that do have an existing CB-IB lender, controlling for other factors that could affect the decision to switch lenders. If firms that do not have existing lending relationships with CB-IBs are more likely to switch to a CB-IB, then this implies that benefits of a CB-IB lending relationship outweigh the switching costs associated with starting a new relationship. The revealed preference for CB-IB relationships would be consistent with borrowers placing a higher value on lending relationships with CB-IBs.

One important data issue arises when examining a borrower's decision to switch lenders. There are some instances when a lender provides multiple lending facilities to the borrower on the same day. Since these loans are presumably negotiated at the same time, I consider the set of loans to represent a single interaction between the firm and bank. Therefore, I use the "loan deal" as the unit of analysis, where a loan deal is defined as one or more loans to a borrower by the same lender on the same date. Table 3, Panel A provides summary statistics for the 1,259 loan deals between existing borrowers and the top-50 banks over the merger period of January 1997 through December 2002. As in the full sample of loans, borrowers are medium sized and highly leveraged. Banks are liquid and well capitalized, which is not surprising given that the banks in this sample are the largest commercial banks in the United States. Lending relationships, on average, are strong and long lasting, as the majority of borrowers have a single lending relationship, banks and borrowers have an average lending relationship of 54.71 months as of the date of the loan, and borrowers select a prior lender in nearly 75 percent of loan deals.

As mentioned, Petersen and Rajan (2002) show that banks that are closer in distance tend to lend to more informationally opaque firms and are more likely to communicate in person with their lenders, suggesting that banks in local lending relationships may gather useful, "soft" information about their borrowers. However, their results are for a sample of small borrowers, while the sample of borrowers used in this study are medium to large in size. Table 3, Panel B provides differences in the sample of loan deals based on whether the borrower and its prior lender have or do not have a local lending relationship. There are clearly many significant differences. Borrowers in local lending relationships are more likely to have a single lending relationship, and on average, longer relationships. Also, local lending relationships are more durable, as local borrowers are significantly more likely to select their prior lender when seeking

a loan. Further, local borrowers are significantly smaller, more likely to be not rated, and do not access the external capital markets as often as non-local borrowers. Taken together, local borrowers appear to have strong, long-lasting lending relationships, and are less likely to be known by outside investors in comparison to borrowers that have non-local lending relationships. This suggests that banks in local lending relationships will have access to more private information about their borrowers than banks in non-local relationships.

3.1.1. Multinomial Logit Models

I use a multinomial logit model in order to examine borrowers' decision to either borrow again from its prior lenders or choose a new CB-IB.¹⁴ This model allows the borrower to choose from among multiple choices based on factors that are specific to the potential choice, the firm, its prior lenders, and the relationship between the firm and its prior lenders. Specifically, I estimate the multinomial logit model:

$$\begin{aligned}
 SWITCHLEND = & \beta_0 + \beta_1 PRIORCBIBREL + \beta_2 CBIBSHARE + \beta_3 IGRADE \\
 & + \beta_4 JUNK + \beta_F FIRMFIN + \beta_B BANK + \beta_L LENDREL + \beta_I IND + \varepsilon
 \end{aligned} \tag{1}$$

The dependent variable, *SWITCHLEND*, captures the borrower's choice from three alternatives: (i) "Prior Lender," which is any bank that has provided a loan to the firm between January 1992 and the loan date; (ii) "New CB-IB," which is a commercial bank that has merged with an investment bank and has not provided a loan to the firm between January 1992 and the loan date; and, (iii) "New CB," which is a commercial bank that has not merged with an investment bank and has not provided a loan to the firm between January 1992 and the loan date. For identification purposes, one of these categories must be specified as the base category, which I choose to be "Prior Lender." The estimation will produce two coefficients for each of the independent variables: one will capture the effect of the variable on the probability of choosing

¹⁴ Greene (2000) provides an excellent discussion of models for choices between multiple alternatives. A multinomial logit model provides the relative probabilities of each of the alternatives and can be thought of as jointly estimating a series of logit models for each pair of alternatives.

“New CB-IB” as opposed to “Prior Lender,” and the other coefficient will reflect the effect of the variable on the probability of selecting “New CB” instead of “Prior Lender.”¹⁵

Of interest is the effect of *PRIORCBIBREL*, which indicates that the borrower has a relationship with a commercial bank that has merged with an investment bank prior to the loan deal, on the likelihood that the borrower switches to a new CB-IB. A negative coefficient on *PRIORCBIBREL* would suggest that a borrower is more likely to switch to a CB-IB when it does not have a prior lending relationship with a CB-IB. This would be consistent with the hypothesis that the benefits of a CB-IB lending relationship outweigh the switching costs associated with starting a new relationship.

In addition, I modify the model to account for differences based on the amount of private information that the commercial bank is likely to gather in the lending process. First, I interact *PRIORCBIBREL* and the credit rating variables *IGRADE*, *JUNK*, and *NR*, which indicate if the firm is investment-grade rated, junk rated, or not rated at the loan date. As previously argued, junk rated borrowers may benefit substantially from a lending relationship with a CB-IB. Also, firms that are not rated are likely to be comparatively unknown to outside investors, so a relationship with a CB-IB may be particularly valuable for firms that are not rated. Negative coefficients on *JUNK X PRIORCBIBREL* and *NR X PRIORCBIBREL* in switching to a new CB-IB would be consistent with this claim. Second, I interact *PRIORCBIBREL* with the lending relationship location variables *LOCAL* and *NONLOCAL*, which indicate if the borrower has or does not have a local lending relationship with its prior lender at the time of the loan deal. If local lenders gather more private information that will be useful in investment banking, then borrowers with local lending relationships may be more likely to stay with their commercial bank after it merges with an investment bank. A negative coefficient on *LOCAL X PRIORCBIBREL* would be consistent with this claim.

Of course, even if the commercial bank has private information about a firm, CB-IB mergers are unlikely to affect firm-bank relationships when firms have little need for investment banking services. In order to isolate a set of borrowers that use investment banking services, I split the sample based on whether the borrower issues public securities (either debt or equity)

¹⁵ To examine the effect of any of the independent variables on the choice between “New CB-IB” and “New CB,” one would just calculate the differences in the coefficients that are estimated when “Prior Lender” is the base category.

after receiving the loan. If CB-IB mergers affect firm-bank relationships, the main effects should be found among firms that issue public securities.

The model contains other variables that may affect a borrower's choice between staying with a prior lender, starting a new relationship with a CB-IB, and starting a new relationship with a pure commercial bank. Many of these variables have been identified by previous studies to influence the duration of lending relationships (Ongena and Smith (2001)) and / or affect a firm's decision to switch from single to multiple lending relationships (Farinha and Santos (2002)). Since borrower attributes may affect the choice, the model includes *IGRADE* and *JUNK*, as well as *FIRMFIN*, a vector of firm financial characteristics that consists of the firm's size (logarithm of assets), profitability (return on assets), and leverage (debt-to-asset ratio) during the year prior to the loan. The model includes *BANK*, a vector of bank attributes that includes the bank's liquidity (cash-to-asset ratio), equity capital ratio, and most importantly, *LOANMKTSHR*, the share of C&I loans of the borrower's main prior lender in the year prior to the loan.¹⁶ *LOANMKTSHR* is used to proxy for the bank's reputation and is expected to be negatively related to the likelihood of switching to a new lender. *LOANMKTSHR* is adjusted for commercial bank mergers, so this variable also controls for the effects of general commercial banking consolidation. Lending relationship variables (*LENDREL*) include an indicator for whether the firm and its prior lender have a local lending relationship, an indicator for borrowers that have multiple lending relationships with the top-50 commercial banks at the time of the loan deal, the logarithm of the one plus the duration of the relationship between the borrower and its prior lender, and a variable that indicates that the borrower has an active investment banking relationship with another financial institution. Industry fixed effects are also included in the model (*IND*). Finally, for loan deals in the later part of the sample, there are more commercial banks that have previously merged with investment banks, which by itself, makes it more likely for borrowers to choose the banks that are classified as "New CB-IB." To account for this aspect of the sample, I include *CBIBSHARE*, which is a measure of CB-IB merger activity that is the sum of the loan market shares of CB-IBs at the end of the month prior to the loan deal. Larger values of *CBIBSHARE* are expected to be associated with a higher likelihood of a borrower

¹⁶ The borrower's main prior lender is the bank that lent the most dollars (deflated into first quarter, 1992 dollars) to the borrower between January 1992 and the loan date

selecting “New CB-IB” and a lower probability of selecting “New CB.” Since observations for the same company may be correlated, all models are estimated with clustered standard errors.

3.1.2. Results

Table 4, Panel A presents the results of estimating equation (1).¹⁷ The odd columns provide the effects of the variables on the probability of switching to a new CB-IB as opposed to borrowing again from a prior lender, while the even columns show the effects of the variables on switching to a pure commercial bank instead of choosing to borrow from a prior lender. As for the control variables, the coefficients on *LOANMKTSHR* are negative and significant at the 1% level in most specifications, indicating that borrowers who have lending relationships with banks with higher market shares are less likely to switch lenders. For example, for the full sample of loan deals, all else equal, a one standard deviation (4.86 percent) increase in market share decreases the odds that a borrower starts a new lending relationship with a CB-IB by 1.4 times. As expected, the coefficients on *CBIBSHARE* indicate that a larger total market share for CB-IBs results in a significantly higher likelihood of borrowers’ switching to a CB-IB and a lower probability of switching to a CB. Also, the negative coefficients on *MULTREL* suggest that borrowers with multiple lending relationships are less likely to establish new lending relationships with CB-IBs than borrowers with single lending relationships. Consistent with the univariate results, the negative coefficients on *LOCAL* indicate that borrowers with local lending relationships are less likely to establish new lending relationships.

Interestingly, for the sample of firms that issue public securities after the loan deal (see the third and fourth columns), the existence of an active investment banking relationship with another financial institution (*OTHERIBREL*) reduces the likelihood that the borrower will establish a new lending relationship with a CB-IB. While the negative coefficient on *OTHERIBREL* in the third column is not statistically significant, it is economically significant; holding all other variables constant, the odds that a borrower switches to a CB-IB rather than select a prior lender are 2.12 times lower when the borrower has an active relationship with an

¹⁷ An assumption underlying the multinomial logit model is the independence of irrelevant alternatives (“IIA”). This means that adding or deleting potential choices does not affect the odds among the remaining outcomes. Using formal tests of IIA developed by Hausman and McFadden (1984), in all models, I cannot reject the assumption of IIA.

outside investment banking. This result is consistent with the idea that one of the reasons for a firm to switch its borrowing to a CB-IB is to establish both a lending and underwriting relationship. In further support of this notion, the coefficient on *OTHERIBREL* in the fourth column is dramatically smaller (-0.75 vs. -0.14), indicating that the presence of an outside underwriting relationship has little influence on the decision to start a new lending relationship with a pure commercial bank.

As for the effect of CB-IB mergers on firm-bank relationships, for the full sample of loans the insignificant coefficients on *PRIORCBIBREL* that are displayed in the first and second columns indicate that having a prior lending relationship with a CB-IB does not effect a borrower's decision to switch lenders. However, significant effects are found in the sample of borrowers that issue public securities after receiving the loan. In the third column, the coefficient on *PRIORCBIBREL* is significantly negative at the 1% level. Economically, holding all other variables constant, the odds of a borrower switching to a CB-IB is seven times greater when the borrower's lender is pure commercial bank relative to when the lender is a CB-IB. However, for borrowers that do not issue public securities after the loan, the results in the fifth column show that coefficient on *PRIORCBIBREL* is insignificant. These results are consistent with the benefits of establishing a relationship with a CB-IB outweigh the costs of switching from a pure commercial bank when the borrower is likely to access the public capital markets in the future. Further, the results in the second, fourth, and sixth columns show that there is no significant effect of *PRIORCBIBREL* on the likelihood of switching to a pure commercial bank. These estimations suggest that the ability of the new lender to provide investment banking services is important in the firms' decision to start a new lending relationship.

In Panels B and C, I explore if the amount of private information that the commercial bank is likely to gather in the lending process has an effect on switching probabilities. In Panel B, *PRIORCBIBREL* is split according to the credit rating of the borrower. The results in the first column show that the coefficient on *JUNK X PRIORCBIBREL* is significantly negative at the 5% level, indicating that junk rated borrowers are more likely to switch to a CB-IB when they do not have prior lending relationships with CB-IBs. The difference is economically meaningful, as a junk rated borrower that has prior CB-IB lending relationships has a 3.8 percent probability of establishing a new relationship with a CB-IB while a junk rated borrower that does not have a prior lending relationship with a CB-IB switches 9.4 percent of the time. In contrast to the

results for junk rated firms, the coefficient on *IGRADE X PRIORCBIBREL* is insignificant. Since banks are likely to have much less private information about investment grade firms, in combination, these results are consistent with the view that the ability of a CB-IB to use private information in investment banking plays a vital role in borrowers' decision to switch to CB-IBs. In further support of this assertion, for junk rated firms, the effect of the CB-IB mergers on switching is much stronger in the sample of borrowers that issue public securities (column 3). Also, a similar result holds for not rated borrowers, as the coefficient on *NR X PRIORCBIBREL* is significantly negative among borrowers that issue public securities following the loan but insignificant otherwise (columns 3 and 5). As in Panel A, the effects are specific to a borrower's decision to switch to a CB-IB, as the results in the second, fourth, and sixth column show that the existence of a prior relationship with a CB-IB does not have a significant influence on a junk rated or not rated borrower's decision to switch to a pure commercial bank.

