Common Ownership in the Loan Market

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Abstract

Firms and banks increasingly have institutional investors as shareholders in common. These shareholders receive profits from the interest rates set by the bank, and they also benefit from the firm's profits. In this paper, I first illustrate through a simple model the implications of firm and bank common ownership on loans. I then provide new evidence on the rise and extent of common ownership between firms and banks. I show that when a firm and a bank have common ownership, the firm obtains larger loans from the bank at a lower interest rate. I use the growth of index funds as a source of exogenous variation to estimate a plausibly causal link between common ownership and loan terms not confounded by unobserved factors such as strategic investments by active institutional investors. I find that a one standard deviation increase in common ownership leads to a five basis point interest rate decrease and a three percent loan size increase. I show that these loan terms do not go to underperforming firms but to firms that are less likely to receive a credit rating downgrade. I also find that this improvement in loan terms is more pronounced for smaller and unrated firms. This suggests that the benefits of common ownership may result from decreased information frictions and decreased monitoring frictions for the lender if the lender's shareholders also have access to firm returns and firm information.

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1 Introduction

In the context of bank credit granted to firms, the theoretical and empirical literature considers the bank and the firm as separate agents that seek to maximize returns for their respective owners based on their own information sets and incentives. However, institutional investors have consolidated their holdings of both financial and non-financial institutions, and this consolidation has increased the potential for lenders and borrowers to have common ownership. When the lender and the borrower have common ownership, the firm and the bank both seek to maximize revenues for the same investors. Specifically, the bank supplies a loan that the firm uses as an input in its production function. The common owners profit both from the returns on the bank's interest rate and from the firm's profit.

Partial common ownership leads to a quasi-vertically integrated enterprise between the firm and the bank. In this paper I ask three questions: First, what are current levels of common ownership between banks and firms, and how have these levels evolved over time? Second, does common ownership lead to an effect on the loan terms a firm obtains given its common ownership structure with the bank and, if so, through what channels? Third, who profits from loan terms? Are loan terms given to underperforming firms based solely on common ownership — and at the expense of other shareholders? Or, do the loan terms remedy information asymmetries?

I analyze common ownership between banks and firms — a previously overlooked feature — through the lens of the vertical integration literature. Theoretically, one reason to integrate firms is to reduce transaction costs when these are done within firm instead of across separate ones (Coase, 1937; Williamson, 1975; Williamson, 1979). Under common ownership, a loan is an internal transaction between the firm and bank. In this paper, I study the loan terms and the real outcomes that result from loan relationships between firms and banks that have common owners to quantify the transaction cost reductions and its channels.

I outline three trends in institutional investors' holdings of public companies, and I describe how these trends drive firm and bank common ownership. First, the overall holdings of institutional investors have grown ten-fold in the past 20 years in terms of market value. The average fraction of a public company owned by these investors nearly doubled (to almost

60 percent) over the same time period. The second trend is the increasing fraction of firms and banks that are owned by common owners and also have a loan relationship. The percentage of firm shares held by institutional investors that also hold bank shares at the time of loan origination has doubled to nearly 40 percent between 1990 and 2012. Similarly, the percentage of bank shares held by institutional investors that also hold firm shares doubled to nearly 30 percent over the same time span. Third, I find that common owners are persistent in their holdings. Around 90 percent of investors the drive common ownership between firms and banks remain as investors in the subsequent year, both in terms of the number of investors and in terms of the percentage of shares held by these recurring investors.

I use a simple model to posit that when a bank and a firm have common ownership, the firm obtains better financing terms from the bank. This occurs because some bank shareholders not only receive profits through interest rates on the loan extended to the firm but also through the firm's profits. To test this prediction, I estimate regressions to examine how common ownership is associated with interest rate spreads and loan size after controlling for various firm and bank time-variant and time-invariant variables.

I define common ownership at the time of loan origination in three ways. First, I consider a bank and firm as having common ownership if they have at least one institutional investor in common. Second, I construct common ownership by the product of the fraction of firm shares and bank shares held by the common institutional investors. Third, I measure common ownership as the fraction of firm shares held by the common institutional investors.

I find that when a firm and bank have at least one institutional investor in common, the interest rate spread of the loan is eight basis points lower, and the size of the loan is five percentage points larger. A one standard deviation difference in the percentage of common ownership is associated with an interest rate spread that is approximately six basis points lower and a loan size that is one percentage point larger.

While my controls are exhaustive, strategic investment in firms and banks could still bias my estimates. Specifically, when banks and firms are performing well, the bank can offer better loan terms, and the firm can obtain better loan terms. At the same time, more investors will want to invest in both, and this may lead to a spurious correlation between common ownership and better loan terms. To overcome such endogeneity, I use

plausibly exogenous variation in the common ownership driven by institutional investors: the common ownership driven by major index funds. Analogous to Azar et al. (2016), the index funds I focus on are iShares (currently part of BlackRock, previously managed by Barclays Global Investors), Vanguard's index funds, SPDR (managed by State Street Global Advisers), Invesco's PowerShares, and Fidelity's Spartan index funds.

Index fund ownership is a subset of institutional investor ownership; therefore, it is relevant to institutional investor ownership.[1] However, index funds grow — increase their holdings of public firms and banks, in particular — when people invest their savings in them and index funds allocate their investments based on predetermined rules. The common ownership they create is potentially exogenous to firm and bank characteristics that lead to lower loan rates. Specifically, the common ownership they create is less attuned to any strategic component, such as active trading based on institutional investors' distinct and private information about firms and banks.

Using index fund shareholdings as a source of exogenous variation, I find that common ownership between firms and banks leads to lower loan rates and larger loans. A one standard deviation increase in either of the two percentage measures of common ownership leads to an approximate five basis point decrease in loan rate spreads.[2] Regarding loan size, I estimate that a one standard deviation increase in the percentage of common ownership leads to between a two and three percentage points increase, using the intensive measurements of common ownership. In both quantity and pricing, the common ownership structure with the bank allows the firm to obtain better financial flexibility in their loan terms.

I also analyze the intensive margin of common ownership by restricting the sample to loans in which firms and banks have at least some common owners. I do this to ensure my results are not solely driven by the functional form of comparing loans given to firms with no common owners with the bank to those with some common ownership. I show that common ownership also decreases loan rate spreads and increases loan sizes in this restricted sample, and with a larger magnitude. A one standard deviation increase in common ownership leads

[1] Institutional investors may have an active investment and index fund arm, as in the case for Blackrock. In such cases, I use only the shares held by the index fund to construct the instrument.

[2] One cannot estimate the results by using the extensive measure of common ownership if firms and banks share at least one shareholder, since this instrument does not induce enough variation on the extensive margin where a firm and a bank are connected only through index fund investors.

to a 17 basis point decrease in interest rate spreads when I restrict the sample to firms that have some positive amount of common ownership with the lending bank. Similarly, a one standard deviation increase in common ownership leads to an increase between five to ten percentage points in loan size.

The observed better loan terms could be given to underperforming firms because banks overlook firms' flaws solely because they have common owners. This would lead to "sweetheart" deals at the expense of other shareholders. To address whether my results are driven by this effect, I study subsequent firm performance after obtaining the loan. A decrease in performance would be evidence that my results reflect this "sweetheart" deal phenomenon.[3] First, I analyze a firm's evolution in credit ratings to assess its financial stability relative to its ability to meet outstanding debt obligations after obtaining a loan. I find that firms are three percentage points less likely to experience a credit rating downgrade in the year after they obtain a loan when there is a one standard deviation increase in common ownership between the firm and the bank at the time of loan origination.

I also analyze subsequent firm performance based on financial accounting measures. I create separate indicator variables whether the firm increases its profitability and capital expenditures and decreases its employment by more than one percent or sells assets in the year after obtaining a loan from a bank with a common ownership structure. The first two measures capture improvements in firm performance, while the second two measures indicate whether the company suffers a downturn that affects its real activity. I find that firms that have common ownership with the lending bank do not appear to increase profits or capital expenditures one year after obtaining a loan from the lending bank. I do find that these firms are more likely to decrease their workforce and less likely to face the need to sell assets. But, taken together, there is little evidence that firms tend to underperform after obtaining better loan terms due to common ownership with the lending bank.

If underperforming firms do not receive better loan terms, why does common ownership result in better loan terms? Based on the comprehensive literature that documents the importance of asymmetric information and monitoring costs on loan terms, I empirically test

[3]Morck and Nakamura (1999) finds that firms in bank groups are "propped up", seemingly at the expense of other shareholders in Japan.

whether these channels can explain the benefits of common ownership. In particular, smaller and unrated firms that have less public information present larger asymmetric information and monitoring costs. Thus, I decompose my common ownership result by heterogeneity in firm size and credit rating status.

By comparing across firm size, I aim to test two mechanisms. First, I test whether the partial vertical integration between firms and banks could be more relevant for smaller firms that have growth prospects that are potentially more volatile and uncertain. In this case, when the investors who own the bank also have ownership of the firm, this common ownership could operate as a form of collateral, or channel for information flow or monitoring, thereby improving the firm's financing terms in line with information asymmetry models of lending.

Second, I test whether the estimated inverse relationship between common ownership and loan rate spreads is simply due to that fact that larger firms are more established, more well-known, and more prone to indexation. These features of larger firms could lead to a mechanical relationship between common ownership and lower (larger) loan rate spreads (loan sizes). In a similar spirit as focusing on small firms, I analyze the heterogeneity by credit rating status. Banks may find it more difficult to assess the creditworthiness of firms that lack a Standard and Poor's (S&P) public credit rating. Common ownership could alleviate this problem.

I find that when there is a higher percentage of common ownership, smaller firms (defined as firms below the median in assets by year among the firms in my sample) and firms without an S&P rating have a lower rate spread. On average, smaller and unrated firms have a higher interest rate than larger and rated firms because their growth prospects are harder to evaluate. The main effects are as follows: Smaller firms have an approximate 11 bp higher loan rate spread, while firms that have no credit rating have an approximate 70 basis points higher loan rate spread. This increased loan rate spread is attenuated by common ownership. For small firms, a one standard deviation increase in common ownership lowers loan rates by around ten basis points more than for large firms. Similarly, a one standard deviation increase in common ownership lowers loan rates also by around ten basis points more for unrated firms than for rated firms.