In Panel C, *PRIORCBIBREL* is interacted with *LOCAL* and *NONLOCAL*. In the third column, the coefficient on *LOCAL X PRIORCBIBREL* is significantly negative at the 1% level while the coefficient on *NONLOCAL X PRIORCBIBREL* is insignificant. Holding all other variables constant, the odds that a borrower with a local lending relationship will stay with its prior lender rather than switch to a CB-IB is approximately eight times greater when the prior lender is a CB-IB. It is important to note that this result is specific to the sample of borrowers that issue public securities after the loan, which suggests that the ability of the CB-IB to use its soft, private information from local lending relationships in investment banking dramatically increases the durability of these lending relationships relative to when the lender is a pure commercial bank.

Panel D provides the results of estimating extensions to the base model using the sample of loan deals where the borrower issues public securities after the loan.¹⁸ First, it is possible that the current model does not adequately capture changes in the banking market or economic climate. While *CBIBSHARE* is highly significant in the base model, I address this concern by adding year fixed effects to the model. The results are nearly identical to those provided in Panels A through C. Second, when banks lend, they examine the firm's future prospects. However, the current model only incorporates the past financial characteristics of the borrower.

¹⁸ Results for the full sample and for the loans where the borrower does not issue public securities after the loan are nearly identical to the results in Panels A through C and are left unreported.

As a result, I replace the firm financial characteristics (size, profitability, and leverage) with their ex-post counterparts, calculated in the year after the loan year. Again, the coefficients on *PRIORCBIBREL* and the associated interaction terms are largely unchanged. While the ex-post financial variables are statistically insignificant, it is interesting to note that the coefficients on *ROAYR+1* are negative. This suggests that firms with higher future profitability are more likely to stay with their prior lenders rather than switch banks. I will return to this point when discussing the effects of CB-IB mergers on the pricing of loan contracts in Section 3.3.

Overall, the results suggest that lending relationships with CB-IBs are valuable to firms that are likely to benefit from the CB-IB's ability to use its private information from lending in investment banking. This is supported by results that show that prior to a public securities issue, junk rated and not rated borrowers are significantly more likely to establish a new lending relationship with a CB-IB when they do not have a prior relationship with a CB-IB. For these firms, where the CB-IB is likely to acquire relatively more private information, the results support the hypothesis that the benefits of borrowing from a CB-IB outweigh switching costs. Further, borrowers that have more information intensive, local lending relationships and issue public securities after the loan deal are significantly more likely to stay with their lender if the lender has merged with an investment bank. Finally, CB-IB mergers do not affect the decision to switch lenders when the bank is likely to have less private information about the firm (i.e. investment grade firms), when the lending relationship is less likely to be information intensive due to the location of the borrower and the bank, and importantly, when borrowers have a low likelihood of needing investment banking services.

3.1.3. Robustness – Commercial Banking Mergers

To further examine if the results are likely due to the CB-IB's ability to use information in investment banking, I perform additional tests by identifying commercial banking mergers between the fifty largest commercial banks ("CB-CB mergers"). It is possible that some of the previous results are driven by general consolidation among commercial banks because some of the commercial banks that are involved in CB-IB mergers also merge with other commercial banks during the sample period. While I control for the increases in size as well as changes in the liquidity and capital ratio of the bank by accounting for CB-CB mergers when constructing

the bank-specific control variables, it is possible that CB-CB mergers have other effects that can influence the likelihood of switching. Also, studying the effects of CB-CB mergers provides a useful comparison with CB-IB mergers because the commercial bank does not gain another line of business through CB-CB mergers.

In order to address these issues, I examine if CB-CB mergers that involve a borrower's prior lenders affects the probability that a borrower switches to a new bank. To proceed, I estimate equation (1) with a few changes. First, I alter the dependent variable, *SWITCHLEND*, to be an indicator variable that equals one if the firm selects any commercial bank that has not provided a loan to the firm between January 1992 and the loan date. I use this more parsimonious specification because I find little reason for a merger between commercial banks to have different influences on the likelihood that a borrower establishes a new lending relationship with a CB-IB instead of a pure commercial bank.¹⁹ Also, I replace *PRIORCBIBREL* with *CBMERGE*, which indicates that the firm has a prior lender that has merged with another top-50 commercial bank prior to the loan deal. Finally, I replace *CBIBSHARE* with year fixed effects (*YR*).

The results of the probit estimations are found in Table 5. In the first three columns, I use loans from all of the top-50 commercial banks. The results of the estimation using the full sample of loans is displayed in the first column while the second and third column provide estimates when I split the sample based on whether the borrower issues public securities after the loan. Panel A displays the estimates of the base model. In all estimations, the coefficients on *CBMERGE* are highly insignificant. Also, as shown in Panels B and C, the coefficients on the interaction terms between *CBMERGE* and the credit rating variables and location variables are also insignificant. These results support the claim that the effects on firm-bank relationships that are identified in Section 3.1.2. are not simply due to general banking consolidation.

One potential problem with using the full sample of loans to examine differences between CB-IB mergers and CB-CB mergers is that some of the banks in the sample are involved in both types of mergers. To address this problem, I re-estimate the models using only loan deals to borrowers that do not have relationships with banks that merge with investment banks during the

¹⁹ In support, when I use the original definition of *SWITCHLEND*, a comparison of choosing "New CB" vs. "New CB-IB" reveals that the merger variables are highly insignificant and also insignificantly different across all three categories.

sample period. The results in the fourth column of all panels again show that commercial bank mergers do not affect the probability of switching to a new lender.

3.2. Underwriter Selection

In this section, I further explore the effects of CB-IB mergers on firm-bank relationships by examining whether continuing borrowers are likely to select their CB-IB as public debt underwriter. To do so, I examine these borrowers' selection of underwriter in their 173 non-convertible public debt issues that occur between their bank's merger date and June 2004. Again, I focus on junk rated borrowers and firms with local lending relationships, for whom the banks are more likely to be able to create efficiency gains from informational economies of scope or use private information from lending to reduce information asymmetries between the firm and investors. These potential benefits may increase the likelihood that these borrowers use their CB-IB as underwriter when they issue public securities.

3.2.1. Logit and Conditional Logit Models

To model firms' choice of underwriter, I begin with standard logit models. In the models, I allow each issuer to select between twelve choices: its lending CB-IB, each of the top-10 underwriters of U.S non-convertible public debt, and a single choice of any other underwriters that are not ranked in the top-10.²⁰ The top-10 underwriters are determined on a yearly basis, based on the underwriter's dollar market share of the U.S. non-convertible public debt market in the year prior to the issuance.²¹ Since the investment grade debt and junk bond markets are quite different and some underwriters may specialize in underwriting junk bonds, I separate issues based on the credit rating of the issue and determine the top-10 underwriters for each market in each year. Junk issuers select from the top-10 junk debt underwriters while investment grade issuers have the top-10 investment grade debt underwriters as a choice set.²²

²⁰ Similar models have been used to study underwriter selection (see e.g. Bharath et al. (2004), Drucker and Puri (2004b), Ljungqvist, Marston, and Wilhelm (2004)) and lender choice (Hellmann, Lindsey, and Puri (2004)).

²¹ If the lending CB-IB happens to be ranked in the top-10, then these issuers have 11 potential choices.

²² For a given year between 1997 and 2004, on average, the top-10 investment-grade (junk) debt underwriters account for approximately 90 (95) percent of the total dollar amount of underwritten investment-grade (junk) debt issues.

The main logit model is specified as follows:

$$\begin{aligned}
 SELUND = \beta_0 + \beta_1 LENDER + \beta_2 DEBTMKTSHR + \beta_3 PRIORUND + \beta_4 IGRADE \\
 + \beta_F FIRMFIN + \beta_L LENDREL + \beta_I IND + \beta_Y YR + \varepsilon
 \end{aligned}
 \tag{2}$$

where *SELUND* indicates if the potential underwriter is selected as a lead manager for the issue. The relevant independent variable is *LENDER*, which is one if the potential underwriter is the issuer's CB-IB in the continuing lending relationship. A positive coefficient of *LENDER* signifies that the lending relationship increases the likelihood of being selected as lead debt underwriter.

To examine if the lending relationship has a stronger influence in underwriter selection when the bank's private information is likely to be more valuable in underwriting, I modify the model to include interactions between *LENDER* and the credit rating variables, *IGRADE* and *JUNK*, which identify if the issuance is investment-grade rated or junk rated, respectively. Also, in a separate estimation, I include interactions between *LENDER* and the location variables, *LOCAL* and *NONLOCAL*.

The model contains two additional variables that are very likely to influence selection. *DEBTMKTSHR*, the underwriter's market share in the U.S. non-convertible public debt market based on total dollars lead underwritten in the year prior to the issuance date, is used to proxy for reputation. Again, *DEBTMKTSHR* is computed separately for investment-grade issues and junk issues. Larger values of *DEBTMKTSHR* are expected to be associated with a higher likelihood of selection. Also, previous research indicates that underwriting relationships are very durable (for recent empirical evidence, see Drucker and Puri (2004b), Ljungqvist, Marston, and Wilhelm (2004)). To capture this effect, the model includes *PRIORUND*, which indicates that the issuer and potential underwriter have a prior debt underwriting relationship between 1992 and the issue date. The logit model also includes additional controls for borrower specific characteristics including *IGRADE*, which indicates that the issue is investment-grade rated, *FIRMFIN*, which is a vector consisting of the firm's size (logarithm of assets), profitability (return on assets), and leverage (debt-to-asset ratio) during the year prior the issuance, and *IND*, which are industry fixed effects using the one-digit SIC code of the issuer. I also include *LENDREL*, which is a vector of issuer-lending bank relationship variables consisting of an indicator for if the firm and

lending bank have a local lending relationship, an indicator for firms that have multiple lending relationships, and the logarithm of one plus the duration of the lending relationship. Also the model incorporates year fixed effects (*YR*). Since observations for the same issuance may be correlated, all logit models are estimated with clustered standard errors.

In addition, I repeat the three estimations using a conditional logit model. This is a more powerful estimation method because it includes issue fixed effects (*ISSUE*), which controls for all issue and firm characteristics at the time of the issuance instead of the few variables included in the logit model. In the conditional logit model, the issuer and relationship controls (*IGRADE*, *FIRMFIN*, *IND*, *LENDREL*) as well as *YR* are removed and replaced with *ISSUE*. Therefore, there are only three remaining variables: the lending relationship indicator (*LENDER*), underwriter market share (*DEBTMKTSHR*), and prior underwriting relationships (*PRIORUND*).

3.2.2. Results

The results of estimating the logit and conditional logit models are displayed in Table 6. As expected, both the underwriter's market share and the existence of a prior underwriting relationship are highly significant in all estimations. For the base estimation that is displayed in the first column, all else equal, a one standard deviation (5.95 percent) increase in *DEBTMKTSHR* raises the odds that the underwriter will be selected by 1.25 times. Also, the odds that an issuer will select a potential underwriter as a lead underwriter are 4.76 times greater when the firm and underwriter have a prior underwriting relationship.

The results of logit model (2) in the first column show that the coefficient of *LENDER* is significantly positive (p-value of 5.5%). This indicates that after controlling for other factors that significantly influence underwriter selection, the lending relationship significantly increases the probability of being selected as a lead manager. This is consistent with CB-IB mergers allowing commercial banks to expand the scope of their relationships and also, by revealed preference, with firms benefiting from using their lending bank as underwriter. The conditional logit estimation in column four supports these findings.

Importantly, the evidence suggests that the positive effects of lending relationships are concentrated among firms where the bank's private information is likely to be more important in

reducing information asymmetries. The results of the logit model in column two and the conditional logit model in column five both show that the lending relationship significantly increases the probability of selection when the issue is junk rated (at the 1% level) but does not have a significant effect for investment-grade issues. Based on the results in the second column, for junk rated borrowers, the odds of selecting a potential underwriter as a lead underwriter are 3.76 times greater if the underwriter is the issuer's CB-IB lender, holding all other variables constant. Also, a t-test for differences between junk rated issues and investment-grade issues is significant at the 2% level. These results are generally consistent with Yasuda (2004), who also finds that for junk rated issuers, a lending relationship significantly increases the likelihood of selection, and the lending relationship is a stronger determinant of selection for junk rated issuers than for investment-grade rated issuers.

The estimations of the logit model in column three and the conditional logit model in column six both show that the positive effect of the lending relationship on underwriter selection is found for issuers with local lending relationships, but there is no significant effect for issuers with non-local lending relationships. Based on the results in the third column, for borrowers with single lending relationships, the odds of selecting a potential underwriter as a lead underwriter are 1.75 times greater if the underwriter is the issuer's CB-IB lender, holding all other variables constant. These results are consistent with issuers' choosing their CB-IB as underwriter due to local banks' superior access to private information that can enhance the certification ability of the underwriter and reduce costs due to informational economies of scope.

The findings of this section, in combination with the analysis in Section 3.1., show that CB-IB mergers have a distinct effect on relationships between banks and firms when the bank is likely to gather private information that will be valuable in investment banking. Junk rated borrowers, particularly those who are likely to issue public securities in the future, are more likely to start a new lending relationship with a CB-IB when they do not have a prior relationship with a CB-IB. Borrowers with local lending relationships are significantly more likely to retain their lending relationship after their lender merges with a CB-IB. Also, when these same types of firms continue to borrow from their bank, they are more likely to choose their CB-IB as debt underwriter, thereby expanding the firm-bank relationship. Overall, through revealed preference, the results indicate that firms that have more information intensive lending relationships have higher value for relationships with CB-IBs. This is consistent with the view that CB-IB mergers

provide banks with the ability to use valuable private information in investment banking, which leads to benefits when firms issue informationally sensitive public securities.

3.3. The Pricing of Loan Contracts

In Sections 3.1. and 3.2., I provide evidence that suggests that firms that issue more informationally sensitive securities have a higher value for CB-IB relationships. Now, I examine the effects of CB-IB mergers on the pricing of loan contracts. Interest rates may increase for two related reasons. First, if commercial banks have an information monopoly over borrowers, then after CB-IB mergers, the CB-IB may charge higher interest rates to share in some of the expected future gains that can emerge from the CB-IB's ability to resolve information asymmetries when underwriting. This type of rent extraction is described in Puri (1999), who shows theoretically that under certain conditions, CB-IB's ability to generate higher security prices in underwriting can allow the CB-IB to extract some of the additional value. Second, CB-IBs may charge higher interest rates to profit from a larger adverse selection problem that may be caused by the merger. The "lemons problem" arises from the potential benefits to firms from using the CB-IBs for both lending and underwriting, which could cause other financial intermediaries to be more skeptical of the quality of companies that do not use their CB-IB for both services. This can increase the switching costs for firms that are likely to issue informationally sensitive public securities, and the merged CB-IB can have a larger information monopoly over these firms than a pure commercial bank would have, which can allow for additional rent extraction (see e.g. Rajan (1996, 2002)).

However, if firms can successfully convey their quality to other banks, then information monopolies will not be present and rent extraction should not occur. Competition between CB-IBs should prevent banks from charging higher interest rates in order to share in potential benefits that the firm may receive from future public security issuances. Also, there would not be a lemons problem, so interest rates would not increase following CB-IB mergers. Firms may actually receive lower interest rates if informational economies of scope produce lower costs for the bank and competition causes CB-IBs to pass these savings along to firms.

To study the effects of CB-IB mergers on the pricing of loan contracts, I analyze the loans to firms with existing relationships who continue to borrow from their bank during the

merger period. There are 2,245 loans between these 607 firms and their banks between 1992 and 2002. These loans are from banks that are involved in CB-IB mergers as well as similar banks that do not merge. By including banks that are not involved in mergers, I can examine if any effects that are identified during the merger period are common to all banks or just to the merging banks. The sample construction is similar to Sapienza (2002), who examines the effect of commercial bank mergers on small Italian companies.

The sample of loans to continuing borrowers may suffer from selection problems. First, a number of borrowers switch to other banks, and these borrowers may be systematically different than the continuing borrowers. In particular, if the firms that are continuing to borrow from their CB-IB decline in quality while those that leave are improving in quality, then this may be responsible for an increase in loan prices, and vice versa. In the loan pricing model, I include many observable characteristics and firm fixed effects, which capture unobservable firm characteristics, so if the borrower's switching decision is based on the observable factors or on unobservable firm characteristics, then the coefficients will not be biased. Still, I formally account for the possibility of sample selection bias by using the full sample of 3,349 loans to the 864 existing borrowers and employing a two-stage procedure developed by Heckman (1979).²³ The results (not reported) are statistically and economically similar to the results that will be presented in Section 3.3.2. Second, it is possible that the continuing borrowers of the banks that do not merge with investment banks are different than the borrowers of the merging banks, potentially due to different needs for using a commercial bank for investment banking services. Again, the observable control variables and firm fixed effects should mitigate sample selection biases. However, I estimate the loan pricing model using only those loans from banks that merge with investment banks, and the results for all estimations (not reported) are statistically and economically similar to those that will be reported in Section 3.3.2.

²³ The first stage uses a probit model to estimate the probability of continuing to borrow. The estimates of the probit model are used to create the inverse mills ratio, which is included when estimating the loan pricing model. This produces consistent estimates of the parameters. The covariance matrix is adjusted in accordance with Heckman (1979).

3.3.1. Fixed Effects Regressions

I estimate the following loan pricing model:

$$YSPREAD = \beta_0 + \beta_1 IBMERGE + \beta_F FIRMFIN + \beta_R RATING + \beta_B BANK + \beta_L LENDREL + \beta_C CONTRACT + \beta_M MARKET + \beta_X FIRM + \varepsilon \quad (3)$$

This model attempts to isolate the effect of CB-IB mergers by controlling for factors that could influence the yield spread of the loan. The structure is similar to models used in examining both loan yield spreads (see e.g. Hubbard, Kuttner, and Palia (2002)) and bond yield spreads (see e.g. Gande, Puri and Saunders (1999), Penas and Unal (2004)).

The dependent variable is *YSPREAD*, the yield spread on the loan, measured by the “all-in spread drawn.” The all-in spread drawn provides a standard measure of the overall cost of the loan, taking into account one-time and recurring fees, quoted in basis points above LIBOR.²⁴ The key independent variable is *IBMERGE*, which is an indicator variable that is one at any date after the lending bank merges with an investment bank. A positive (negative) coefficient of *IBMERGE* would indicate that banks increase (decrease) their loan interest rates to continuing borrowers after merging. An increase in loan rates is consistent with banks extracting rents from their borrowers, while a decrease in loan rates is consistent with informational scope economies reducing the costs of lending and the bank passing these savings along to the borrower.

I control for many factors that can influence loan yield spreads. To control for the risk of the borrower, I include *RATING*, which are dummy variables for the firm’s credit rating, and *FIRMFIN*, a vector of firm financial characteristics that consists of the firm’s size (logarithm of assets), leverage (debt-to-asset ratio), and profitability (return on assets) during the year prior to the loan.²⁵ Firms with lower credit ratings and firms that are more leveraged are expected to have higher loan rates. Larger and more profitable firms are likely to have lower yield spreads because these borrowers tend to be less risky. Also, to capture any effects on loan pricing of differences in banks’ cost of funds, I include *BANK*, which are lender-specific characteristics consisting of the lender’s market share of C&I loans, the lender’s liquidity (cash-to-asset ratio),

²⁴ The all-in spread drawn is defined as the coupon spread over LIBOR plus the annual fee plus the up-front fee (which is divided by the maturity of the loan).

²⁵ In additional tests, I have included variables that capture if borrowers have experienced a credit rating upgrade or downgrade since their prior loan. However, this occurs for only 2.4% of the loans in the sample. While the signs of these variables are correct, they are generally statistically insignificant and do not affect the results.

and capital ratio in the year prior to the loan. The model includes *LENDREL*, which are variables specific to the lending relationship consisting of an indicator for local lending relationships, a dummy variable that indicates that the borrower has multiple lending relationships at the date of the loan, the logarithm of one plus the duration of the lending relationship, and a variable that indicates that the borrower has an active investment banking relationship with another financial institution. Previous studies show that borrowers with strong lending relationships pay higher interest rates (see e.g. Angelini, Di Salvo and Ferri (1998), Degryse and van Cayseele (2000)) while other researchers find that banks charge lower interest rates when firm-bank lending relationships are strong (see e.g. Berger and Udell (1995), Bharath et al. (2004)), so the signs of these variables are ambiguous. I include *CONTRACT*, which are non-price loan characteristics consisting of indicators for the type of loan, indicators for the purpose of the loan, the logarithm of the facility size of the loan, and the logarithm of the length of the loan.²⁶ Banking market and economy-wide influences are captured by *MARKET*, which consists of the Herfindahl index of the national loan market, the bond market credit spread, and the bond market term spread. These variables are expected to be positively related to the yield spread. *MARKET* also includes a dummy variable that indicates that the loan occurred during the merger period of January 1997 through December 2002. The coefficient on this variable captures any differences in yield spreads charged by banks to continuing borrowers during this period that are not directly attributable to the bank merging or other factors that can affect yield spreads that are included in the regression. I also include firm fixed effects (*FIRM*) to capture the effects that unobserved firm specific factors have on yield spreads. By using loans to continuing borrowers and a fixed-effects model, I use the firm before the mergers as a control for itself after the mergers. Also, by including borrowers from banks that do not merge with investment banks, I capture overall changes in the pricing of loan contracts during the merger period.

To isolate loans where the bank is likely to have more private information about the borrower, I estimate equation (3) for the full sample as well as for sub-samples based on the firm's credit rating and whether the borrower and lender have or do not have a local lending relationship. In the sub-sample analyses, I wish to continue to use the powerful firm fixed effects. However, when running the model, there is one estimation problem: if I were simply to

²⁶ Note that these variables are likely to be simultaneously determined with price and are therefore, endogenous. The results in Section 3.2.2. are robust to removing *CONTRACT*.

classify loans based on credit rating or location at the time of the loan, I would lose much of this power when firms have a credit rating change or if the bank opens branches in the same state as the firm's headquarters. As a solution, I estimate equation (3) using five samples: (i) the full sample; (ii) loans to firms that are investment-grade rated when receiving at least one of their loans; (iii) loans to firms that are junk rated when receiving at least one of their loans; (iv) loans where the bank has a branch in the same state as the firm's headquarters for at least one of their loans; and (v) loans where the bank does not have a branch in the same state as the firm's headquarters for any of their loans. Using these samples preserves the power of the fixed effects methods and also allows the control variables to vary across the different sub-samples.²⁷ In addition, since rent extraction is more likely to take place when the firm has a single lending relationship rather than multiple relationships (Sharpe (1990), Rajan (1992)), I also run two additional estimations based on the number of relationships that the firm maintains. These estimations include loans to (vi) firms that have a single lending relationship with a top-50 bank over the full sample period of 1992 through 2002; and, (vii) firms that have more than one lending relationship with a top-50 bank over the sample period of 1992 through 2002.

I perform additional tests in order to further examine if the effects on interest rates are related to the ability of the CB-IB to use information in investment banking. First, I estimate the effects of CB-CB mergers on loan yield spreads. Examining the effects of CB-CB mergers helps determine if any changes in loan yield spreads are due to general banking consolidation. While the model controls for changes to the size of the lender and concentration of the loan market that are caused by CB-CB mergers, there may be additional effects on loan pricing. Also, an analysis of the effects of CB-CB mergers provides a useful contrast because the bank does not expand the scope of its operations through these mergers. I repeat the estimations of equation (3) using CB-CB mergers by replacing *IBMERGE* with *CBMERGE*, which indicates that the lender has merged with another top-50 commercial bank prior to the loan. To further isolate differences between the two types of mergers, I also estimate equation (3) using only loans from banks that do not merge with investment banks during the sample period. Second, instead of replacing *IBMERGE* with *CBMERGE*, I augment equation (3) with *CBMERGE*. Third, the economic

²⁷ Another method to preserve the fixed effects is to simply interact *IBMERGE* with the credit rating variables and with the location variables and estimate the model for the full sample of loans. These models yield similar statistical and economic results to those presented in Section 3.3.2. and are left unreported. The interaction model has the disadvantage of constraining the control variables to be equal across all sub-samples.

environment changed dramatically during the later years of the sample period. Figure 1 shows the distribution of loans to continuing borrowers and the average Baa-Aaa credit spread, by year. It is clear that the spread between Baa and Aaa bonds rose dramatically after 1999. If I am not adequately controlling for market changes, then the coefficients may be biased. While there are fewer loans in the later years of the sample and I explicitly control for changes in the banking market and economic environment in the base model, I also perform two additional robustness checks by adding a dummy variable that equals one for all loans after December 31, 1999 (*POST1999*), and in a separate estimation, I include year dummy variables (*YR*).²⁸ As a final check, I replace the firm financial characteristics (size, profitability, and leverage) with their ex-post counterparts, calculated in the year after loan origination. This modification attempts to capture the idea that when banks lend, they examine the firm's future prospects and risk. In all estimations, I use heteroskedastic consistent standard errors.

3.3.2. Results

The results of fixed-effects regressions are presented in Table 7. Panel A displays the effects on yield spreads of the mergers between commercial banks and investment banks. In general, the control variables have the expected signs and most are statistically significant. Loan yield spreads are higher for lower credit rated borrowers and borrowers with higher leverage, and yield spreads are lower for larger and more profitable borrowers. Also, the term spread, credit spread, and concentration in the loan market are significantly positively related to the level of yield spreads. Banks that have larger loan market share and are more liquid charge significantly lower yield spreads, which is generally consistent with the findings in Hubbard, Kuttner, and Palia (2002). Also, the lending relationship variables are generally insignificant. Interestingly, firms that have an active investment banking relationship with another financial institution receive significantly lower loan yield spreads, which could reflect that these firms have a viable outside option when it comes to raising capital. The results for the full sample of continuing borrowers are presented in the first column. The coefficient on *IBMERGE* is positive and statistically significant (p-value = 6%); continuing borrowers pay 13 basis points more after a CB-IB merger

²⁸ In order to avoid collinearity when adding the year dummy variables, I must remove the yearly loan market concentration variable (*HHI*) and the indicator for loans that are originated after December 31, 1996 (*POST1996*).

than before the merger. This is an interesting finding, especially in light of the results from Section 3.1., which at least weakly suggest that borrowers who continue to borrow from their bank have higher ex-post performance than borrowers who switch. If there is sample selection bias induced by only using loans to continuing borrowers, then the estimate of the coefficient on *IBMERGE* is likely to be downward biased.

Examination of the sub-samples shows that after merging with investment banks, commercial banks charge significantly higher interest rates to their junk rated borrowers and borrowers with local lending relationships. The second column presents the results for the junk rated sample, which shows that junk rated borrowers pay yield spreads that are 40.20 basis points higher after the CB-IB merger than before the merger, which is significant at the 1% level. For the median loan in the sample, which is a \$29 million dollar, 3-year loan, an increase of 40.20 points translates into a present value increase of approximately \$300,000.²⁹ Also, the fourth column shows that borrowers with local lending relationships have their yield spreads increase by 23.67 basis points, which is equivalent to a present value increase of \$175,000. Importantly, the results in the third and fifth column indicate that loan yield spreads are unchanged when the borrower is investment-grade rated or the firm and bank do not have a local lending relationship. These results indicate that the increases in loan yield spreads are concentrated among firms where the bank is likely to have more private information about a borrower. Interestingly, as shown in the sixth and seventh columns the increases in yield spreads that occur after CB-IB mergers are concentrated among firms that have single lending relationships, while firms with multiple lending relationships do not have a significant change in their loan interest rates.³⁰ In combination, these results are consistent with banks having an information monopoly over firms when they are likely to have more private information and when they are the firm's sole lender, which allows the CB-IB to share in merger-related gains by charging higher interest rates. In addition, the higher yield spreads may partially reflect an increase in the switching costs for the CB-IB's junk rated and local borrowers. As suggested in Rajan (1992), it appears that multiple lending relationships limit a bank's information monopoly.