Regarding loan size, the effect of common ownership for smaller and unrated firms is

positive but smaller in magnitude compared to the main effect of common ownership. These results suggest that banks and firms are more likely to internalize their common ownership structure when they consider common ownership as a conduit for better information flow or better access to firm returns when setting loan terms.

I conclude my analysis by exploring the relation between the common ownership of each bank in the loan syndicate with the borrowing firm. My previous findings focused on the common ownership between the lead bank in the loan syndicate and the firm. They suggest a firm obtains better loan terms the more common ownership it has with the lead bank. Given the above facts, other banks may not want to join a loan syndicate, because if they did join, their loans would have a lower interest rate, and this would decrease their profits. On the other hand, if the bank that has high common ownership with the firm can alleviate information asymmetries, then other banks may be willing to trade off the associated lower interest rate, and the bank with common ownership would become the lead bank. In line with this latter hypothesis, I find a small but positive association between common ownership and the choice of lead bank. A one standard deviation increase in common ownership leads to a one to two percentage points higher probability that the bank with common ownership is the lead arranger of the loan syndicate.

This paper combines insights from different strands of the literature to provide a novel answer to the question of how common ownership between lenders and borrowers impacts the syndicated loan market. The banking literature has long hypothesized how shocks to lenders or how lenders ability to screen and to monitor influences credit availability.[4]. An underlining feature in each study is that they consider both the bank and the firm as separate agents that interact only through the loan market. In this paper, I will examine how a common ownership relationship between banks and firms impacts loan terms. To the best of my knowledge, I am the first to relax the assumption that banks and firms are separate agents and instead consider them in an empirical setting as agents who maximize rents for a common

[4]The literature has examined many mechanisms that influence screening and monitoring capabilities in the loan market. A partial list of these mechanisms includes borrower bank dependency (Schwert, Forthcoming), geographical proximity (Petersen and Rajan, 2002; Brickley et al., 2003; Degryse and Ongena, 2005; Mian, 2006), and relationship length (Sharpe, 1990; Berger and Udell, 1995; Schenone, 2010; Bharath et al., 2011; Botsch and Vanasco, 2017). The literature has examined various shocks to lenders that can impact lending, including bank capitalization (Bernanke, 1983; Ivashina and Scharfstein, 2010; Chodorow-Reich, 2014) and monetary policy (Kashyap and Stein, 2000; Jiménez et al., 2014)

set of institutional shareholders.[5]

My findings relate to the literature that studies what constitutes firm ownership and the boundary of ownership, since I consider that banks and firms maximize returns for common owners. This literature analyzes how asset ownership defines bargaining power and thus defines the incentives to control corporate decisions and to integrate with other firms (Grossman and Hart, 1986; Hart and Moore, 1990; Whinston, 2003).[6] It has also been proposed theoretically that vertical integration could be particularly valuable for firms, and for society, when both the upstream firm and the downstream firm are monopolies in their respective markets.[7] In this scenario, upstream and downstream firms add their monopoly markup; this is known as the double-marginalization effect. If these two monopoly firms are instead merged, the resulting vertically integrated firm would have higher profits, and the end consumer would pay lower prices (Tirole, 1988). Yet despite the proposed benefits, the empirical evidence on partial or full vertical integration is sparse.

I also contribute to an emerging literature that empirically analyzes the effects of partial common ownership on firm performance. Recent work has established how partial common ownership between firms driven by the growth of institutional investors might increase monopoly power in industries such as airline travel (Azar et al., 2017) and bank deposit products (Azar et al., 2016). The literature has also analyzed how common ownership can impact market behavior between firms through firms' executives pay (Anton et al., 2017). This literature has shown that anti-competitive behavior potentially exists among horizontal firms when they act on behalf of a common underlying set of shareholders. I extend this conceptual framework to test it empirically in the loan market, where the firms owned by common shareholders — the lender and borrower — have a vertical relationship that is now partially integrated through the common shareholders. In my setting, I focus on the enter-

[5]Jiang et al. (2010) is similar, because it examines the effects on syndicated loans when both equity and debt claims of the same firm are owned by non-commercial banking and commercial banking institutions. However, it focuses on direct debt claims held by the institutional investor, while I focus on debt claims through banks with shareholders in common with the firm. Hoshi et al. (1990) analyzes how firms in Japan experience less financial distress when they are part of industrial groups which could include a bank.

[6]See Holmstrom and Roberts (1998) for a comprehensive literature review on the theory of firm boundaries.

[7]In my particular context for this research, the bank is considered the upstream firm the provides a product, a loan, that is purchased by the the downstream borrowing firm.

prises that have a relationship in which the common shareholders can alleviate information asymmetries and obtain rents directly when lower interest rates on the bank side help carry out investment projects on the firm side. This contrasts with previous studies in which common shareholders obtain rents through competing firms systematically changing the prices of their products.[8]

The literature has also analyzed banks that offer favorable terms to firms based on ownership focusing on the personal connections between the firm and bank management. It has been shown that firms with clear political ties obtain better pricing from government banks (Khwaja and Mian, 2005). Similarly, firms owned by bank executives also appear to obtain more favorable loan terms (La Porta et al., 2003). Previous papers have historically analyzed direct common ownership in the United States in the earlier part of the 20th century, when the number of investors and firms was smaller and when bank executives were simultaneously owners or board members of the firms that received the loans from the executives' banks (Kandel et al., 2013; DeLong, 1991). More recently, it has been shown that banks offer more favorable lending terms to firms when their respective executives went to college together or previously worked together (Engelberg et al., 2012; Karolyi, Forthcoming).[9] In this paper, I show how common ownership through institutional investors carries similar implications. Previous research has not yet explored the type of model I present in this paper. This model takes into consideration the underlying common shareholders, and it can explain how a firm can be connected to, and can obtain better financing from, a bank.

To clarify, for the rest of this paper, I refer to firms as borrowers interchangeably. I do the same when referring to banks as lenders. While banks are indeed firms as well, I do not refer to them as such, to avoid confusing the reader, given setting of this paper. In addition, I refer to "firms borrowing from banks" or "banks lending to firms," but this should not be interpreted as referring to the entity that has the most agency in the relationship. The mechanism at work analyzed in this paper is the underlying common ownership between

[8] Acemoglu et al. (2009) analyzes the determinants of full vertical integration empirically across countries focusing on contracting costs and financial development. I focus my analysis in the United States to determine the changes in the internal transfers through loans between partially integrated upstream and downstream firms (i.e., the bank and borrowing firm, respectively).

[9] Kroszner and Strahan (2001) investigate the extent to which bank executives are board members in borrowing firms in the U.S.

firms and banks – not necessarily who borrows from whom or who lends to whom.

The rest of the paper proceeds as follows. Section 2 describes a simple model to motivate the empirical analysis. Section 3 describes the setting and data with an emphasis on showing the growth of institutional investors and its prevalence in driving common ownership between firms and banks that have loan relationships. Section 4 describes the methodology, and Section 5 describes the estimation results. Section 6 presents results on potential mechanisms at work, and Section 7 presents a discussion of the overall results. Section 8 concludes.

2 Conceptual Framework

I motivate my initial set of empirical analyses from a model described in Tirole (2010). In this model, firms have projects that need one unit of investment. For simplicity, they are not endowed with any initial assets. The project in the good state of the world has a return of R, and the project returns nothing in the bad state. There is a probability π that the project succeeds. Hence, the expected value of a firm's project is:

$$E(R) = \pi R.$$

For markets to exist, I assume that $\pi R > 1$. Banks are the only actors that can provide financing for the firm's investment project and they are risk neutral. They obtain a fraction of the total return project, R_b, defined by $R = R_b + R_f$. R_f is defined as the fraction the firms keeps from the overall project returns. As there is perfect competition, banks will lend if:

$$\pi R_b = 1,$$

meaning that the expected returns for the bank is equal to the financing amount they provide. Bank returns can be expressed as the one unit loan, including interest, defined as

$R_b = (1 + r)$. This leads to the interest rate being set as:

$$(1 + r) = \frac{1}{\pi}, \tag{1}$$

which gives the usual relation that the bank charges a higher interest rate as a firm's project is less likely to succeed (interpreted with a lower π).

I now introduce common ownership to the previous setup. With common ownership, there exists a fraction θ of shareholders of the bank that have claims to its profits but also have a claim to the firm's returns where $0 < \theta < 1$. These common owners have a claim of a γ fraction of the firm's returns, as that is the percentage of the firm they own. In turn, there exists a fraction $(1 - \theta)$ of bank shareholders that only receive revenue through the bank and none through the firm's returns. In this new setup, the bank internalizes common ownership by setting its lending rule as:

$$\begin{aligned}
&\pi((1-\theta)(1+r^c) + \theta(1 + r^c + \gamma R_f)) = 1 \Leftrightarrow \\
&\pi((1-\theta)(1+r^c) + \theta(1 + r^c + \gamma(R - (1 + r^c))) = 1,
\end{aligned}$$

where r^c is the interest rate set under common ownership. Rearranging the previous equation leads to the following interest rate:

$$(1 + r^c) = \frac{1}{1 - \theta\gamma}(\frac{1}{\pi} - \theta\gamma R) \tag{2}$$

When there is no common ownership, the expression reduces to Equation (1) as expected. While simple, this model leads to the following hypothesis, which I test empirically once common ownership is introduced to a bank's lending decision:

H1: Under the assumption $\pi R > 1$ for markets to exist, then the interest under common ownership will always be lower with common ownership than with no common ownership: $r^c < r$.

H2: As the percentage of common ownership increases from either the shareholders in common owning more of the firm, γ, or bank, θ, then the interest rate will fall.

This is given by taking the partial derivatives from Equation (2) such that:

$$\frac{\partial(1+r^c)}{\partial\theta} = \frac{(1-\pi R)\gamma}{\pi(1-\theta\gamma)^2} < 0$$
$$\frac{\partial(1+r^c)}{\partial\gamma} = \frac{(1-\pi R)\theta}{\pi(1-\theta\gamma)^2} < 0,$$

since $\pi R > 1$.

Figure 1 plots the relationship between the interest rates charged under no common ownership and the rates charged with common ownership — as measured by $\theta \times \gamma$ — fixing π and R. As can be seen, with no common ownership, the interest rate remains unchanged. However, it is decreasing as $\theta \times \gamma$ — the product of the firm and bank shares held by common shareholders — increases.