²⁹ This calculation assumes a discount rate of 10%.

³⁰ The results in the sixth and seventh columns are for the full sample of loans. In unreported estimations, I find that junk rated firms and firms with local lending relationships pay significantly higher loan yield spreads following the CB-IB merger only when they have single lending relationships. As in the full sample, firms with multiple lending relationships do not have a significant increase in borrowing costs post-merger.

Table 7, Panel B shows the effects of CB-CB mergers on the pricing of loan contracts. Columns one through seven display the results when using loans from all of the top-50 commercial banks, while the eighth column shows the results of estimating the loan pricing model when only including loans from banks that do not merge with investment banks during the sample period. In contrast to CB-IB mergers, all estimations reveal that commercial bank mergers do not significantly influence the pricing of loan contracts. These results support the view that the increases in interest rates after CB-IB mergers are related to the ability of the CB-IB to use information across product lines and are not driven by commercial bank consolidation.

In Panel C of Table 7, I perform a number of additional robustness checks. First, adding *CBMERGE* to equation (3) barely changes the point estimate and statistical significance of *IBMERGE*. These estimations add additional evidence that the increases in loan yield spreads that occur after CB-IB mergers are not due to commercial bank consolidation. Second, I add *POST1999* to the model, and the coefficients on *POST1999* are positive and usually statistically significant. Separately, I add year dummy variables. In both cases, the core results remain unchanged; after CB-IB mergers, junk rated firms, borrowers in local lending relationships, and firms in single lending relationships pay significantly higher loan yield spreads while investment-grade rated borrowers, firms that are not in local lending relationships and borrowers that maintain multiple relationships do not have significant changes in their borrowing costs. Finally, the coefficients on *IBMERGE* are unchanged when replacing the firm financial characteristics that are in the base model with their ex-post counterparts. This result suggests that poor ex-post performance or higher risk is not driving the increase in yield spreads.

Sections 3.1. and 3.2. provide evidence that is consistent with junk rated firms and firms with local lending relationships valuing relationships with CB-IBs due to the ability of the bank to reduce the costs of information asymmetry in investment banking. The results of this section suggest that these firms may be subject to information monopolies, which allows CB-IBs to extract at least some of this created value by raising loan yield spreads after the CB-IB merger. Also, the findings are consistent with CB-IB mergers increasing the switching costs for informationally sensitive firms. CB-IB mergers do not affect the loan yield spreads of firms when the firm is unlikely to be “locked-in” and when the bank is unlikely to have as much private information that could be useful to outside investors. Further, CB-CB mergers do not influence the pricing of loan contracts, supporting the view that the borrowing cost increases are

related to the ability of the CB-IB to use private information in investment banking and not due to general banking consolidation. In addition, it does not appear that the increases in loan yield spreads are driven by changes in the economic environment or poor ex-post performance or increases in the risk of the borrowers.

4. Conclusion

Following the relaxation and repeal of the 1933 Glass-Steagall Act, commercial banks merged with investment banks, allowing banks to expand their relationships with companies. Through these mergers, the commercial bank acquires the capability to use the private information from its lending relationships in investment banking. This may allow the bank to reduce information asymmetries between the firm and public markets as well as create efficiencies by limiting the duplication of screening and monitoring activities. As a result, these mergers can have important effects on relationships between banks and firms when firms are likely to issue information sensitive public securities.

The empirical findings indicate that mergers between commercial banks and investment banks have distinct effects on firm-bank relationships when the CB-IB's ability to reduce information asymmetries between the firm and investors is likely to be important. This is supported by the decisions of junk rated firms to switch from pure commercial banks to CB-IB lenders prior to issuing public securities and to use their CB-IB as the underwriter of their public debt issuances. Also, when borrowers and banks have local lending relationships, the borrower is more likely to stay with their commercial bank after it merges with an investment bank, particularly if the borrower issues public securities after the loan. Further, the existence of a local lending relationship significantly increases the likelihood of the firm selecting their CB-IB as a lead underwriter. The revealed preference by firms that issue informationally sensitive securities for relationships with CB-IBs is consistent with these firms having a higher value for relationships with merged commercial-investment banks. Additional evidence is consistent with commercial banks sharing in the expected gains by extracting information rents after merging with investment banks, as their junk rated and local continuing borrowers that have single lending relationship pay higher loan interest rates after the merger relative to before the merger. The borrowing cost increases suggest that commercial banks have information monopolies over

their more informationally sensitive borrowers and may indicate that these borrowers face larger information monopolies after CB-IB mergers.

Other results support the view that the effects of the mergers between commercial banks and investment banks are related to commercial banks gaining the ability to use private information in investment banking. Mergers between commercial banks and investment banks do not influence firms' decision to switch lenders, underwriter selection, or interest rates when the bank is unlikely to have significant private information about the firm, such as when the firm is investment-grade rated or the lending relationship is not local. In addition, firms that are unlikely to issue public securities are unaffected by the mergers. Also, mergers between commercial banks, where the bank does not gain a new area of business, produce no significant effects on firms' decision to switch lenders or borrowing costs. Finally, sample selection biases and changes in economic conditions do not appear to account for the increases in loan yield spreads to junk rated firms and borrowers in local lending relationships that occur following commercial-investment banking mergers.

Overall, the analysis suggests that CB-IB mergers create gains when the bank's private information is likely to be useful in investment banking, and the CB-IB can share in these gains by charging higher interest rates when the CB-IB is most likely to have an information monopoly. In addition, the results point out that it is possible that the potential gains from the CB-IB mergers may lead to larger switching costs for the informationally opaque borrowers who will be likely to issue public securities. Do CB-IB mergers cause a significant increase in switching costs, and if so, does this influence firms' financing decisions? This is a topic that deserves further research.

Appendix A

Detailed Descriptions of the Variables

Switching Lenders

- SWITCHLEND:** In the multinomial logit model, the variable indicates the borrower's choice from three alternatives: (i) "Prior Lender," which is any bank that has provided a loan to the firm between January 1992 and the loan date; (ii) "New CB-IB," which is a commercial bank that has merged with an investment bank and has not provided a loan to the firm between January 1992 and the loan date; and, (iii) "New CB," which is a commercial bank that has not merged with an investment bank and has not provided a loan to the firm between January 1992 and the loan date. In the probit model, an indicator variable that equals one if the firm selects any commercial bank that has not provided a loan to the firm between January 1992 and the loan date.
- PRIORCBIBREL:** An indicator variable that equals one if the borrower has a relationship with a commercial bank that has merged with an investment bank prior to the loan deal.
- CBMERGE:** An indicator variable that equals one if the borrower has a relationship with a commercial bank that has merged with another commercial bank (ranked in the top-50 of C&I lenders as of the end of 1996) prior to the loan deal.
- LNASSETS:** The logarithm of ASSETS, the total assets during the year prior to the loan, measured in first quarter, 1992 dollars.
- ROA:** The return on assets, calculated as the ratio of net income to total assets during the year prior to the loan, measured in first quarter, 1992 dollars.
- LEVERAGE:** The book debt to total assets during the year prior to the loan, measured in first quarter, 1992 dollars.
- IGRADE:** A dummy variable that equals one if the firm has a Standard and Poor's long-term debt rating of AAA, AA, A, or BBB at the time of the loan.
- JUNK:** A dummy variable that equals one if the firm has a Standard and Poor's long-term debt rating of BB, B, CCC, CC, or C at the time of the loan.
- NR:** A dummy variable that equals one if the firm does not have a Standard and Poor's long-term debt rating at the time of the loan.
- IND:** Dummy variables that equal one if the issuer is in the corresponding one-digit SIC group
- LNASSETS_{YR+1}:** The logarithm of total assets during the year after the loan year, measured in first quarter, 1992 dollars.
- ROAYR+1:** The return on assets, calculated as the ratio of net income to total assets during the year after the loan year, measured in first quarter, 1992 dollars.
- LEVERAGE_{YR+1}:** The book debt to total assets during the year after the loan year, measured in first quarter, 1992 dollars.
- LOANMKTSHR:** The market share of the borrower's prior lender's total domestic C&I loans as of the end of the year prior to the year of the loan, adjusted for mergers that take place during the year of, but prior to, the loan, expressed as decimal. If the firm has multiple lending relationships, then the firm's prior lender from whom it has borrowed the most dollars (deflated into first quarter, 1992 dollars) between January 1992 and the loan date is used for identification.
- LIQUIDITY:** The borrower's prior lender's total cash and balances due from depository institutions divided by total assets as of the end of the year prior to the year of the loan, adjusted for mergers that take place during the year of, but prior to, the loan, expressed as decimal. If the firm has multiple lending relationships, then the firm's prior lender from whom it has borrowed the most dollars (deflated into first quarter, 1992 dollars) between January 1992 and the loan date is used for identification.
- CAPITALRATIO:** The borrower's prior lender's total equity capital divided by total assets as of the end of the year prior to the year of the loan, adjusted for mergers that take place during the year of, but prior to, the loan, expressed as decimal. If the firm has multiple lending relationships, then the firm's prior lender from whom it has borrowed the most dollars (deflated into first quarter, 1992 dollars) between January 1992 and the loan date is used for identification.
- LOCAL:** An indicator that equals one if the firm's prior lender has a branch in the same state of the borrower's headquarters at the time of the loan deal. If the firm has multiple lending relationships, then the firm's prior lender from whom it has borrowed the most dollars (deflated into first quarter, 1992 dollars) between January 1992 and the loan date is used for identification.
- NONLOCAL:** An indicator that equals one if the firm's prior lender does not have a branch in the same state of the borrower's headquarters at the time of the loan deal. If the firm has multiple lending relationships, then the firm's prior lender from whom it has borrowed the most dollars (deflated into first quarter, 1992 dollars) between January 1992 and the loan date is used for identification.

MULTREL: An indicator that equals one if the borrower has received a loan from more than one top-50 bank prior to the loan deal.

LNDURATION: The logarithm of 1+DURATION, the number of months between the first loan provided by the firm's prior lender and the loan date. If the firm has multiple lending relationships, then the firm's prior lender from whom it has borrowed the most dollars between January 1992 and the loan date is used for identification.

OTHERIBREL: An indicator variable that equals one if the borrower has issued public debt or public equity during the five years prior to the loan deal and used an underwriter other than its prior lenders as lead manager.

CBIBSHARE: The sum of the market shares of total domestic C&I loans of all banks that have merged with investment banks by the month prior to the loan, accounting for mergers between commercial banks.

ISSUEAFTLOAN: An indicator that equals one if the borrower issues public debt or public equity between the loan date and June 2004.

YR: Dummy variables that correspond to the year of the loan deal.

Underwriter Selection

SELUND: An indicator variable that is one if the specified potential underwriter is selected as a lead underwriter on the issuance.

LENDER: An indicator variable that equals one if the potential underwriter is the issuer's lending bank in the continuing borrowing relationship.

DEBTMKTSHR: The potential underwriter's market share in the U.S. public, non-convertible debt market based on total dollars lead underwritten in the year prior to the issuance, as reported by SDC. For investment-grade (junk) rated issues, the market share is computed using all investment-grade (junk) debt issues from the year prior to the issuance.

PRIORUND: An indicator variable that is one if the potential underwriter has previously been selected as lead underwriter of a debt issuance by the issuer between January 1992 and the date of the issuance.

LNASSETS: The logarithm of total assets during the year prior to the issuance, measured in first quarter, 1992 dollars.

ROA: The return on assets, calculated as the ratio of net income to total assets during the year prior to the issuance, measured in first quarter, 1992 dollars.

LEVERAGE: The book debt to total assets during the year prior to the issuance, measured in first quarter, 1992 dollars.

IGRADE: A dummy variable that equals one if the issue has a Standard and Poor's debt rating of AAA, AA, A, or BBB at the time of the issuance.

JUNK: A dummy variable that equals one if the issue has a Standard and Poor's debt rating of BB, B, CCC, CC, or C at the time of the issuance.

IND: Dummy variables that equal one if the issuer is in the corresponding one-digit SIC group.

LOCAL: An indicator that equals one if the issuer's lending bank in the continuing borrowing relationship has a branch in the same state of the issuer's headquarters at the time of the debt issuance.

NONLOCAL: An indicator that equals one if the issuer's lending bank in the continuing borrowing relationship does not have a branch in the same state of the issuer's headquarters at the time of the debt issuance.

MULTREL: An indicator that equals one if the issuer has received a loan from more than one top-50 bank prior to the debt issuance.

LNDURATION: The logarithm of the 1+DURATION, the number of months between the first loan provided by the issuer's lending bank in the continuing borrowing relationship and the issuance date.

YR: Dummy variables that correspond to the year of issuance.

ISSUE: Issue fixed effects. Dummy variables for each of the 173 debt issues.

The Pricing of Loan Contracts

YSPREAD: The yield spread of the loan. This is the *DealScan* item "all-in spread drawn," which is the coupon spread over LIBOR plus the annual fee plus the up-front fee (which is divided by the maturity of the loan).

IBMERGE: An indicator variable that equals one at any date after the lending bank merges with an investment bank.

CBMERGE: An indicator variable that is one at any date after the lender merges with another commercial bank, where both commercial banks are ranked in the top-50 commercial bank C&I lenders as of the end of 1996.

LNASSETS: The logarithm of ASSETS, the total assets during the year prior to the loan, measured in first quarter, 1992 dollars.

ROA: The return on assets, calculated as the ratio of net income to total assets during the year prior to the loan, measured in first quarter, 1992 dollars.

LEVERAGE: The book debt to total assets during the year prior to the loan, measured in first quarter, 1992 dollars.

RATING: Dummy variables that indicate the firm's Standard and Poor's long term debt rating at the time of the loan. Individual dummies are created for AAA, AA, A, BBB, BB, B, CCC, and C. Not rated loans are indicated by the variable NR.

LNASSETS_{YR+1}: The logarithm of total assets during the year after the loan year, measured in first quarter, 1992 dollars.

ROAYR+1: The return on assets, calculated as the ratio of net income to total assets during the year after the loan year, measured in first quarter, 1992 dollars.

LEVERAGEYR+1: The book debt to total assets during the year after the loan year, measured in first quarter, 1992 dollars.

LOANMKTSHR: The lender's market share of total domestic C&I loans from commercial banks in the Federal Reserve Call Reports as of the end of the year prior to the year of the loan, adjusted for mergers that take place during the year of, but prior to, the loan, expressed as decimal.

LIQUIDITY: The lender's total cash and balances due from depository institutions divided by total assets as of the end of the year prior to the year of the loan, adjusted for mergers that take place during the year of, but prior to, the loan, expressed as decimal.

CAPITALRATIO: The lender's total equity capital divided by total assets as of the end of the year prior to the year of the loan, adjusted for mergers that take place during the year of, but prior to, the loan, expressed as decimal

LOCAL: An indicator that equals one if the lender has a branch in the same state of the borrower's headquarters at the time of the loan.

MULTREL: An indicator that equals one if the borrower has multiple in-sample bank lenders at loan origination date.

MULTREL9202: An indicator variable that equals one if the borrower has multiple to-50 ranked lenders at any time between January 1992 and December 2002.

LNDURATION: The logarithm of 1+DURATION, the number of months between the first loan provided by the lender to the borrower and the loan date.

OTHERIBREL: An indicator variable that equals one if the borrower has issued public debt or public equity during the five years prior to the loan deal and used an underwriter other than the lender as lead manager.

LNLENGTH: The logarithm of LENGTH, the term length of the loan, where the term length is the number of months between the facility active date and the facility maturity date.

LNFACTSIZE: The logarithm of FACTSIZE, the notional size of the lending facility. The notional size is measured in first quarter, 1992 dollars.

LOANTYPE: Dummy variables that correspond to the type of lending facility. The dummy variables indicate if the facility is a term loan, 364-day facility, revolving line of credit, or other type.

LOANPURPOSE: Dummy variables that correspond to the purpose of the loan. The purposes are for acquisition, recapitalization (including debt repayments and consolidations), LBO, general (including working capital), miscellaneous (project finance, real estate, securities purchases, stock buybacks, spinoffs and trade finance), or other (including commercial paper backups, credit enhancements, DIP, and ESOPs). Grouping into these six categories is based on Hubbard, Kuttner, and Palia (2002).

HHI: The Herfindahl index of domestic C&I Loans from commercial banks in the Federal Reserve Call Reports as of the end of the year prior to the loan year. This variable captures national loan concentration. To calculate HHI, each commercial bank is given a market share by consolidating all of C&I loans by its individual chartered banks in the Call Report. HHI is the sum of squared market shares, multiplied by 1000.

10YRMIN6MO: The difference between the 10-year treasury bond and 6-month T-bill, measured during the month of the loan, expressed as decimal.

BAAMINAAA: The monthly difference between Moody's seasoned Baa-rated corporate bonds and Aaa-rated corporate bonds, measured during the month of the loan, expressed as decimal.

POST1996: An indicator variable that equals one if the date of the loan is after December 31, 1996.

POST1999: An indicator variable that equals one if the date of the loan is after December 31, 1999.

YR: Dummy variables that correspond to the year of issuance.

FIRM: Firm Fixed Effects. Dummy variables for each of the firms.

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Table 1
List of Commercial Bank – Investment Bank Mergers – 1997 through 2002

This table presents a list of U.S. commercial banks that merge with investment banks and the month and year of merger. This list only includes mergers where the commercial banks were ranked in the top-50 of domestic commercial and industrial lending as of December 1996 and the investment bank had underwritten at least one equity or bond offering during the three years prior to the merger.

Commercial Bank	Investment Bank	Merger Date
LaSalle Bank	Chicago Corp.	January 1997
Bankers Trust	Alex Brown & Sons	September 1997
Bank of America	Robertson Stephens	October 1997
NationsBank	Montgomery Securities	October 1997
First Union	Wheat, First, Butcher & Singer	November 1997
SunTrust Bank	Equitable Securities	January 1998
US Bancorp	Piper Jaffray	May 1998
Fifth Third Bancorp	Ohio Co	June 1998
BankBoston	Robertson Stephens	September 1998
KeyCorp	McDonald Investments	September 1998
Citigroup	Salomon Smith Barney	October 1998
BB&T Corp	Scott & Stringfellow	November 1998
Wachovia Bank	Interstate - Johnson Lane	January 1999
First Union	Everen Securities	October 1999
Chase Manhattan Bank	Hambrecht & Quist	December 1999
Wells Fargo	Van Kasper & Co	November 2000
SunTrust Bank	Robinson Humphrey	July 2001

Table 2
Loan Sample Summary Statistics, 1992 - 2002

This table provides summary statistics for the sample of 3,349 loan facilities to the 864 “existing borrowers,” which are borrowers who have a loan from at least one top-50 ranked bank both before and after January 1997. The time period is January 1992 through December 2002. All variables are explained in detail in Appendix A, under the heading “The Pricing of Loan Contracts.” All notional values are expressed in millions of first quarter, year 1992 dollars using the GDP implicit price deflator.

Variable	Mean / Percentage	Std. Dev	Median
<i>Firm</i>			
ASSETS (\$ mil)	1078.71	4575.21	183.48
LNASSETS	19.17	1.59	19.03
ROA (%)	2.84	1.32	3.83
LEVERAGE (%)	58.36	24.69	57.77
IGRADE (%)	10.81		
JUNK (%)	13.70		
NR (%)	75.49		
<i>Bank</i>			
IBMERGE (%)	20.30		
CBMERGE (%)	19.62		
LOANMKTSHR (%)	5.14	4.13	3.43
LIQUIDITY (%)	7.40	3.07	6.63
CAPITALRATIO (%)	7.50	1.56	7.39
<i>Firm-Bank Relationship</i>			
LOCAL (%)	66.02		
MULTREL (%)	12.18		
MULTREL9202 (%)	48.25		
DURATION (months)	23.77	30.42	11.47
LNDURATION	1.95	1.85	2.52
OTHERIBREL (%)	45.95		
<i>Loan Contract</i>			
LENGTH (months)	37.96	24.01	36.00
LNLENGTH	3.39	0.76	3.58
FACSIZE (\$ mil)	84.395	231.09	29.31
LNFACSIZE	17.13	1.57	17.19
<i>Type of Loan</i>			
Credit Line (%)	72.65		
Term Loan (%)	24.81		
Other Loan (%)	2.54		
<i>Purpose of Loan</i>			
Acquisition (%)	12.57		
General (%)	42.94		
LBO (%)	0.77		
Recapitalization (%)	36.94		
Miscellaneous (%)	2.09		
Other (%)	4.69		
<i>Banking Market</i>			
HHI	214.762	70.73	199.72
10YRMIN6MO (bps)	71.37	15.83	68.00
BAAMINAAA (bps)	135.35	102.40	116.00
POST1996	46.73		

Table 3
Loan Deal Summary Statistics, 1997 - 2002

This table provides summary statistics for the sample of loan deals with “existing borrowers,” which are borrowers who have a loan from at least one top-50 ranked bank both before and after January 1997. A loan deal is one or more loans to a borrower by the same lender on the same facility active date. All variables are explained in detail in Appendix A, under the heading, “Switching Lenders.” All notional values are expressed in millions of first quarter, year 1992 dollars using the GDP implicit price deflator. Panel A summarizes the sample of 1,259 loan deals between January 1997 and December 2002. Panel B summarizes differences between loan deals based on whether or not the firm’s prior lender has a branch in the same state that the borrower is headquartered at the time of the loan deal (*LOCAL* = 1 or 0). ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Loan Deals					
Variable	Mean / Percentage		Std. Dev	Median	
<i>Firm</i>					
ASSETS (\$ mil)	1447.22		5632.36		261.03
LNASSETS	19.50		1.60		19.38
ROA (%)	2.30		1.50		3.20
LEVERAGE (%)	58.31		24.58		57.73
ISSUEAFTLOAN (%)	22.80				
IGRADE (%)	13.42				
JUNK (%)	17.56				
NR (%)	69.02				
<i>Bank</i>					
LOANMKTSHR (%)	6.59		4.86		6.25
LIQUIDITY (%)	6.87		2.45		6.49
CAPITALRATIO (%)	8.10		1.68		8.01
<i>Firm-Bank Relationship</i>					
SWITCHLEND (%)	25.18				
PRIORCBIBREL (%)	48.37				
CBMERGE (%)	45.99				
LOCAL (%)	67.76				
MULTREL (%)	21.92				
DURATION (months)	54.71		31.16		51.53
LNDURATION	1.59		0.51		1.66
OTHERIBREL (%)	47.58				
<i>Banking Market</i>					
CBIBSHARE (%)	26.45		18.26		24.82
Panel B: Local vs. Non-Local Loan Deals					
Variable	LOCAL =1	LOCAL = 0	Z-ratio	Wilcoxon test	
	Mean / Percentage	Mean / Percentage		p-value	
ASSETS (\$ mil)	1238.10	1886.59	-2.12 **	0.0000	***
ISSUEAFTLOAN (%)	20.52	27.59	-2.80 ***		
NR (%)	74.21	58.13	5.77 ***		
LOANMKTSHR (%)	6.60	6.58	0.06	0.5388	
SWITCHLEND (%)	23.33	29.06	-2.19 ***		
MULTREL (%)	19.70	26.60	-2.77 ***		
DURATION (months)	56.23	51.53	2.56 ***	0.0245	**
OTHERIBREL (%)	47.25	48.28	0.34		
Number of Observations	853	406			