As observed in Equation (2), the interest rate under common ownership depends on the total returns of the firm's project, R, as well as the overall probability of success, π. This points to the reason, presented in my empirical section, for the importance of controlling for all possible time-varying variables associated with those characteristics and the importance of introducing a source of variation of common ownership that is exogenous to a firm's project's returns and risk. There is also a scenario in which the interest rate can be negative, given the assumption that banks are risk neutral and place the weight on returns to common owners and bank-only owners solely based on the percentage of the bank each group owns. As we do not observe negative interest rates, this could be fixed by a simple fiduciary constraint that bank shareholders who do not own part of the firm must receive at least some positive return; however, the model's intuition remains the same.

3 Setting and Data

To test the motivating model's hypothesis, my setting is the syndicated corporate loan market, and I focus on the relationship between the bank acting as the lead arranger and the borrowing firm.[10] The main data sources are standard in the literature and include LPC

[10]See Sufi (2007) for a comprehensive discussion of the syndicated corporate loan market and the lead arranger bank's role.

DealScan, Compustat and Thomson Reuters's SEC 13F filings database. I merge information on corporate loans from DealScan with borrower and lender characteristics in the quarter of loan origination from Compustat to construct a sample of firm–bank–loan observations from 2000 to 2012. Thomson Reuters's SEC 13F filings database helps me determine which borrowers and lenders from loans in LPC DealScan have institutional investors in common.

DealScan provides data for syndicated loans made between a single borrower and a syndicate of lenders. DealScan refers to loans as "credit facilities," which can be either a loan with a specific maturity or a revolving line of credit. The measure of loan price — one of the main outcomes in this research paper — is the all-included drawn spread over LIBOR, which is the price that includes fees that a firm would pay if it drew upon 100% of its line of credit (for revolving loans) minus the spread over LIBOR including fees for term loans. The data also contain other loan characteristics such as loan size, another main outcome variable, as well as type, purpose, maturity and covenant presence. These characteristics serve as controls throughout my analysis.

For most of my analysis, I focus on the common ownership relation between the firm and the bank acting as the lead arranger in the syndicated credit facility. As mentioned in previous studies,[11] the bank that acts as the lead arranger has a more active role in originating the loan and monitoring its performance. Hence, I expect common ownership measures between the firm and the lead arranger to be the most relevant when defining its role on loan terms. Throughout most of this paper, I refer to a bank as the one that acts as the lead arrangers for a given loan unless otherwise noted. I define a bank to be a lead arranger if, in the DealScan data, its role is defined as Arranger, Administrative Agent or Agent.

Building upon previous research, I start the data build with the DealScan-Compustat Link from Chava and Roberts (2008). This table matches loan facilities from DealScan with borrower identifiers in Compustat. This allows me to control for firm time-varying performance measures. Following the literature, I exclude loans to financial companies (SIC between 6000 and 6999) from the sample. To obtain bank identifiers to link to firms with a common set of shareholders and to incorporate bank time-varying controls I use the

[11] Schwert (Forthcoming)

DealScan-Compustat Bank Link from Schwert (Forthcoming). It provides a lender link table by hand-matching DealScan lender names with Compustat GVKEYs for all lenders with at least 50 loans or at least $10 billion in loan volume. Using Compustat, I obtain various firm and bank performance measures that could influence loan pricing and are standard in the literature. I also use the SDC Platinum database to control for the firm issuing any public debt or equity during the life of the loan.

Thomson Reuters's database of SEC 13F filings provides data on institutional ownership of banks and firms. All institutions that "exercise investment discretion over $100 million or more" must file a Form 13F every quarter with the SEC that provides information on their holdings of US firms' equity. This data set includes institutional holdings for all firms publicly traded in US stock markets. The Thomson Reuters data identify managers by SEC filing, assigning them a unique manager number. I also use this database to measure index fund ownership from the largest five index funds over time as a potential instrument for overall institutional ownership.

3.1 Construction of Common Ownership Variable

A widespread feature in the syndicated corporate loan market that is overlooked in the literature, and is the main focus of this research paper, is the degree to which firms and banks are connected through having the same underlying shareholders when a loan is originated between them. Combining information from the Thomson Reuters's SEC 13F and DealScan databases, I can determine which firms and banks with a loan relationship have institutional investors in common as major shareholders. Furthermore, I can construct the percentage of firm and bank shares held by common owners.

A main contribution of this paper is to determine and measure the extent to which firms and banks have common ownership. As an extensive metric, I first define firms and banks having a common ownership structure as an indicator variable:

$$\text{Connected}_{i(fbt)} = \mathbf{1}\big\{Investors_{i(bt)} \cap Investors_{i(ft)} \neq \emptyset\big\},$$

where $Investors_{i(bt)}$ is the set of institutional investors that hold shares in bank b originating

loan i at time t. $Investors_{i(ft)}$ represents the equivalent set for shares held in firm f. In other words, the indicator variable turns on when there exists any institutional investor that holds shares in both the bank and firm when the loan originates. This variable is intended to capture on the extensive margin whether a firm and a bank are connected at all through a non-empty intersecting set of shareholders. Related to the motivating model described in Section 2, this is an indicator of when θ and γ are both greater than zero.

As my main intensive measure, I define common ownership as the product of the fraction of firm and bank shares held by institutional investors that are shareholders in both the firm and the bank concurrently at the time of loan origination. These are the empirical analogues to θ and γ described in Section 2. More formally, the firm-side component of this measure is defined as:

$$\text{Firm Common Own}_{i(fbt)} = \frac{\sum_n Shares_{i(nft)} * \mathbf{1}\{n \in Investors_{i(bt)} \cap Investors_{i(ft)}\}}{TotalShares_{i(ft)}},$$

where $Shares_{i(nft)}$ is the number of shares of firm f held by institutional shareholder n at time t for loan i. It is summed in the numerator across all institutional shareholders that hold stakes in the firm and the bank when the loan originates as defined by the indicator variable. The total number of firm shares is in the denominator. Firm Common $\text{Own}_{i(fbt)}$ is a measure intended to capture the extent of institutional investors' vested interest in the borrowing firm when they also have some ownership of the bank that originates the loan. Firm Common $\text{Own}_{i(fbt)}$ is the empirical analogue to γ used in Section 2. I then construct the equivalent measure on the bank side:

$$\text{Bank Common Own}_{i(fbt)} = \frac{\sum_n Shares_{i(nbt)} * \mathbf{1}\{n \in Investors_{i(bt)} \cap Investors_{i(ft)}\}}{TotalShares_{i(bt)}},$$

where $Shares_{i(nbt)}$ is the number of shares held at bank b by institutional shareholder n at time t for loan i. It is summed in the numerator across all institutional shareholders that hold stakes in the firm and the bank when the loan originates, as defined by the indicator variable. The total number of bank shares is in the denominator. Bank Common $\text{Own}_{i(fbt)}$

is the empirical analogue to θ used in Section 2. I then define the second measure as:

$$\text{Firm-Bank Common Own}_{i(fbt)} = \text{Firm Common Own}_{i(fbt)} \times \text{Bank Common Own}_{i(fbt)}.$$

Under the assumptions that shareholders receive all revenue from the firm and bank, the product of Firm Common $\text{Own}_{i(fbt)}$ and Bank Common $\text{Own}_{i(fbt)}$ is intended to stand in empirically for the product of γ and θ previously shown to lower rates on loans when common ownership exists. Broadly speaking, I incorporate common ownership to the bank lending rule through a measure that weighs the fraction of the firm and bank held by common owners. In other words, it will downweigh cases in which a firm is mostly held by institutional investors that have holdings in both the bank and firm when the institutional investors only hold a small percentage on the bank side.

As my third and additional intensive measure, I use only Firm Common $\text{Own}_{i(fbt)}$. This serves as the empirical analogue of setting θ equal to one, which signifies the tacit assumption that common shareholders between the firm and bank own all the bank's shares and only part of the firm's shares. This is equivalent to a thought experiment in which common owners can influence corporate lending decision-making at the bank when it sets loan terms for the firm under common ownership. It provides an upper bound of the common shareholders' bargaining power on the bank side as measured solely through the percentage of shares owned. This measure can also be interpreted as assuming the most relevant variation is the firm-side common ownership to the degree it allows the shareholders to learn about the firm and alleviate information asymmetries when common owners exist.

3.2 Descriptive Statistics

Table 1 reports summary statistics for the sample used for the analysis. I use the DealScan loan observations, in which I can merge financial and ownership information of the lead bank and the firm, thanks to data tables provided by previous studies. I also ensure that the loan-, bank-, and firm-level variables used in the analysis are all nonmissing. This leaves me with a sample that includes 15,467 distinct loan facilities. I show the mean, the standard deviation, and the 25th and 75th percentile for the variables measured when the loan originates.

The average loan size in the sample is about $337 million with around a 4-year maturity. Such loan size represents, on average, close to a fifth of borrowers' total assets. The interest rate spread average is nearly 200 basis points with a standard deviation of 132 basis points. Nearly a fifth of loans are intended for working capital, and a tenth are revolving credit facilities while ten percent are revolving.

The average firm in my sample has a little over $4 billion in assets. The mean of cash holdings that these firms carry is 20 percent of total assets. The relationship length since the time of first origination within my sample time frame is about three years. The banks in my sample are large: on average, they carry over $300 billion in assets. To proxy for bank capitalization, I use the ratio of deposits over total assets, the Tier 1 Capital ratio and the ratio of total nonperforming assets over total assets. The Tier 1 Capital ratio is a measure of assets that banks can quickly redeem over a risk-adjusted measure of its total assets, and it is followed to regulate banks according to the Basel Accord. In my sample, its average is almost ten percent. For the ratio of deposits over total assets, this measure is almost 50 percent.

Regarding common ownership, 60 percent of loans have the case in which the bank and the firm share at least one institutional investor in common at the time of loan origination. The average percentage of firm shares held by institutional investors that also have bank holdings at the time of loan origination is 28 percent. This is the average for the empirical analogue of γ from the model described in Section 2. My main measure of common ownership, the product of firm and bank percentages held by institutional investors in common, is 11 percent. This is the average for the empirical analogue of the product of γ and θ from the model described above. As around 40 percent of loan observations have no common ownership between firms and banks, the 25th percentile for all my common ownership measures is zero.