Table 4
Probability of Switching Lenders
Commercial Bank-Investment Bank Mergers

This table presents the results of a multinomial logit model, using the 1,259 loan deals from 1997 through 2002 where the borrower has an existing lending relationship at the time of the loan deal with a commercial bank ranked in the top-50 by total domestic commercial & industrial (C&I) loans (ranked as of the end of 1996). The dependent variable is *SWITCHLEND*, which indicates the borrower's choice from three alternatives: (i) "Prior Lender," which is any bank that has provided a loan to the firm between January 1992 and the loan date; (ii) "New CB-IB," which is a commercial bank that has merged with an investment bank and has not provided a loan to the firm between January 1992 and the loan date; and, (iii) "New CB," which is a commercial bank that has not merged with an investment bank and has not provided a loan to the firm between January 1992 and the loan date. The key independent variable is *PRIORCBIBREL*, an indicator variable that equals one if the borrower has a relationship with a commercial bank that has merged with an investment bank prior to the loan deal. All variables are explained in detail in Appendix A, under the heading, "Switching Lenders." Columns (1) and (2) display estimations using the full sample of loan deals. Columns (3) and (4) provide the results of estimations using loans deals where the firm issues either public debt or public equity between the loan date and June 2004 (*ISSUEAFTLOAN* = 1). Columns (5) and (6) summarize estimations using loans deals where the firm does not issue public debt nor public equity between the loan date and June 2004 (*ISSUEAFTLOAN* = 0). The odd numbered columns ((1), (3), and (5)) show the probability of switching to "New CB-IB" instead of staying with "Prior Lender" while the even numbered columns ((2), (4), and (6)) show the probability of switching to "New CB" instead of staying with "Prior Lender." Panel A provides the results of the base model (equation (1)). Panel B shows differential effects of CB-IB mergers, based on the credit rating of the borrower. Panel C shows differential effects of CB-IB mergers, based on the physical location of the borrower and its prior lenders. Panel D provides two extensions of the base model. First, year fixed effects are added to the model (coefficients on *YR* not reported). Second, the logarithm of the firm's total assets during the year prior to the loan deal (*LNASSETS*), the firm's return on assets calculated as the ratio of net income to total assets during the year prior to the loan (*ROA*), and the book debt total assets during the year prior to the loan (*LEVERAGE*) of the borrower, are replaced by corresponding variables that are measured during the year after the loan year (*LNASSETSYR+1*, *ROAYR+1*, and *LEVERAGEYR+1*). Panel D reports the results of estimating the models for the sample of loans where the borrower issues public debt or public equity between the loan date and June 2004 (*ISSUEAFTERLOAN* = 1). Coefficients for industry dummies (*IND*) are not reported. Standard errors are White heteroskedastic consistent and clustered at the firm-level and z-scores are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Base Model						
	Full Sample		Issues Public Securities After Loan		Does Not Issue Public Securities After Loan	
	Switch CB-IB vs. Stay (1)	Switch CB vs. Stay (2)	Switch CB-IB vs. Stay (3)	Switch CB vs. Stay (4)	Switch CB-IB vs. Stay (5)	Switch CB vs. Stay (6)
PRIORCBIBREL	0.05 (0.17)	-0.13 (-0.52)	-2.00 *** (-2.56)	-0.08 (-0.14)	0.23 (0.78)	-0.23 (-0.77)
<i>Firm Variables</i>						
LNASSETS	0.02 (0.16)	-0.19 * (-1.88)	0.12 (0.39)	-0.19 (-0.98)	-0.01 (-0.03)	-0.21 * (-1.77)
ROA	0.08 (0.13)	-0.28 (-0.38)	-4.84 (-1.12)	-2.19 (-0.96)	0.21 (0.37)	-0.14 (-0.19)
LEVERAGE	1.13 *** (3.09)	0.65 (1.43)	-2.41 (-0.78)	-0.58 (-0.50)	1.23 *** (3.37)	0.94 * (1.92)
IGRADE	0.32 (0.80)	0.14 (0.33)	0.92 (0.94)	0.34 (0.48)	0.31 (0.64)	0.05 (0.08)
JUNK	-0.51 (-1.55)	-0.17 (-0.63)	0.01 (0.01)	0.71 (1.39)	-0.54 (-1.54)	-0.42 (-1.19)
<i>Bank Variables</i>						
LOANMKTSHR	-7.38 *** (-3.39)	-7.51 *** (-3.23)	-14.52 ** (-2.20)	-8.68 * (-1.70)	-6.93 *** (-3.00)	-6.87 ** (-2.51)
LIQUIDITY	1.07 (0.26)	-2.84 (-0.74)	-19.21 * (-1.72)	1.76 (0.24)	-1.41 (-0.30)	-5.46 (-1.17)
CAPITALRATIO	-11.11 (-1.60)	-1.89 (-0.32)	29.99 (1.61)	3.19 (0.32)	-18.08 ** (-2.36)	-2.38 (-0.31)
<i>Firm-Bank Relationship Variables</i>						
LOCAL	-0.29 (-1.25)	-0.38 ** (-1.96)	-0.81 (-1.03)	-0.14 (-0.31)	-0.28 (-1.13)	-0.50 ** (-2.20)
MULTREL	-0.45 * (-1.68)	0.02 (0.10)	-2.73 *** (-2.58)	-0.20 (-0.41)	-0.28 (-0.98)	0.04 (0.17)
LNDURATION	0.13 (0.54)	0.17 (0.80)	-0.93 (-1.44)	-0.82 * (-1.86)	0.30 (1.13)	0.44 * (1.89)
OTHERIBREL	-0.17 (-0.82)	0.01 (0.04)	-0.75 (-1.23)	0.59 (1.43)	-0.14 (-0.62)	-0.08 (-0.38)
<i>Banking Market Variables</i>						
CBIBSHARE	6.12 *** (6.52)	-1.35 ** (-2.01)	12.61 *** (4.30)	0.77 (0.48)	5.24 *** (5.11)	-1.79 ** (-2.33)
Intercept	-2.18 (-1.09)	3.12 (1.27)	-2.87 (-0.44)	3.06 (0.82)	-1.16 (-0.56)	2.72 (0.37)
IND Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Log Likelihood	-834.05		-156.71		-646.49	
Pseudo R-squared	0.10		0.21		0.11	
Number of Loan Deals	1259		287		972	

Panel B: Expanded Model – Credit Ratings						
	Full Sample		Issues Public Securities After Loan		Does Not Issue Public Securities After Loan	
	Switch CB-IB vs. Stay (1)	Switch CB vs. Stay (2)	Switch CB-IB vs. Stay (3)	Switch CB vs. Stay (4)	Switch CB-IB vs. Stay (5)	Switch CB vs. Stay (6)
JUNK X	-0.99 *	-0.23	-3.30 **	0.28	-0.73	-0.45
PRIORCBIBREL	(-1.91)	(-0.48)	(-2.03)	(0.30)	(-1.29)	(-0.74)
IGRADE X	0.36	-0.35	-1.26	-0.15	1.39	-0.78
PRIORCBIBREL	(0.57)	(-0.65)	(-1.20)	(-0.16)	(1.16)	(-1.11)
NR X PRIORCBIBREL	0.20	-0.07	-2.12 **	-0.24	0.37	-0.14
	(0.68)	(-0.26)	(-2.09)	(-0.34)	(1.08)	(-0.43)
<i>Firm Variables</i>						
LNASSETS	0.02	-0.19 *	0.18	-0.19	-0.00	-0.21 *
	(0.23)	(-1.89)	(0.58)	(-1.00)	(-0.01)	(-1.77)
ROA	0.00	-0.28	-4.58	-2.17	0.12	-0.14
	(0.00)	(-0.39)	(-1.00)	(-0.96)	(0.20)	(-0.20)
LEVERAGE	1.14 ***	0.66	-2.32	-0.59	1.24 ***	0.96 **
	(3.11)	(1.44)	(-0.73)	(-0.51)	(3.35)	(1.94)
IGRADE	0.16	0.27	0.12	0.33	-0.65	0.33
	(0.25)	(0.53)	(0.11)	(0.39)	(-0.54)	(0.52)
JUNK	0.24	-0.10	0.26	0.56	0.16	-0.29
	(0.54)	(-0.29)	(0.21)	(0.89)	(0.34)	(-0.67)
<i>Bank Variables</i>						
LOANMKTSHR	-7.42 ***	-7.61 ***	-13.45 **	-8.61 *	-7.02 ***	-7.05 ***
	(-3.40)	(-3.24)	(-2.16)	(-1.70)	(-3.02)	(-2.55)
LIQUIDITY	1.98	-2.90	-14.67	1.64	-0.70	-5.37
	(0.47)	(-0.75)	(-1.18)	(0.22)	(-0.15)	(-1.15)
CAPITALRATIO	-11.28	-1.98	26.11	3.65	-18.05 **	-2.32
	(-1.57)	(-0.34)	(1.34)	(0.37)	(-2.27)	(-0.30)
<i>Firm-Bank Relationship Variables</i>						
LOCAL	-0.27	-0.39 **	-0.71	-0.15	-0.26	-0.49 **
	(-1.17)	(-1.97)	(-0.87)	(-0.33)	(-1.04)	(-2.18)
MULTREL	-0.43	0.02	-2.84 **	-0.22	-0.26	0.05
	(-1.60)	(0.09)	(-2.38)	(-0.44)	(-0.94)	(0.20)
LNDURATION	0.14	0.16	-0.94	-0.83 *	0.31	0.44 *
	(0.57)	(0.77)	(-1.39)	(-1.89)	(1.16)	(1.86)
OTHERIBREL	-0.19	0.01	-0.67	-0.60	-0.18	-0.07
	(-0.92)	(0.03)	(-1.11)	(1.42)	(-0.79)	(-0.33)
<i>Banking Market Variables</i>						
CBIBSHARE	6.22 ***	-1.33 **	12.99 ***	0.76	5.31 ***	-1.73 **
	(6.61)	(-1.98)	(4.03)	(0.46)	(5.16)	(-2.25)
Intercept	-2.42	3.14	-3.82	3.09	-1.38	2.61
	(-1.20)	(1.28)	(-0.58)	(0.84)	(-0.65)	(0.36)
IND Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Log Likelihood	-831.59		-155.88		-643.92	
Pseudo R-squared	0.10		0.21		0.11	
Number of Loan Deals	1259		287		972	

Panel C: Expanded Model – Local vs. Non-Local Relationships						
	Full Sample		Issues Public Securities After Loan		Does Not Issue Public Securities After Loan	
	Switch CB-IB vs. Stay (1)	Switch CB vs. Stay (2)	Switch CB-IB vs. Stay (3)	Switch CB vs. Stay (4)	Switch CB-IB vs. Stay (5)	Switch CB vs. Stay (6)
LOCAL X	0.07	0.07	-2.55 ***	0.57	0.26	-0.08
PRIORCBIBREL	(0.26)	(0.25)	(-2.83)	(0.86)	(0.83)	(-0.25)
NONLOCAL X	-0.02	-0.47	-1.34	-0.99	0.13	-0.49
PRIORCBIBREL	(-0.05)	(-1.45)	(-1.19)	(-1.33)	(0.27)	(-1.29)
<i>Firm Variables</i>						
LNASSETS	0.01 (0.16)	-0.19 ** (-1.95)	0.06 (0.21)	-0.19 (-1.02)	-0.00 (-0.04)	-0.21 * (-1.80)
ROA	0.08 (0.12)	-0.27 (-0.37)	-5.45 (-1.42)	-2.28 (-0.97)	0.21 (0.37)	-0.13 (-0.18)
LEVERAGE	1.12 *** (3.08)	0.62 (1.32)	-2.52 (-0.83)	-0.72 (-0.59)	1.23 *** (3.36)	0.92 * (1.84)
IGRADE	0.33 (0.81)	0.18 (0.42)	1.03 (1.04)	0.48 (0.70)	0.31 (0.64)	0.05 (0.09)
JUNK	-0.51 (-1.55)	-0.17 (-0.60)	0.15 (0.14)	0.79 (1.55)	-0.54 (-1.55)	-0.42 (-1.19)
<i>Bank Variables</i>						
LOANMKTSHR	-7.43 *** (-3.41)	-7.82 *** (-3.32)	-13.25 * (-1.89)	-10.91 ** (-2.20)	-6.96 *** (-3.01)	-6.98 *** (-2.53)
LIQUIDITY	1.06 (0.26)	-3.19 (-0.83)	-21.78 ** (-2.00)	-1.21 (-0.16)	-1.38 (-0.30)	-5.57 (-1.19)
CAPITALRATIO	-11.14 (-1.61)	-2.16 (-0.36)	29.97 * (1.75)	2.75 (0.27)	-18.12 ** (-2.34)	-2.57 (-0.32)
<i>Firm-Bank Relationship Variables</i>						
LOCAL	-0.34 (-0.86)	-0.59 ** (-2.44)	-0.16 (-0.14)	-0.63 (-1.26)	-0.36 (-0.82)	-0.66 ** (-2.32)
MULTREL	-0.45 * (-1.69)	0.02 (0.11)	-2.70 ** (-2.39)	-0.24 (-0.51)	-0.28 (-0.99)	0.05 (0.19)
LNDURATION	0.13 (0.53)	0.17 (0.81)	-0.85 (-1.31)	-0.78 * (-1.80)	0.30 (1.13)	0.45 * (1.89)
OTHERIBREL	-0.17 (-0.82)	0.01 (0.06)	-0.79 (-1.31)	0.57 (1.37)	-0.14 (-0.62)	-0.07 (-0.34)
<i>Banking Market Variables</i>						
CBIBSHARE	6.13 *** (6.50)	-1.33 ** (-1.95)	12.46 *** (4.24)	0.51 (0.31)	5.27 *** (5.06)	-1.74 ** (-2.25)
Intercept	-2.14 (-1.05)	3.38 (1.41)	-2.10 (-0.32)	3.80 (1.00)	-1.09 (-0.51)	2.95 (0.42)
IND Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Log Likelihood	-832.96		-154.36		-646.04	
Pseudo R-squared	0.10		0.22		0.11	
Number of Loan Deals	1259		287		972	

Panel D: Model Extensions – Sample: Loan deals where borrower issues public securities after the loan						
	Switch CB-IB vs. Stay (1)	Switch CB vs. Stay (2)	Switch CB-IB vs. Stay (3)	Switch CB vs. Stay (4)	Switch CB-IB vs. Stay (5)	Switch CB vs. Stay (6)
<i>Adding YR Fixed Effects</i>						
PRIORCBIBREL	-2.02 ** (-2.51)	-0.07 (-0.12)				
JUNK X			-3.56 **	0.77		
PRIORCBIBREL			(-2.28)	(0.79)		
IGRADE X			-1.36	-0.43		
PRIORCBIBREL			(-1.20)	(-0.41)		
NR X PRIORCBIBREL			-2.11 ** (-2.14)	-0.27 (-0.40)		
LOCAL X					-2.53 ***	0.42
PRIORCBIBREL					(-2.66)	(0.63)
NONLOCAL X					-1.48	-0.90
PRIORCBIBREL					(-1.22)	(-1.10)
YR Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
All Base Model Variables	Yes	Yes	Yes	Yes	Yes	Yes
Log Likelihood	-151.58		-150.13		-150.05	
Pseudo R-squared	0.24		0.24		0.24	
Number of Loan Deals	287		287		287	
<i>Replacing Firm Variables with Ex-Post Firm Variables</i>						
PRIORCBIBREL	-2.10 *** (-2.66)	0.07 (0.11)				
JUNK X			-3.92 **	0.30		
PRIORCBIBREL			(-2.14)	(0.28)		
IGRADE X			-1.10	-0.27		
PRIORCBIBREL			(-1.13)	(-0.28)		
NR X PRIORCBIBREL			-2.22 ** (-2.14)	0.09 (0.12)		
LOCAL X					-2.47 ***	0.81
PRIORCBIBREL					(-2.70)	(1.15)
NONLOCAL X					-1.65 *	-0.96
PRIORCBIBREL					(-1.64)	(-1.19)
LNASSETS _{YR+1}	0.14 (0.46)	-0.29 (-1.39)	0.25 (0.80)	-0.29 (-1.40)	0.09 (0.31)	-0.31 (-1.48)
ROAYR+1	-5.29 (-1.06)	-0.75 (-0.34)	-5.75 (-1.12)	-0.72 (-0.33)	-5.03 (-1.05)	-0.67 (-0.28)
LEVERAGE _{YR+1}	-1.60 (-0.70)	0.11 (0.08)	-1.99 (-0.83)	0.15 (0.11)	-1.64 (-0.72)	0.02 (0.01)
All Base Model Variables (not <i>LNASSETS</i> , <i>ROA</i> , and <i>LEVERAGE</i>)	Yes	Yes	Yes	Yes	Yes	Yes
Log Likelihood	-148.68		-147.46		-146.39	
Pseudo R-squared	0.22		0.23		0.24	
Number of Loan Deals	279		279		279	