In the analysis below, I will interpret my estimates based on standard deviation increases for the intensive measures of common ownership. The standard deviation for the product of firm and bank percentages held by institutional investors in common is 15 percent while the standard deviation for the percentage of firm shares held by institutional investors that also have bank holdings is 31 percent.

3.3 Common Ownership Trends

Common ownership between a firm and a bank with a loan relationship has become more likely given the ever-growing presence of institutional investors that hold large and diversified portfolios. On the left axis, Figure 2 shows the market value of the shares owned by institutional investors using the number of shares owned and price per stock at the end of the year as reported in the Thomson Reuters's SEC 13F filings and Compustat databases from 1990 to 2012. I restrict the sample to firms and banks that appear at some point in my DealScan sample. On the right axis, I show the average fraction of a public company's stock that is owned by institutional investors. The growth of institutional investors has been continuous over the time span that I focus on in this study. The growth in the market capitalization of shares that institutional investors own has grown tenfold to over one trillion dollars by 2012. Meanwhile, the average fraction of company shares owned by institutional investors has doubled, to around 60 percent.

This growth of institutional investors in the financial markets has led to a stark increase in common ownership between borrowers and lenders at the time of loan origination. To fix ideas, in Table 2, I show a specific example. In 2012Q1, there was a loan origination between the bank Wells Fargo and the firm PetSmart. For this quarter, I show the top ten institutional investors by the fraction owned of each company. In bold, the investors that appear in common are: Vanguard, Fidelity, State Street, Blackrock and Wellington Management. For both companies considering only the largest ten shareholders, the common owners held over 15 percent of shares. Using the common ownership measures described above, I examine this type of relationship across all investors of the firm and bank. Throughout this paper, I consider that firm and bank decision-makers are well aware of such ownership stakes, as these stakes are economically meaningful. I assume that decision-makers take them into consideration, since their objective is to maximize shareholder value.

I present heatmaps in Figures 3 through 5 to show visual differences in common ownership across time and across firms. In these heatmaps, I show the intensity of common ownership, as measured by Firm-Bank Common $\text{Own}_{i(fbt)}$ ($\theta \times \gamma$ empirical analogue) between two banks — Bank of America and JP Morgan — and 18 firms in 2004Q1 and 2011Q1. These firms

and banks have a loan relationship at some point in the data used for this analysis, although not necessarily in the quarters I show. In Figures 3 and 4, a darker shade in the heatmaps describes a higher common ownership between the bank and firm. There is a wide variation in this percentage for both quarters in the cross-section with some firms and banks having no common ownership. Figure 5 shows how common ownership changed over time between both quarters. A transition from red to blue in the heatmap shows decreases to increases in the common ownership percentage between these particular banks and firms from 2004Q1 to 2011Q1. Most firms and banks intensify their common ownership in the positive direction. This is consistent with an overall growth in institutional investor holdings, on average, across all companies.

While the previous figures and tables portray specific examples, in Figure 6, I show the fraction of firm and bank shares held by common owners. Each fraction is measured at the time of a loan origination between them as reported in the DealScan data. These represent the measures Firm Common $\text{Own}_{i(fbt)}$ and Bank Common $\text{Own}_{i(fbt)}$ described above. There is a continuous rise in common ownership over time. The percentage of firm shares held by common owners is always higher than its bank counterpart. From 1990 to 2012, the common ownership at the time of loan origination for firms, Firm Common $\text{Own}_{i(fbt)}$ (γ empirical analogue), starts around 20 percent, but nearly doubles to 40 percent by the end of this period. Bank common ownership, Bank Common $\text{Own}_{i(fbt)}$ (θ empirical analogue), starts slightly below 20 percent, but rises to almost 30 percent by the end of this period.

This growth in common ownership is driven by institutional investors that are recurring in consecutive years as suggested by Figures 7 and 8. Such recurrence shows that my common ownership measures do not mask large strategic investing swings since investors in both firms and banks do not change their positions extensively and actively. In Figure 7 I plot, for the first quarter in each year, the percentage of common owners that were also common owners at some point in the previous year. Similarly, in Figure 8, I plot the percentage of shares of firms and banks held by common owners. In these figures, I use firm and bank pairs that have a loan relation at some point in my analysis sample.

The pattern in both figures strikingly shows that most investors are likely to keep their investment holdings in any given year. Around 85 percent of a firm's or a bank's common

owners also reported being common owners in the previous year. The percentage is higher in terms of shares held by these investors. Around 90 percent of a firm's or a bank's shares under common ownership are held by shareholders who also reported being common owners in the previous year. There appears to be more variability in the series for banks than for firms, but the overall pattern remains largely the same for both.

In Figure 9, I show a Kaplan–Meier survival plot for investors in firms and banks in which the time variable is quarters. It shows that, overall, investors remain as shareholders in a bank or firm for long periods of time in my sample. For this plot, when the investor stops reporting holding shares in a firm or bank for over one year, I consider it as an exit. The plot shows that nearly 50 percent of investors remain as shareholders of the company over 10 years. The institutional investor survival rate is slightly higher for banks.

3.4 Common Ownership in Financial Returns and Corporate Decision-Making

Throughout the model and the results, I rely on the assumption that banks and firms are well aware of the distribution of shareholders at any given point of time. In addition, I assume that their corporate strategies are attuned to maximizing shareholder revenue considering common owners. Particularly, when the bank lends to firms, they consider the returns of their shareholders that also hold shares of the borrowing firm exactly by the proportion of total shareholders they represent. Or, I assume that common owners are at least able to transmit information that alleviates information asymmetry proportional to their ownership stakes in the firm and bank. However, fallbacks occur when the relation is not concrete between partial ownership in financial returns and corporate decisions, as discussed in O'Brien and Salop (2000). When there is complete common ownership — in my particular context, when one institutional investor owns all the shares of the bank and firm — this relation is straightforward. As investors internalize all returns on the firm and bank side, they could be indifferent about which side it comes from, as long as the joint corporate decision-making of the bank and firm maximizes their overall revenue.

When investors do not fully own the firm and bank, as in the scenarios I analyze, some

shareholders will not fully reap the benefits from both firm and bank returns or act as conduits for information flow. This could lead to more bargaining over corporate control between sets of shareholders who have different incentives. A higher financial interest through stock ownership could be associated with more corporate control. In other cases, different types of shares with voting rights might break down that relationship. For example, those who have large financial interests could lose power over corporate decision-making when they do not own any voting stock. There are also fiduciary obligations on the board of directors to maximize shareholders' returns for all shareholders and not only those who have majority stock. This could decrease the corporate control influence of major shareholders.

Given the data used in this paper, it is difficult to empirically measure the exact difference between asset ownership and corporate control. Specially, it is difficult to measure the degree to which this difference influences a bank's decision to internalize its partial common ownership structure by considering its common owners' access to firm returns or informational channel potential. Instead, to provide insight to this issue, I use Firm Common $\text{Own}_{i(fbt)}$ which is one of the common ownership measures I construct that tacitly assumes that common owners have control over the bank's corporate lending arm or that the information flow about the firm is proportional to the firm shares held by common owners, if any exist. These results can be interpreted as an upper-bound scenario if common owners have a significant power over the bank's decision-making process. In future work, I plan to more precisely disentangle the difference between asset ownership and corporate control under partial common ownership between firms and banks.

4 Methodology

Motivated from the intuition derived from the model discussed in Section 2, I empirically test whether common ownership leads to lower interest rates and larger loan sizes with the following estimating equation:

$$Y_{i(f,b,t)} = \beta_0 + \beta_1 CommonOwnMeasure_{i(fbt)} + \beta_2' X_{i(fbt)} + \beta_3' X_i + \delta_b + \delta_t + \epsilon_{i(fbt)}. \quad (3)$$

The outcome variable $Y_{i(f,b,t)}$ is either the loan rate spread over LIBOR or the log loan size as reported in DealScan for loan i between firm f and bank b at origination time t. The main coefficient of interest, β_1, is on the variable $CommonOwnMeasure_{fbt}$. This variable is one of the three common ownership measures at loan origination defined above: 1) an indicator of whether the firm and bank have one institutional investor in common; 2) Firm-Bank Common Own$_{i(fbt)}$ which is the product between the percentage of firm shares and the percentage of bank shares held by institutional investors in common; and 3) Firm Common Own$_{i(fbt)}$ which is the percentage of firm shares held by institutional investors who also hold bank shares. $X_{i(fbt)}$ is a vector of firm time-varying and invariant variables to control for its performance that can also impact its loan terms such as assets; tangibility; profitability; market capitalization; the number of quarters since the first loan from the bank; credit rating; Tobin's q; and firm, state and industry fixed effects. This vector also includes time-varying bank performance controls such as bank assets and capitalization, as measured by Tier 1 Capital, ratio of deposits over total assets and ratio of non-performing assets over total assets. X_i is a vector of loan controls from Dealscan that contains maturity, loan type, loan purpose and covenant presence. δ_b is a bank fixed effect included in all regressions. δ_t is the vector of time fixed-effects used to control for any aggregate trends. Regressions are clustered at the bank and quarter level.

To track how firms perform after they obtain a loan from a bank with common ownership, I also estimate a linear probability model (LPM) in which the dependent variable, $Y_{i(f,b,t)}$, is a firm outcome measure based on an indicator variable. To assess common ownership's effect on lowering financial distress, I use $Y_{i(f,b,t)}$ as an indicator variable whether the firm receives a credit rating downgrade from S&P. For firm real activity measures, I separately use two indicators of whether the firm increases its profitability and capital expenditures proportional to total assets. To analyze common ownership's effect on lowering firm distress, I also use (as outcome variables) indicators of whether the firm decreases its workforce by more than one percent or sells assets. All these outcomes are measured one year after the firm obtains a credit facility.

4.1 Research Design

To estimate a plausibly causal effect of common ownership on loan terms, I use variation in common ownership driven by index fund ownership of banks and firms. As used by Azar et al. (2016), these index funds are: iShares, Vanguard, SPDR, Invesco's PowerShares, and Fidelity's Spartan. The idea for this research design is as follows. Index funds' ownership changes are not driven by fund managers predicting temporary changes in firms' and banks' investment opportunities or investors' portfolio strategies that could lead to better loans terms or posterior firm and bank performance. As a result, endogeneity stemming from active fund managers' investment strategies that could be related to better loan terms should be less of a concern for the results I obtain using this strategy. Index funds increase their investments in companies when people increase their savings in index funds and allocate their investments based on predetermined rules on the aggregate value of their holdings which I argue is exogenous to firm and bank characteristics that might lead to lower loan rates and larger loans. As firms and banks have different degrees of index fund ownership, their respective growth leads to cross-firm variation in the common ownership induced by such funds.

Formally, for the 2SLS approach, I use the following estimating equations in the first- and second-stage:

$$CommonOwnMeasure_{i(fbt)} = \eta_0 + \eta_1 IndexFundCommonOwnMeasure_{i(fbt)} + \eta_2' X_{i(fbt)} \\ \eta_3' X_i + \delta_b + \delta_t + \xi_{i(fbt)} \tag{4}$$

$$Y_{i(f,b,t)} = \beta_0 + \beta_1 CommonOwnMeasure_{i(fbt)} + \beta_2' X_{i(fbt)} + \beta_3' X_i + \\ \delta_b + \delta_t + \varepsilon_{i(fbt)}. \tag{5}$$

$CommonOwnMeasure_{i(fbt)}$ stands for either Firm-Bank Common Own$_{i(fbt)}$ or Firm Common Own$_{i(fbt)}$ as defined above. For the 2SLS estimation strategy, I use only the two intensive measures of common ownership as the main explanatory variables in separate estimations. I cannot implement this strategy to the extensive measure (the indicator of

whether common owners exist), since the top index funds holdings do not induce variation in creating firm and bank common ownership. For $IndexFundCommonOwnMeasure_{i(fbt)}$, I construct a common ownership measure using only the holdings data from main index funds to serve as instrumental variables. These are equivalent to Firm-Bank Common $\text{Own}_{i(fbt)}$ or Firm Common $\text{Own}_{i(fbt)}$ restricted to using shares held by index funds. Formally, I construct them as:

$$\text{Firm Index Common Own}_{i(fbt)} = \frac{\sum_n Shares_{i(nft)} * \mathbf{1}\{n \in Index_{i(bt)} \cap Index_{i(ft)}\}}{TotalShares_{i(ft)}}$$

$$\text{Bank Index Common Own}_{i(fbt)} = \frac{\sum_n Shares_{i(nbt)} * \mathbf{1}\{n \in Index_{i(bt)} \cap Index_{i(ft)}\}}{TotalShares_{i(bt)}}$$

$$\text{Firm-Bank Index Common Own}_{i(fbt)} =$$
$$\text{Firm Index Common Own}_{i(fbt)} \times \text{Bank Index Common Own}_{i(fbt)}.$$

These measures of index funds–based common ownership are, by definition, a subset of those constructed with all institutional investors. The only difference is that I replace $Investors_{i(bt)}$ and $Investors_{i(ft)}$ with $Index_{i(bt)}$ and $Index_{i(ft)}$, respectively, where the index funds are the five main ones listed above. The numerator for each measure is now summed across index fund holdings when the index fund holds the bank and the firm concurrently instead of across all institutional investors.[12] In the 2SLS estimating equation, Firm-Bank Index Common $\text{Own}_{i(fbt)}$ and Firm Index Common $\text{Own}_{i(fbt)}$ serve as the instruments for Firm-Bank Common $\text{Own}_{i(fbt)}$ and Firm Common $\text{Own}_{i(fbt)}$, respectively.

The underlying reason for using the index fund–induced variation as plausibly exogenous is the same as in Azar et al. (2016), but I construct and apply it differently, given the nature of my setting. In their setting, the main outcomes of interest are the prices faced

[12]Blackrock, State Street, Invesco and Fidelity have other active management funds. For this measure, I use only holdings allocated to their index funds.

by consumers set by firms. They construct generalized and modified Herfindahl–Hirschman Indices of common ownership (GHHI and MHHI, respectively) to measure their impact on these prices charged by firms. These are motivated by O'Brien and Salop (2000) and Bresnahan and Salop (1986) and they are intended to capture market concentration when a set of horizontally competing firms in the market are partially owned by institutional investors who have shares in several of the firms concurrently. As their instrument for GHHI and MHHI, the authors use the sum of the firm market shares weighted by the portion of the firm owned by the five main index funds mentioned above.

In my setting, I always analyze the common ownership between two firms — the bank and the borrowing firm — that have a vertical relation. I do not consider their market power in their respective markets. I focus on how such common ownership impacts loan terms, not the prices set by each firm that consumers face downstream. My constructed common ownership measures are intended to capture the share of the borrowing firm's cash flow rights held by investors relative to their concurrent stake in the bank. The instrument I use in my estimation (i.e., index fund common ownership) is a fraction of the endogenous variable (i.e., overall common ownership) in contrast to how the index fund ownership data are used in Azar et al. (2016).

5 Results

5.1 Baseline Estimates

In Panels A and B of Table 3, I present the reduced form effect of common ownership on loan rate spread and log loan size, respectively. I show the results from the baseline estimation Equation (3) using one of the three measures of common ownership in each column. In the first column, I use the extensive measure of common ownership that indicates whether the firm and the bank share at least one institutional investor at the time of loan origination. In the second column, I use the intensive measure of common ownership, which is the product of the fraction of the firm and the bank held by institutional investors that have shares in both concurrently. In the third and final column, I use the additional intensive measure of

common ownership, which represents only the fraction of the firm owned by institutional investors who also own bank shares. For clarity in the tables, I show the estimates after including all the relevant control variables in the estimating equation, and I suppress the subscripts.

Across the three ways it is measured, common ownership is associated with lower rate spreads and larger loan sizes. When a firm and a bank have at least one institutional investor in common, there is an eight basis point decrease in the loan rate spread. This is about half the magnitude of loan rate spreads explained by the firm and bank being connected through executives, as estimated in Engelberg et al. (2012).[13]

Using Firm-Bank Common Own$_{i(fbt)}$ as the measure of common ownership, there is almost a 42 basis point decline in loan rate spreads, ranging from no common ownership to full common ownership. For easier interpretation in the intensive measures, I show the effect of common ownership on loan rate spreads and log loan size through increases in its standard deviation as well as the point estimate. A one standard deviation increase in Firm-Bank Common Own$_{i(fbt)}$ is associated with around a six basis point decrease in the loan rate spread. Meanwhile, a standard deviation increase in the firm common ownership percentage, Firm Common Own$_{i(fbt)}$, is associated with around a seven basis point decrease in the loan rate spread.

Regarding loan size, I find a positive relationship between common ownership and loan sizes. Loans are around two percentage points larger when a firm and a bank share at least one institutional investor in common. Using the intensive measures of common ownership, there is a about a one percentage point increase in the loan size when there is a one standard deviation increase using either intensive measure.

5.2 2SLS Estimates

I now present results instrumenting for overall common ownership percentage with the index fund common ownership percentage to overcome potential biases that arise from some

[13] In that study, they show that an approximate decrease of around 17 basis points results when one firm executive shares at least one school connection or third-party past professional connection with a bank executive in the syndicate.

strategic investing from institutional investors for separate reasons in banks and firms. Table 4 shows the estimation results for the first-stage, Equation (4), for both intensive common ownership measures. Given that index fund ownership is a subset of overall institutional investor ownership, each of the positive coefficients on the main index fund–based common ownership measures are expected to be, and are, each economically and statistically significant. Also, due to their construction, the index fund-based common ownership measures pass weak instruments tests, with F-stats well above the commonly used threshold of ten. It is important to note that the effect of index-induced common ownership on overall common ownership, after all controls are included, is not necessarily 1:1. This result could be due to other institutional investors who follow the index fund trading strategies, and their effect is also absorbed by the instrument.

Panels A and B of Table 5 show the 2SLS estimates using Equations 4 and 5, in which the outcomes are loan rate spreads and log loan size, respectively. As index funds' common ownership does not induce much variation on the extensive margin, I focus on the intensive measures when estimating the 2SLS equation. For comparison, I include the results from the baseline OLS estimates next to their equivalent 2SLS estimates.

In Panel A of Table 5, the first two columns show the estimates using the common ownership intensive measure (Firm-Bank Common Own$_{i(fbt)}$) derived from the product of the firm and bank shares percentage held by institutional investors who hold shares in the bank and the firm at the same time when the loan is originated. Using the variation induced by index funds, a one standard deviation increase in Firm-Bank Common Own$_{i(fbt)}$ leads to around a five basis point decrease in the loan rate spread, as denoted in Column (2). As noted before, such a change in Firm-Bank Common Own$_{i(fbt)}$ could be driven by either changes in the firm's or bank's percentage of common ownership holdings by institutional investors. This measure is agnostic as to which side is more relevant. Instead, I focus on overall changes in firm and bank common ownership no matter the specific source. In Columns (3) and (4), I show the OLS and 2SLS estimates using the common ownership measure of the percentage of firm shares owned by investors who hold the firm and the bank concurrently, defined as Firm Common Own$_{i(fbt)}$. In this case, a one standard deviation increase in the common ownership measure leads to a decrease of just below five basis points in the loan spread.

In both sets of estimations using intensive measures, it is worth noting that the magnitude of the effect of common ownership on loan rate spreads is reduced using 2SLS estimates. This is expected since the OLS estimates are potentially downward biased by picking up unobserved time-varying firm and bank performance measures. More specifically, I use my 2SLS strategy to attempt to control with for institutional investors increasing their shareholdings of the firm and bank because of better performance for separate reasons. This would lead to common ownership between them and this would be endogenously related to lower loan rate spreads.

Regarding loan size, Panel B of Table 5 shows the estimates from the 2SLS estimation in which the loan amount in logs is the outcome variable. The relationship between loan amount and common ownership percentages remains positive and statistically significant throughout the OLS and 2SLS specifications. Using the 2SLS coefficients, a one standard deviation increase in common ownership is associated with an increase of around two percent in loan size using either of the common ownership measures on the intensive margin. Such effects are slightly larger than the OLS estimates.