Table 5
Probability of Switching Lenders
Commercial Bank – Commercial Bank Mergers

This table presents the results of a probit model, using the 1,259 loan deals from 1997 through 2002 where the borrower has an existing lending relationship at the time of the loan deal with a commercial bank ranked in the top-50 by total domestic commercial & industrial (C&I) loans (ranked as of the end of 1996). The dependent variable is *SWITCHLEND*, which is an indicator variable that equals one if the firm selects any commercial bank that has not provided a loan to the firm between January 1992 and the loan date. The key independent variable is *CBMERGE*, an indicator variable that equals one if the borrower has a relationship with a commercial bank that has merged with another commercial bank (ranked in the top-50 of C&I lenders as of the end of 1996) prior to the loan deal. All variables are explained in detail in Appendix A, under the heading, “Switching Lenders.” Column (1) includes the full sample of loan deals. Column (2) contains loans deals where the firm issues either public debt or public equity between the loan date and June 2004 (*ISSUEAFTLOAN* = 1). Column (3) contains loans deals where the firm does not issue public debt nor issue public equity between the loan date and June 2004 (*ISSUEAFTLOAN* = 0). Column (4) includes loan deals to borrowers that do not have relationships with banks that merge with investment banks during the sample period (the banks are pure commercial banks for January 1992 through December 2002). Panel A provides the results of the base model. Panel B shows differential effects of CB-CB mergers, based on the credit rating of the borrower. Panel C shows differential effects of CB-CB mergers, based on the physical location of the borrower and its prior lenders. Panels B and C use the same firm variables, bank variables, relationship variables, and fixed effects as in the base model (coefficients not reported). Coefficients for industry dummies (*IND*) and year dummies (*YR*) are not reported. Standard errors are White heteroskedastic consistent and clustered at the firm-level and z-scores are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Base Model				
	Full Sample (1)	Issues Public Securities After Loan (2)	Does Not Issue Public Securities After Loan (3)	Lenders are "Pure CB" for 1992-2002 (4)
CBMERGE	-0.01 (-0.06)	0.03 (0.14)	-0.06 (-0.47)	-0.17 (-0.37)
<i>Firm Variables</i>				
LNASSETS	-0.05 (-1.33)	-0.05 (-0.49)	-0.06 (-1.26)	-0.11 (-1.06)
ROA	-0.02 (-0.06)	-1.09 (-0.91)	0.05 (0.16)	-1.90 * (-1.78)
LEVERAGE	0.51 *** (2.83)	-0.29 (-0.56)	0.62 *** (3.25)	0.67 (1.17)
IGRADE	0.15 (0.81)	0.33 (0.95)	0.12 (0.53)	0.32 (0.61)
JUNK	-0.19 (-1.53)	0.23 (0.87)	-0.29 ** (-1.97)	0.08 (0.24)
<i>Bank Variables</i>				
LOANMKTSHR	-4.37 *** (-4.31)	-6.37 *** (-2.67)	-3.73 *** (-3.36)	0.71 (0.09)
LIQUIDITY	-0.61 (-0.37)	2.60 (0.81)	-2.32 (-1.18)	-1.75 (-0.54)
CAPITALRATIO	-3.47 (-1.24)	2.97 (0.55)	-5.01 (-1.45)	-9.93 (-0.81)
<i>Firm-Bank Relationship Variables</i>				
LOCAL	-0.20 ** (-2.15)	-0.13 (-0.59)	-0.22 ** (-2.13)	-0.49 ** (-1.95)
MULTREL	-0.12 (-1.06)	-0.48 ** (-1.93)	-0.05 (-0.36)	-0.06 (-0.08)
LNDURATION	0.08 (0.77)	-0.45 ** (-2.01)	0.23 ** (1.98)	0.07 (0.22)
OTHERIBREL	-0.03 (-0.30)	0.19 (1.00)	-0.04 (-0.44)	0.00 (0.01)
Intercept	1.02 (1.08)	0.89 (0.44)	0.97 (0.81)	2.37 (1.06)
<i>Fixed Effects</i>				
IND	Yes	Yes	Yes	Yes
YR	Yes	Yes	Yes	Yes
Log Likelihood	-674.79	-138.89	-520.60	-108.94
Pseudo R-squared	0.05	0.11	0.06	0.12
Number of Loan Deals	1259	287	972	204

Panel B: Expanded Model – Credit Ratings

	Full Sample (1)	Issues Public Securities After Loan (2)	Does Not Issue Public Securities After Loan (3)	Lenders are “Pure CB” for 1992-2002 (4)
JUNK X CBMERGE	0.02 (0.08)	0.08 (0.19)	-0.01 (-0.04)	0.46 (0.60)
IGRADE X CBMERGE	0.22 (0.95)	0.08 (0.19)	0.32 (0.98)	-0.82 (-1.09)
NR X CBMERGE	-0.05 (-0.45)	-0.01 (-0.03)	-0.12 (-0.87)	-0.20 (-0.40)
All Base Model Variables	Yes	Yes	Yes	Yes
Log Likelihood	-674.15	-138.87	-519.70	-108.19
Pseudo R-squared	0.05	0.11	0.06	0.12
Number of Loan Deals	1259	287	972	204

Panel C: Expanded Model – Local vs. Non-Local Relationships

	Full Sample (1)	Issues Public Securities After Loan (2)	Does Not Issue Public Securities After Loan (3)	Lenders are “Pure CB” for 1992-2002 (4)
LOCAL X CBMERGE	0.06 (0.52)	0.05 (0.16)	0.04 (0.52)	-0.04 (-0.08)
NONLOCAL X CBMERGE	-0.17 (-1.01)	0.01 (0.02)	-0.31 * (-1.63)	-1.16 (-1.23)
All Base Model Variables	Yes	Yes	Yes	Yes
Log Likelihood	-673.92	-138.89	-519.05	-107.91
Pseudo R-squared	0.05	0.11	0.06	0.13
Number of Loan Deals	1259	287	972	204

Table 6
Probability of Selecting Lead Underwriter for Public Debt Issuance

This table presents the results of two logit models of underwriter selection. The data consists of all public, non-convertible debt issues by continuing borrowers after their relationship bank merges with an investment bank through June 2004 (there are 173 issues). For each issue, the issuer is allowed to choose from a set of lead underwriters that is comprised of the firm's lending bank in the continuing relationship, the ten-top ranked debt underwriters from the year prior to the debt issue, and a single underwriter that represents all other underwriters. The top-10 ranked underwriters are determined by the market share of each underwriter in the U.S. public, non-convertible debt market based on total dollars lead underwritten, as reported by SDC. Rankings (and, as a result, the choice of set of underwriters) for investment grade debt issues and junk debt issues are calculated separately. The dependent variable is *SELUND*, which is one if the specified potential underwriter is selected as a lead underwriter on the issuance. The key independent variable is *LENDER*, which is one if the potential underwriter is the issuer's lending bank in the continuing borrowing relationship. All variables are explained in detail in Appendix A, under the heading, "Underwriter Selection." Column (1) presents estimation of the base logit model (equation (2)). For the estimations displayed in columns (2) and (5), interaction terms are created using *JUNK*, which is a dummy variable that equals one if the issue has a Standard and Poor's debt rating of BB, B, CCC, CC, or C, and *IGRADE*, which is a dummy variable that equals one if the issue has a Standard and Poor's debt rating of AAA, AA, A, or BBB. For the estimations displayed in columns (3) and (6), interaction terms are created using *LOCAL (NONLOCAL)*, which is an indicator that equals one if the lending bank in the continuing borrowing relationship has (does not have) a branch in the same state that the borrower is headquartered at the time of issuance. Columns (1) through (3) report estimates of a standard logit model, with standard errors that are White heteroskedastic consistent and clustered for each debt issuance. Columns (4) through (6) report estimates of a conditional logit model, which includes issue fixed effects. Coefficients for industry dummies (*IND*), year dummies (*YR*), and issue fixed effects (*ISSUE*) are not reported. Z-scores are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Logit Model			Conditional Logit Model		
	(1)	(2)	(3)	(4)	(5)	(6)
LENDER	0.42 * (1.92)			0.38 * (1.92)		
JUNK X LENDER		1.32 *** (3.12)			1.25 *** (3.09)	
IGRADE X LENDER		0.18 (0.72)			0.16 (0.68)	
LOCAL X LENDER			0.56 * (1.86)			0.56 ** (2.02)
NONLOCAL X LENDER			0.28 (0.85)			0.21 (0.72)
<i>Underwriter Variables</i>						
DEBTMKTSHR	3.76 *** (3.08)	3.57 *** (2.88)	3.90 *** (3.11)	2.91 *** (2.54)	2.76 ** (2.41)	3.07 *** (2.65)
PRIORUND	1.56 *** (8.31)	1.59 *** (8.53)	1.57 *** (8.31)	1.94 *** (10.27)	1.97 *** (10.40)	1.96 *** (10.30)
<i>Firm Variables</i>						
LNASSETS	-0.01 (-0.17)	-0.01 (-0.17)	-0.01 (-0.17)	N/A	N/A	N/A
ROA	-0.43 (-0.30)	-0.39 (-0.27)	-0.43 (-0.30)	N/A	N/A	N/A
LEVERAGE	0.04 (0.06)	0.04 (0.07)	0.05 (0.09)	N/A	N/A	N/A
IGRADE	-0.41 ** (-2.24)	-0.26 (-1.39)	-0.41 ** (-2.24)	N/A	N/A	N/A
<i>Issuer-Lending Bank Relationship Variables</i>						
LOCAL	-0.00 (-0.01)	-0.01 (-0.04)	-0.04 (-0.21)	N/A	N/A	N/A
MULTREL	-0.17 * (-1.68)	-0.16 * (-1.64)	-0.16 * (-1.66)	N/A	N/A	N/A
LNDURATION	0.21 (1.27)	0.21 (1.22)	0.21 (1.26)	N/A	N/A	N/A
Intercept	-2.29 (-1.58)	-2.39 * (-1.63)	-2.29 (-1.58)	N/A	N/A	N/A
<i>Fixed Effects</i>						
IND	Yes	Yes	Yes	No	No	No
YR	Yes	Yes	Yes	No	No	No
ISSUE	No	No	No	Yes	Yes	Yes
Log Likelihood	-718.38	-715.77	-718.16	-488.10	-485.48	-487.72
Pseudo R-squared	0.10	0.10	0.10	0.14	0.15	0.14
Number of Observations	1965	1965	1965	1965	1965	1965
T-Tests						
JUNK X LENDER – IGRADE X LENDER		1.14 ** (2.31)			1.09 ** (2.36)	
LOCAL X LENDER – NONLOCAL X LENDER			0.28 (0.62)			0.35 (0.88)

Table 7
Estimating Changes in the Yield Spreads of Loan Contracts

This table presents the results of fixed-effect regressions. The sample of loans is to “continuing borrowers.” Continuing borrowers receive loans from a top-50 ranked commercial bank between January 1992 and December 1996 and also borrow from the same bank between January 1997 and December 2002. All variables are explained in detail in Appendix A, under the heading “The Pricing of Loan Contracts.” The dependent variable is *YSPREAD*, the yield spread of the loan. *YSPREAD* is the *DealScan* item called the “all-in spread drawn,” which is defined as the coupon spread over LIBOR plus the annual fee plus the up-front fee (which is divided by the maturity of the loan). Panel A provides estimation results of the base model (equation (3)), which captures the effect of mergers between commercial banks and investment banks. The regressions include *IBMERGE*, an indicator variable that is one at any date after the lender merges with an investment bank. Panel B provides the effect of mergers between any of the top-50 commercial bank lender of commercial & industrial (C&I) loans as of the end of 1996. In the regression, *IBMERGE* is replaced with *CBMERGE*, which is an indicator variable that is one at any date after the lender merges with another commercial bank, where both commercial banks are ranked in the top-50 commercial bank C&I lenders as of the end of 1996. Panel C includes extensions of the base model. First, *CBMERGE* is included. Second, *POST1999*, a dummy variable that equals one if the date of the loan is after December 31, 1999, is included. Third, year dummy variables (*YR*) are included (so *POST1996* and *HHI*, which is the Herfindahl index of domestic C&I loans in the year prior to the loan year, are removed to avoid colinearity). Coefficients for the year dummy variables are not reported. Fourth, the logarithm of the firm’s total assets during the year prior to the loan deal (*LNASSETS*), the firm’s return on assets calculated as the ratio of net income to total assets during the year prior to the loan (*ROA*), and the book debt total assets during the year prior to the loan (*LEVERAGE*) of the borrower, are replaced by corresponding variables that are measured during the year after the loan year (*LNASSETSYR+1*, *ROAYR+1*, and *LEVERAGEYR+1*). For all panels, in column (1), the model is estimated using the full sample of loans. In column (2), the model is estimated using loans to firms that are that are junk rated (*JUNK*) when receiving at least one of their loans, as measured by their Standard and Poor’s long term debt credit rating at the time of their loans. Junk rated borrowers have a credit rating of BB, B, CCC, CC, or C. In column (3), the model is estimated using loans to firms that are that are investment-grade rated (*IGRADE*) when receiving at least one of their loans, as measured by their Standard and Poor’s long term debt credit rating at the time of their loans. Investment-grade borrowers have a credit rating of AAA, AA, A, or BBB. In column (4), the model is estimated using loans between firms and banks where the lending bank has a branch in the same state as the borrower’s headquarters at the time of at least one of the loans (*LOCAL* = 1). In column (5), the model is estimated using loans between firms and banks where the lending bank does not have a branch in the same state as the borrower’s headquarters at the time of at least one of the loans (*LOCAL* = 0). In column (6), the model is estimated using loans to firms that have a single lending relationship during the period from January 1, 1992 to December 31, 2002. A firm has a single relationship when the firm uses the same bank as its lender for all of its loans from top-50 banks (*MULTREL9202* = 0). In column (7), the model is estimated using loans to firms that have multiple lending relationships at some point during the period from January 1, 1992 to December 31, 2002. A firm has multiple relationships when the firm uses more than one top-50 bank for its loans (*MULTREL9202* = 1). Panel B includes column (8), where the model is estimated using loans from banks that do not merge with an investment bank during the sample period. Coefficients for the credit rating dummies (*RATING*), type dummies (*LOANTYPE*), purpose dummies (*LOANPURPOSE*), and firm fixed effects (*FIRM*) are not reported. T-ratios are in parentheses, calculated using White heteroskedastic-consistent standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Base Model - Commercial Bank – Investment Bank Mergers							
	Credit Rating			Relationship Location		Number of Relationships	
	Full Sample (1)	Junk (2)	Inv. Grade (3)	Local (4)	Non-Local (5)	Single (6)	Multiple (7)
IBMERGE	12.69 * (1.89)	40.20 *** (3.13)	-7.49 (-0.83)	23.67 *** (2.62)	-10.79 (-1.22)	19.08 *** (2.34)	-9.26 (-0.85)
<i>Firm Variables</i>							
LNASSETS	-26.05 *** (-4.47)	-12.26 (-1.13)	-18.32 ** (-2.45)	-24.55 *** (-3.34)	-29.83 *** (-3.41)	-30.89 *** (-4.69)	-14.34 (-1.39)
ROA	-29.40 * (-1.63)	-9.97 (-0.33)	-177.98 *** (-3.59)	-43.76 * (-1.69)	-16.55 (-0.88)	-28.34 (-1.24)	-21.41 (-0.92)
LEVERAGE	127.11 *** (6.97)	124.69 *** (3.36)	102.41 *** (3.05)	128.77 *** (5.87)	117.34 *** (3.88)	128.59 *** (6.16)	103.42 *** (2.94)
<i>Bank Variables</i>							
LOANMKTSHR	-209.27 ** (-1.94)	-97.49 (-0.43)	-342.57 ** (-2.15)	-385.76 *** (-2.84)	45.99 (0.26)	-214.67 * (-1.67)	-22.46 (-0.12)
LIQUIDITY	-313.94 *** (-2.89)	-486.32 ** (-2.07)	118.35 (1.01)	-286.37 ** (-2.37)	-325.71 (-1.50)	-207.04 (-1.59)	-717.74 *** (-3.65)
CAPITALRATIO	134.48 (0.85)	203.54 (0.59)	33.97 (0.13)	284.29 * (1.70)	-416.55 (-0.87)	33.25 (0.19)	447.68 (1.41)
<i>Firm-Bank Rel</i>							
LOCAL	-0.13 (-0.01)	48.96 * (1.71)	6.55 (0.67)			13.96 (1.02)	-46.95 * (-1.91)
MULTREL	5.83 (0.72)	15.28 (1.02)	9.99 (0.97)	9.26 (0.86)	-0.04 (-0.00)		
LNDURATION	-3.05 (-1.43)	-4.46 (-1.03)	3.11 (1.46)	-3.70 (-1.41)	-3.23 (-1.08)	-1.18 (-0.48)	-8.71 ** (-2.13)
OTHERIBREL	-21.06 *** (-3.27)	-12.89 (-1.14)	-10.74 (-1.57)	-12.20 (-1.55)	-37.42 *** (-4.02)	-21.66 *** (-2.88)	-29.36 ** (-2.40)
<i>Loan Contract</i>							
LNLENGTH	-12.87 *** (-3.30)	-0.75 (-0.12)	-4.19 (-1.01)	-15.55 *** (-3.28)	-3.58 (-0.68)	-14.79 *** (-3.21)	-7.72 (-1.18)
LNFACTSIZE	-13.55 *** (-4.70)	-6.08 (-1.25)	-7.72 *** (-2.58)	-16.74 *** (-4.76)	-6.48 (-1.58)	-14.73 *** (-4.35)	-9.17 * (-1.73)
<i>Banking Market</i>							
HHI	0.10 * (1.68)	0.11 (0.75)	0.38 *** (4.40)	0.05 (0.61)	0.33 *** (3.19)	0.11 (1.48)	0.01 (0.13)
10YRMIN6MO	8.78 *** (2.59)	9.12 (1.30)	10.05 *** (3.51)	6.66 (1.59)	11.24 ** (2.04)	11.12 *** (2.75)	-3.36 (-0.57)
BAAMINAAA	43.88 ** (2.08)	53.71 (1.10)	20.11 (0.82)	52.76 ** (2.18)	45.54 (1.11)	46.39 * (1.80)	22.96 (0.77)
POST1996	2.89 (0.46)	-10.86 (-1.03)	-15.32 *** (-2.53)	6.62 (0.84)	-3.19 (-0.34)	2.40 (0.32)	5.28 (0.50)
Intercept	802.01 *** (7.03)	556.59 *** (2.83)	566.31 *** (3.02)	820.27 *** (5.71)	721.06 *** (4.00)	906.24 *** (7.17)	834.40 *** (4.76)
<i>Fixed Effects</i>							
FIRM	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RATING	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LOANPURPOSE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LOANTYPE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.78	0.75	0.87	0.77	0.86	0.78	0.84
Number of Loans	2245	599	332	1631	614	1731	514

Panel B: Commercial Bank – Commercial Bank Mergers

	Credit Rating			Relationship Location		Number of Relationships		Type of Lender
	Full Sample (1)	Junk (2)	Inv. Grade (3)	Local (4)	Non-Local (5)	Single (6)	Multiple (7)	“Pure CB” for 92-02 (8)
CBMERGE	0.67 (0.09)	14.49 (1.04)	13.88 (0.98)	2.81 (0.30)	7.88 (0.60)	5.15 (0.58)	-2.97 (-0.21)	12.39 (0.40)
<i>Firm Variables</i>								
LNASSETS	-25.76 *** (-4.44)	-11.88 (-1.09)	-16.78 ** (-2.26)	-24.14 *** (-3.29)	-30.79 *** (-3.54)	-30.57 *** (-4.64)	-14.57 (-1.41)	-21.75 ** (-1.92)
ROA	-29.79 * (-1.66)	-14.70 (-0.50)	-166.08 *** (-3.46)	-42.36 * (-1.61)	-12.30 (-0.63)	-28.18 (-1.21)	-21.19 (-0.89)	-134.42 *** (-3.21)
LEVERAGE	127.01 *** (6.99)	125.05 *** (3.36)	99.45 *** (2.97)	130.13 *** (5.93)	119.34 *** (3.93)	127.81 *** (6.16)	103.13 *** (2.95)	83.57 ** (2.31)
<i>Bank Variables</i>								
LOANMKTSHR	-176.81 (-1.55)	-103.53 (-0.43)	-310.83 (-1.58)	-310.76 ** (-2.24)	-0.83 (-0.00)	-191.01 (-1.40)	-36.06 (-0.18)	-562.31 (-0.91)
LIQUIDITY	-321.14 *** (-2.93)	-454.97 ** (-1.94)	157.68 (1.29)	-299.32 ** (-2.40)	-319.59 (-1.47)	-204.78 (-1.57)	-695.03 *** (-3.63)	-261.96 ** (-2.08)
CAPITALRATIO	166.14 (1.01)	260.82 (0.74)	-42.83 (-0.16)	338.76 ** (1.97)	-515.39 (-0.96)	61.24 (0.33)	434.90 (1.33)	-108.79 (-0.19)
<i>Firm-Bank Rel</i>								
LOCAL	0.97 (0.08)	53.38 * (1.86)	1.99 (0.19)			14.89 (1.07)	-47.33 * (-1.90)	-33.97 (-1.33)
MULTREL	5.94 (0.73)	14.85 (0.99)	6.61 (0.62)	9.42 (0.89)	-0.62 (-0.06)			-12.68 (-0.65)
LNDURATION	-3.15 (-1.48)	-4.38 (-1.00)	3.45 (1.55)	-3.81 (-1.44)	-3.10 (-1.04)	-1.28 (-0.52)	-8.64 ** (-2.10)	7.85 * (1.81)
OTHERIBREL	-21.26 *** (-3.30)	-16.24 (-1.40)	-7.93 (-1.19)	-13.01 * (-1.66)	-37.16 *** (-3.98)	-21.44 *** (-2.84)	-28.61 ** (-2.33)	-20.87 (-1.31)
<i>Loan Contract</i>								
LNLENGTH	-12.77 *** (-3.25)	0.32 (0.05)	-4.41 (-1.03)	-15.47 *** (-3.22)	-3.98 (-0.76)	-14.69 *** (-3.17)	-7.86 (-1.19)	-11.48 * (-1.89)
LNFACEIZE	-13.80 *** (-4.79)	-7.18 (-1.49)	-7.44 ** (-2.51)	-17.18 *** (-4.91)	-6.08 (-1.50)	-15.01 *** (-4.41)	-8.91 * (-1.69)	-17.87 *** (-2.43)
<i>Banking Market</i>								
HHI	0.13 ** (2.04)	0.23 * (1.64)	0.33 *** (4.33)	0.08 (1.02)	0.30 *** (2.84)	0.14 ** (1.94)	0.01 (0.07)	-0.09 (-0.82)
10YRMIN6MO	8.74 *** (2.57)	8.46 (1.18)	10.40 *** (3.66)	6.46 (1.53)	11.28 ** (2.03)	11.03 *** (2.73)	-3.13 (-0.54)	1.68 (0.20)
BAAMINAAA	48.25 ** (2.29)	65.48 (1.29)	6.89 (0.30)	61.65 *** (2.54)	40.07 (0.97)	51.59 ** (2.00)	19.54 (0.67)	94.50 * (1.72)
POST1996	4.15 (0.67)	-14.11 (-1.29)	-15.89 *** (-2.66)	7.93 (1.00)	-5.62 (-0.62)	3.56 (0.47)	4.11 (0.40)	-11.98 (-0.92)
Intercept	789.73 *** (6.97)	528.50 *** (2.64)	537.63 *** (2.86)	798.52 *** (5.61)	743.19 *** (4.05)	893.36 *** (7.12)	844.66 *** (4.82)	1150.98 *** (5.35)
<i>Fixed Effects</i>								
FIRM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RATING	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LOANPURPOSE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LOANTYPE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.78	0.75	0.86	0.77	0.86	0.78	0.84	0.79
Number of Loans	2245	599	332	1631	614	1731	514	442

Panel C: Model Extensions - Commercial Bank – Investment Bank Mergers							
	Credit Rating			Relationship Location		Number of Relationships	
	Full Sample (1)	Junk (2)	Inv. Grade (3)	Local (4)	Non-Local (5)	Single (6)	Multiple (7)
<i>Adding CBMERGE</i>							
IBMERGE	13.66 ** (1.98)	40.23 *** (3.15)	-5.67 (-0.66)	25.62 *** (2.75)	-12.75 (-1.39)	19.49 ** (2.29)	-9.16 (-0.88)
CBMERGE	-3.69 (-0.47)	-0.08 (-0.01)	18.28 (1.33)	-6.27 (-0.65)	11.11 (0.81)	-1.42 (-0.16)	-0.54 (-0.04)
All Base Model Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Adding POST1999</i>							
IBMERGE	11.05 * (1.65)	38.27 *** (3.06)	-7.41 (-0.83)	21.89 ** (2.45)	-12.46 (-1.40)	17.09 ** (2.09)	-9.57 (-0.89)
POST1999	34.94 *** (3.22)	18.77 (0.94)	21.64 * (1.88)	41.58 *** (3.10)	17.19 (0.90)	35.64 *** (2.78)	27.20 (1.49)
All Base Model Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Adding YR Fixed Effects</i>							
IBMERGE	9.24 (1.37)	33.43 *** (2.68)	-14.36 (-1.49)	24.19 *** (2.58)	-16.63 * (-1.85)	13.62 * (1.66)	-7.07 (-0.62)
YR Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All Base Model Variables (not HHI and POST1996)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Replacing Firm Variables with Ex-Post Firm Variables</i>							
IBMERGE	11.75 (1.57)	44.37 *** (3.14)	2.44 (0.33)	27.09 *** (2.68)	-24.00 ** (-2.36)	14.30 (1.52)	0.16 (0.01)
LNASSETS _{YR+1}	-28.11 *** (-4.65)	-6.07 (-0.57)	-11.97 * (-1.80)	-28.24 *** (-3.86)	-24.56 ** (-2.37)	-27.57 *** (-3.82)	-34.91 *** (-3.45)
ROAYR+1	-16.75 (-1.04)	-48.41 (-1.27)	-93.16 ** (-2.50)	-15.90 (-0.82)	19.67 (0.74)	-11.81 (-0.61)	-24.54 (-0.90)
LEVERAGE _{YR+1}	77.38 *** (3.68)	93.29 ** (2.42)	73.93 ** (2.19)	82.91 *** (3.22)	89.47 *** (2.88)	71.00 *** (3.22)	71.08 * (1.77)
All Base Model Variables (not LNASSETS, ROA, and LEVERAGE)	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Figure 1
Loans to Continuing Borrowers and Average Baa-Aaa Credit Spread, by year

This figure shows the number of loans to continuing borrowers and the average Baa-Aaa credit spread, by year. The left vertical axis is the number of loans and the right vertical axis is the credit spread. Bars represent the number of loans while the line gives the credit spread.