Some previous studies have developed measures to estimate the connections between firm executives and bank executives and to estimate a firm executives overall relationship with the lending bank. While the effects that I estimate are smaller by comparison, these effects still account for a comparable fraction of the effect on loan rate spreads and loan sizes estimated by these prior studies. Engelberg et al. (2012), in their most stringent specification, find that increasing the number of firm and bank connections by 1.5 (the average in their sample) leads to an approximate eight basis point decrease in loan rate spreads and an approximate five percentage point increase in loan sizes. The effects that I estimate for increasing common ownership on loan rate spreads and size are smaller, but they are more than half the magnitude of their findings. In Karolyi (Forthcoming), the author shows that a one standard deviation increase in his measure of firm executive and bank relationship is associated with a decrease of around 18 basis points in loan rate spreads and an increase of 11 percentage points in loan size.[14] Compared to his estimates, mine are slightly below half

[14]The measure is constructed by considering the duration, frequency, recentness and size of loan deals between firm executives and bank pairs.

in magnitude for loan rate spreads and above a third for loan size.

5.3 Positive Common Ownership

As noted previously, a large fraction — 40 percent — of my loan sample has no common ownership between the firm and the bank. In this section, I restrict the sample to observations that have some positive common ownership according to my constructed measures. I do this to ensure that previous results are not driven completely by functional form by comparing firms and banks that have no common ownership to those that have some common ownership. In Panels A and B of Table 6, I report OLS and 2SLS results as in the previous section but only using loans in which banks and firms have positive common ownership.

When restricted to the positive common ownership sample, the inverse relationship between interest rate spreads and common ownership still holds, and even increases in magnitude as shown in Panel A of Table 6. A one standard deviation increase in the product of firm and bank common ownership leads to a decrease of around 18 basis points in loan rate spreads. This increase is about three times larger than the estimates that include loan observations in which there is no common ownership. Similarly, a one standard deviation increase in the firm common ownership percentage leads to a decrease of around 13 basis points in loan rate spreads.

In Panel B of Table 6, I show the estimates from the OLS and 2SLS regressions using log loan size as the outcome and restricting the sample as before (i.e. when positive common ownership exists). A one standard deviation increase in the product of firm and bank common ownership leads to a loan size that is approximately ten percentage points larger. Similarly, a one standard deviation increase in firm common ownership leads to increases in loan size of about five percentage points.

Overall, the results in this section suggest that common ownership still impacts loan terms even when the comparison is made only between firms and banks that have some degree of common ownership. In addition, the effects on loan rate spreads and loan size restricted to this sample are larger than the estimates that use the full sample, and the effects are similar in magnitude to the effects of firm executive personal relationships with the lending bank, as constructed in prior literature and as described above.

5.4 Financial Distress

In the remainder of this section, I examine firm outcomes after the firm obtains a loan from a bank that is potentially under a common ownership structure. Previous results show that common ownership leads to a lower loan rate spread and a larger loan. I now analyze whether such loan terms are granted to firms that subsequently exhibit worse outcomes after the loan is originated. In such cases, these loans could be considered as lenient deals to firms that have common owners with the lending bank — deals that are made at the expense of other bank shareholders that do not have claims to the firm's cash flow. On the other hand, if firms do not necessarily underperform after the origination of the loan, this would suggest that the lending bank has better financial flexibility because common ownership provides a channel to overcome adverse selection problems and to monitor or access firm returns.

Unfortunately, the loan data source does not track loan performance over time, so it does not allow for direct observation of whether default rates differ depending on the common ownership between the firm and bank. Therefore, I examine outcomes at the firm level to analyze posterior financial stability performance. In this regard, one important measure that shareholders should care about is avoiding financial distress, which is broadly related to a firm avoiding defaulting on loans. Firm and bank shareholders would prefer that better loan terms are granted to a firm that avoids such a situation, if the terms are not granted as sweetheart deals to underperforming firms.

In Panel A of Table 7, I analyze the effect of loan common ownership on firms that avoid financial distress through an LPM regression in which the outcome is an indicator variable whether the firm received a credit downgrade in the year after the firm obtained a loan (e.g., BBB to BB or below). The results suggest that firms with larger bank common ownership at the time of loan origination are less likely to undergo financial distress the year after loan origination. A one standard deviation increase in either common ownership percentage leads to about a two percent decrease in the probability that the firm will receive an S&P credit downgrade in the year after it obtains a loan. This decrease accounts for an approximate quarter to a half lower probability of receiving an S&P credit downgrade compared to the observed mean in the sample (seven percent).

5.5 Real Activity Outcomes

To assess overall firm performance, I also analyze whether firm real activity measures worsen after obtaining such a loan. I construct these real activity measures from Compustat variables that, albeit noisy, can offer insight into firms' overall performance. I create indicator variables related to profitability, capital expenditures, asset sales and employment. One set of indicator variables intends to measure improvements related to balance sheet items and investment. The first variable indicated whether the firm increases its profitability and the second variable indicated whether the firm increases its capital expenditures in the year after the firm obtained a loan. Both profitability and capital expenditures are relative to total assets. To measure whether firms face difficulties that affect its workforce or assets, I create indicator variables whther the firm is forced to lay off over one percent of its workforce or the firm must sell assets in the year after it obtains a loan.

In Panels B through E of Table 7 show the results estimating the 2SLS regressions as described in Equations (4) and (5). The outcome variable is now one of the four firm real activity indicator variables. The reported coefficients are LPM estimates as the outcome variable is an indicator in all cases.

I find that, across the real outcome measures I construct, firm performance does not appear to worsen after the firm obtains a loan related to bank common ownership. As shown in Panel B of Table 7, my intensive measures of common ownership appear to lead to a higher chance of increasing profitability in the year after obtaining a loan when using 2SLS estimates but the effect is not statistically significant. The pattern is similar with capital expenditures. Regarding employment, a one standard deviation increase in common ownership between the firm and bank leads to around a four to seven percentage point increase in the likelihood that a firm will have employment layoffs of more than one percent compared to the previous year. This is shown in Panel D of Table 7 and the effect is statistically significant for 2SLS estimates using either one of the intensive measures of common ownership. Using my fourth measure of real activity performance, I find that when there is a one standard deviation increase in common ownership using either intensive measure, firms are about three percentage points less likely to be forced to sell assets in the year after it obtains a loan.

This effect is statistically significant at the ten percent level when using the firm common ownership measure.

Overall, I observe no significant signs of firm underperformance in the year after obtaining a loan. While not statistically significant, the coefficients estimated directionally point to firms increasing their profitability and capital expenditures, and lowering their need to sell assets. On the other hand, I observe a statistically significant increase in the likelihood that firms will undergo layoffs but also a decrease in the likelihood they will undergo financial distress by receiving a credit downgrade by S&P. Most relevant to my analysis in these sections, I do not observe overall deteriorating firm performance. This indicates, at the very least, that the favorable loan terms granted by the bank are not lenient or intended as sweetheart deals to firms due only to common ownership to firms that ex post perform worse.

6 Potential Mechanisms

In this section, I analyze how common ownership can lead to better loan terms that are not necessarily sweetheart deals based on heterogeneity in firm and loan syndicate characteristics. Such an exercise aims to shed light on the dynamics that enable common ownership to lower loan rate spreads and increase loan sizes.

6.1 Firm Size

I observe an inverse (positive) relationship between loan rate spreads (loan size) and common ownership. One reason for this could be that larger firms are more likely to have institutional investors and index funds as shareholders. Since larger firms are more established and older they are associated with having larger loans and with lower rate spreads. Such an effect could hold through unobserved variables that are not detected by my set of observable variables used as controls throughout the regressions. On the other hand, smaller firms potentially have more volatile and uncertain growth prospects and common ownership may act as a channel to alleviate information asymmetry concerns or to ensure that some of the bank shareholders will have access to the firm's cash flow even if this is not explicit in the

loan contract. Common ownership could then improve financial flexibility on loan terms for smaller firms.

To distinguish how the effect of common ownership differs by firm size, I create an indicator of whether the firm is small, defined as the firm being below the asset size median by year for firms in the analysis sample. I also interact this variable with the intensive common ownership measures defined above (Firm-Bank Common $\text{Own}_{i(fbt)}$ and Firm Common $\text{Own}_{i(fbt)}$) to measure the additional effect of common ownership for small firms. I add the small firm indicator and its interaction with my common ownership measures to the 2SLS estimation described by Equations (4) and (5). As I now have an additional endogenous variable, I construct the equivalent interaction between the small firm indicator and my index-based common ownership measures that serve as my instruments. As in previous tables, I show the OLS estimate next to its 2SLS estimate using the index fund common ownership as an instrument for overall common ownership.

Table 8 shows the regression results where loan rate spreads is the outcome variable. I find that, on average, small firms obtain a higher interest rate, which is consistent with the increased difficulty in assessing their growth prospects. Depending on the specification, such an increase is around ten basis points. However, the interest rate spread is reduced when common ownership is considered. A one standard deviation increase in the percentage of common ownership decreases the loan rate spread by around 11 basis points for small firms when using the common ownership as defined by the firm- and bank-side percentages. The same effect is around an eight basis point decrease when using the common ownership measure as defined only by the percentage of firm shares held by institutional investors in common with the bank. When combined with the baseline common ownership effect, loan rates decrease overall for small firms when there is a one standard deviation increase in common ownership.

Table 9 shows the regression results where log loan size is the outcome variable. In this case, the additional effect of the small firm indicator interaction with common ownership measures is smaller than the baseline effect for large firms. This result is statistically insignificant, but still positive.

A caveat to both sets of results is that the 2SLS estimates appear to be underpowered

to have statistical significance as I have two endogenous variables with two instruments but the direction is consistent.

6.2 Credit Rating

Beyond firm size, another measure of uncertainty in assessing a firm's creditworthiness is whether the firm has a public credit rating by S&P at the time of loan origination. Credit ratings are meant to show the firm's repayment capacity and the firm's access to public debt markets. Common ownership by institutional shareholders may help alleviate the uncertainty in a firm's creditworthiness assessment, because some shareholders will obtain returns from the firm regardless of loan performance, or because some shareholders can act as conduits to relay knowledge that alleviates information asymmetries between the firm and the bank. Such mechanisms can help a firm access financing when their creditworthiness signal is not verified by a third party such as S&P.

Table 10 shows the effect of common ownership by credit rating status on loan rate spreads. I add an indicator of whether a firm does not have an S&P credit rating at the time of loan origination, defined as No Rating. To analyze its effect with common ownership, I follow the same procedure described in the previous section, except I replace the small firm indicator with a variable that indicates the firm has no S&P credit rating.

I find that, on average, firms with no rating have a significantly higher loan rate by around 70 basis points. This is consistent with their creditworthiness being harder to evaluate and priced into the loan rate. However, common ownership percentages significantly lower the rate spread they face. A one standard deviation increase in the common ownership percentage leads to an additional decrease of around 15 basis points in loan rate spreads for firms with no credit rating, depending on the common ownership measure and estimation strategy used. The baseline common ownership effect for firms that have a credit rating is smaller and closer to a three basis point decrease.

Table 11 shows the results from the same specification with log loan size as the outcome variable. Similar to the results by firm size, the additional effect of the unrated firm indicator interaction with common ownership measures on loan size is smaller in most specifications than the baseline effect for large firms. The effect is statistically insignificant, yet remains

positive.

6.3 Bank Participants in the Syndicated Loan Market

Until now I have focused on analyzing the common ownership between the firm and the lead bank in the loan syndicate. I did this under the assumption that the common ownership structure with the lead bank is the most relevant, as the lead bank is the one in charge of the originating and monitoring process. If other banks are aware of the inverse relationship between a lead bank's common ownership with the firm and the interest rate charged, they might avoid participating in a syndicated loan with such a lead bank, because this relationship would lower their profits. On the other hand, bank participants could benefit from the lead bank having common ownership with the firm, because this common ownership might alleviate information asymmetries and might not simply be a sweetheart deal, even if common ownership does lead to a lower loan rate and thus potentially lower profits.

To test how common ownership impacts the composition of the loan syndicate, I perform two analyses. First, I create an indicator variable for whether the bank acts as the lead arranger. I then pool all the banks that participate in the syndicated loan and their respective common ownership measures with the firm to estimate an LPM in which the outcome is an indicator for the lead arranger bank. This intends to measure the effect of common ownership on the probability of a bank being the lead arranger. A positive relationship would suggest that a bank obtains lead arranger status in the syndicated facility at least partially due to the benefits it brings due to firm common ownership, even if this common ownership does lead to a lower interest rate.

In my second analysis, I use the number of banks in the syndicated loan — a control variable in previous loan terms regressions — as an outcome to assess whether more banks join the deal as participants when the lead bank arranger has more common ownership with the borrowing firm. In this estimation, I use the same 2SLS setup as described by Equations (4) and (5). If more banks join as participants when there is a higher common ownership between the lead bank and firm, this suggests that the participating banks also find a benefit from the lead arranger having a such common ownership structure with the firm, even at the expense of a lower interest rate.

I find a small but positive association between a bank's common ownership with the firm and the probability that it is selected as the lead arranger in the deal. Table 12 reports the regression estimates when the outcome variable is an indicator of whether the bank is the lead arranger and when the main explanatory variables are the common ownership measures described above across all banks participating in the syndicated loan. A one standard deviation increase in either common ownership measure appears to be associated with an increase of one percentage point in the probability that the bank is the lead arranger in the deal, although I do lose precision with the 2SLS estimates.

In Table 13, I find that higher common ownership between the lead arranger bank in the syndicated loan deal leads to a higher number of bank participants in the deal. This suggests that more banks join the syndicate in this scenario, as they benefit indirectly from the lead arranger bank's common ownership with the firm. For the 2SLS estimates, a one standard deviation increase in either measure of common ownership leads to an approximate increase of half a bank in the total number of bank participants in the deal. This effect is about a tenth increase from the overall mean observed number of banks (5.37) in syndicated loans.

7 Discussion

I have shown that under a common ownership structure, firms obtain better loan terms from banks, and such loans are not simply sweetheart deals. Among the potential mechanisms at work are common owners alleviating information asymmetries and banks internalizing firm returns through common owners. This motivates an analysis of whether firm and bank partial vertical integration can be beneficial for both companies and for society at large. Raskovich (2008) discusses in detail the potential benefits and pitfalls of a bank and firm completely vertically integrating. I contextualize my results motivated from such discussion.

Raskovich (2008) posits that among the benefits from integrating banks and firms include: 1) eliminating double-marginalization when the bank and firm have market power in their respective markets, 2) reducing transaction costs, and 3) lowering monitoring costs. As described above, these could potentially all be at work in my context. Raskovich (2008) notes that vertically integrating firms and banks may lead to reduced transaction costs for

the firm, as integrated firms benefit from lower payment processing fees, which are usually charged by banks. Transaction costs could also be reduced on the consumer side through firms and banks offering one-stop-shop financial and retail services. Closer to my setting, through full vertical integration, banks gain more information on the performance of the borrowing firm, since the bank is the firm's sole owner and thus continuously observes the firm's inflows and outflows.[15] In addition, banks might have a potentially stronger incentive to monitor, and a lower monitoring cost, under full vertical integration. Banks will oversee all the firm's distress costs when the firm defaults on a loan and not just on the loan itself, making the incentive to monitor stronger.

While Raskovich (2008) focuses on the potential benefits of fully vertically integrating firms and banks, these factors could also be relevant under partial common ownership through institutional investors as in my setting. Common owners can act as conduits of better information from the firm to the bank to the degree they are known by bank management. Given the large stakes these institutional investors have in both firms and banks, I believe this is a reasonable assumption. The reduction in transaction costs could be interpreted as the effect I find in which banks offer better loans terms to the firm and the loan becomes an internal transaction between partially commonly owned enterprises. Especially to the degree banks internalize the returns common owners will obtain from the firm's cash flow and the incentive to monitor to avoid distress costs for common owners.

This paper sheds little light if common ownership helps overcome double-marginalization since I do not analyze the market power that firms and banks have in their respective markets. I do find lower prices and higher quantity on the input offered by the bank or upstream firm to the borrowing or downstream firm in the form of a loan, as predicted when firms vertically integrate. However, I do not examine whether this has an effect on prices and on the quantity offered by firms to the end consumer. Such an examination is required in order to test whether double-marginalization is hampered by partial common ownership. This is also a question I aim to address in future research in this partial common ownership setting, not only among firms and banks, but also between other firms that have

[15] In a setting similar to mine, see Ivashina and Sun (2011) for an analysis on the information flow from a bank being the loan provider for the firm to its equity position on the firm.

supplier-distributor relationships or supplier-producer relationships.

Three major concerns arise from firms and banks partially vertically integrating: 1) foreclosure of competition, 2) increased regulation costs, and 3) weakened financial system stability. As described in my motivating model, a bank under partial common ownership with a firm has more incentive to reduce interest rates on a loan to that firm compared to a bank that has less common ownership. The evidence I present suggests that firms obtain better loan terms from a bank with common owners, giving it a competitive advantage margin. But, given the syndicated loan structure and bank participation, the potential pitfall of shutting down bank competition is apparently not a major concern at the moment.

The second and third concerns are interrelated and are beyond the scope of this paper; however, they are worth discussing broadly. At a micro-level, it appears that firms obtain better loan terms, which helps them to perform marginally better after obtaining the loan — or at the very least — they do not underperform after obtaining the loan. However, further integration of firms and the banking industry through common ownership may make it more difficult for regulators to assess overall risk in the financial system. If we are to determine the overall benefits to society from the observed increase in the partial vertical integration of firms and banks, it is crucial to analyze the tradeoff between the potential efficiency gains from partial common ownership driven through institutional investors and the increase in financial systemic risk. I hope to contribute to this area of research in the future.

8 Conclusion

The ever-growing presence of institutional investors in financial markets has led to an increase in partial common ownership between firms and banks that have loan relationships. Common owners have claims to the returns on the interest rates that banks charge as well as, they have claims to the returns from the firms' projects, and they can also provide a channel to overcome information asymmetries. On the other hand, this relationship could also lead to lenient loans to the firm, carrying favor to the common owners at the expense of the shareholders that do not have common ownership of the firm.

This research shows that common ownership between banks and firms matters in the

context of the syndicated corporate loan market. Common ownership between the lead arranger bank and the firm elicits lower interest rates and larger loans. To assess the effect of common ownership, I construct measures for the extensive and intensive margin, based on the fraction of the firm and the fraction of the bank held in common by shareholders at the time of a loan origination. I use plausibly exogenous variation from index fund-induced common ownership to measure its effect orthogonal to strategic investment that could be associated with better loan terms. A one standard deviation increase in my intensive measures of common ownership leads to a decrease of around five basis points in loan rate spreads and an increase of three percentage points in loan sizes. These loans do not appear to be "sweetheart" deals, as these firms do not subsequently underperform and are less likely to receive a credit downgrade in the year after they obtain the loan.

I find evidence that common ownership alleviates information asymmetries. In particular, common ownership improves loan terms for smaller and unrated firms that could have more difficulties signaling their creditworthiness. In addition, there is a positive association between a bank's common ownership with a firm and that bank being the lead arranger in the syndicated loan. Loans in which the lead arranger has a higher common ownership with the firm are also more likely to have more bank participants. These latter two effects occur even if such loans are associated with lower loan rates and hence lower profits to bank participants. These effects suggest that bank participants find value from the lead bank having a common ownership structure with the firm that could come from reducing information asymmetries.

These findings provide new insights into the impacts that the growth of institutional investors has on the loan market by expanding common ownership. Prior literature has found that institutional investors may hinder price discovery when they follow passive strategies or they may hinder competition when they partially own multiple firms that horizontally compete in a market. In my setting, which focuses on vertical relationships, firms can obtain better loan terms from banks under a common ownership structure, and not at the expense of other bank shareholders or banks that participate in the syndicated loan.

Understanding if such efficiency gains are prevalent across other firm vertical relationships when there is common ownership through institutional investors is a promising area for future

research. More broadly, incorporating these effects of institutional investors when they own firms with vertical relationships to their impact across other markets can provide guidance to policymakers. An improved understanding of these phenomena will help establish their overall benefit to the finance industry and to society.

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Figure 1: **Relationship between Common Ownership and Interest Rates**. This graph shows the Interest Rate under two scenarios fixing other parameters in the model: no common ownership and with common ownership. $\theta\gamma$ is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank concurrently.

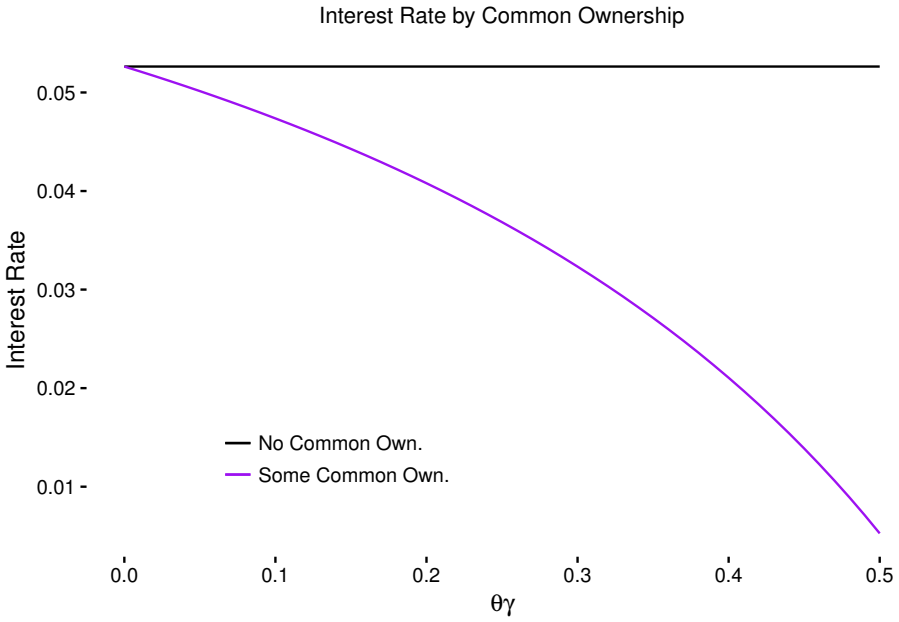

Figure 2: **Market Value of and Overall Percent of Shares held by Institutional Investors**. This figure shows on the left axis the market value of shares held by institutional investors of firms that appear at any point in DealScan. On the right axis, it shows the average fraction of a public firm owned by institutional investors.

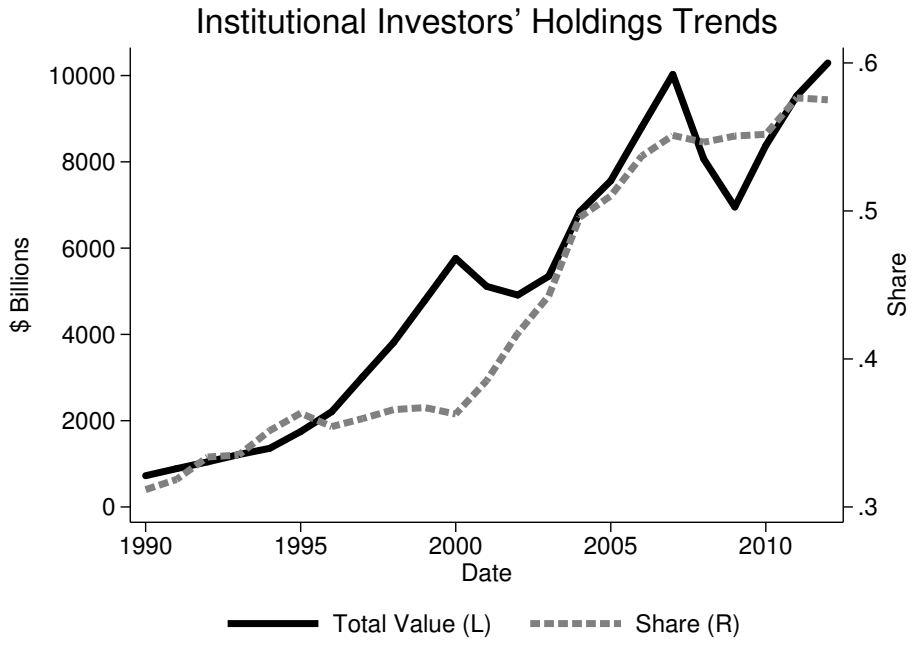

Figure 3: **Heatmap: Percent Common Ownership between Firm and Banks**. This figure shows the common ownership percentage between a sample of firms and two banks as of 2004Q1. $\theta\gamma$ is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank concurrently. The darker shade in the heatmap denotes higher levels of common ownership.

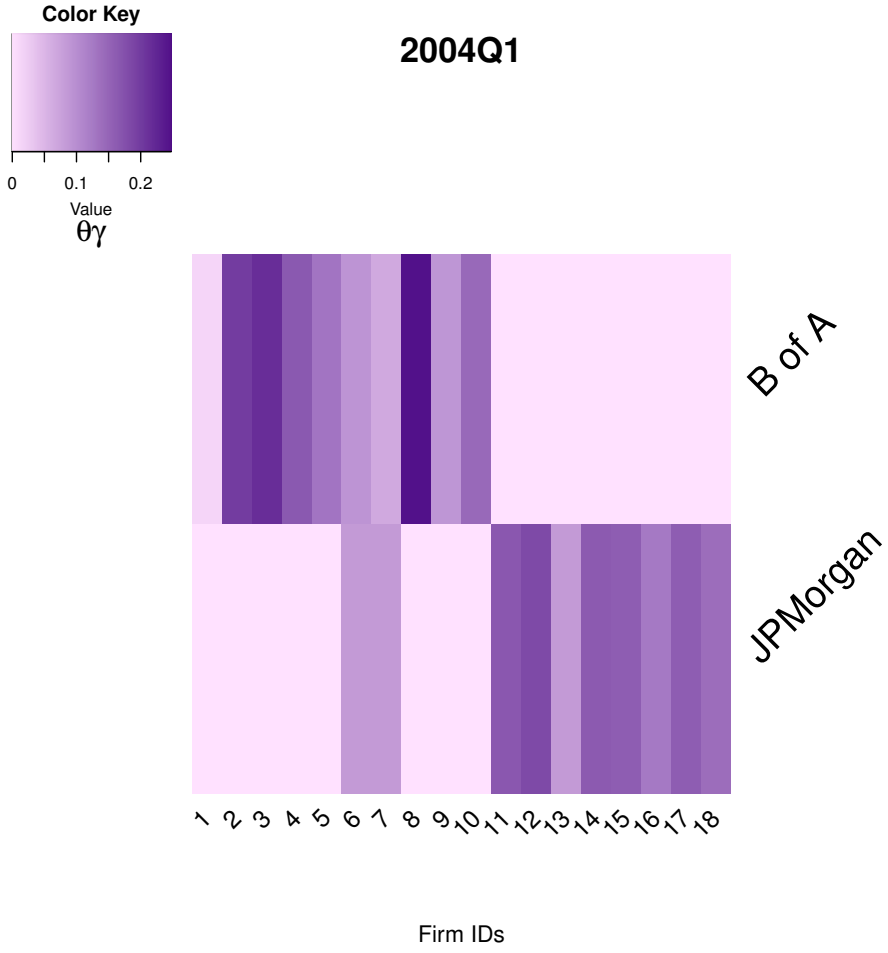

Figure 4: **Heatmap: Percent Common Ownership between Firm and Banks**. This figure shows the common ownership percentage between a sample of firms and two banks as of 2011Q1. $\theta\gamma$ is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank concurrently. The darker shade in the heatmap denotes higher levels of common ownership.

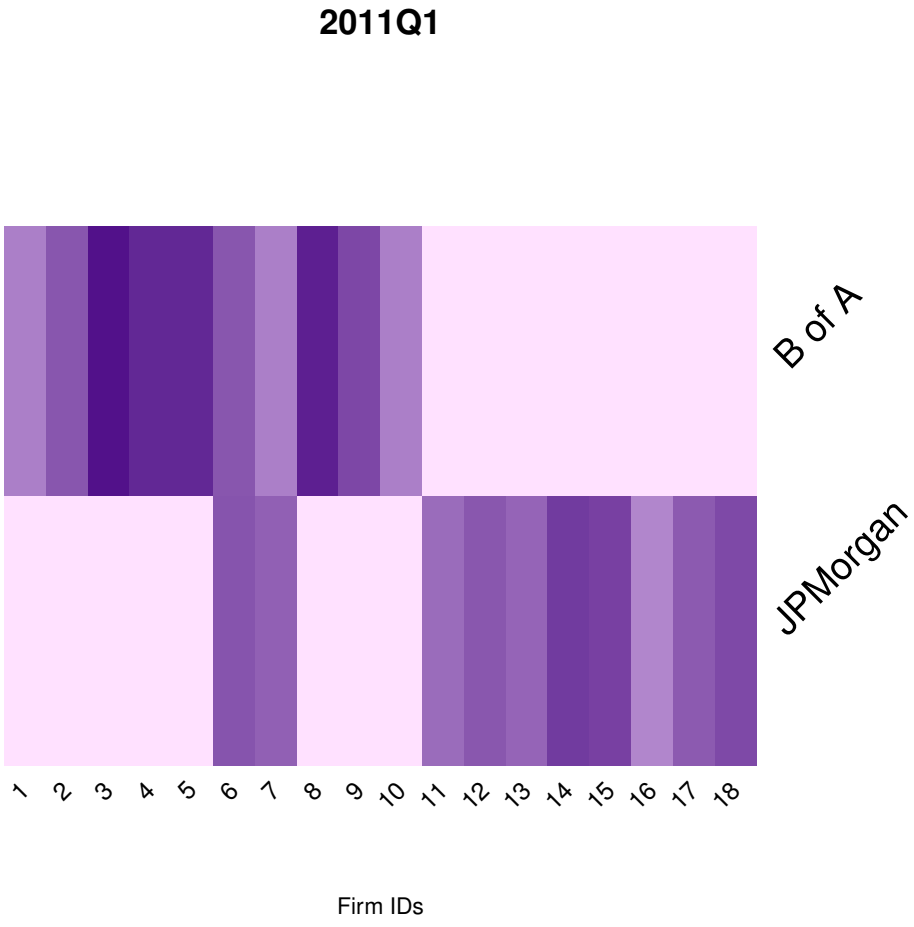

Figure 5: **Heatmap: Difference Percent Common Ownership between Firm and Banks**. This figure shows the difference in common ownership percentage between 2004Q1 and 2011Q1 for a sample of firms and two banks. Red shades denote decreases while blue shades denote increases in common ownership between the two periods.

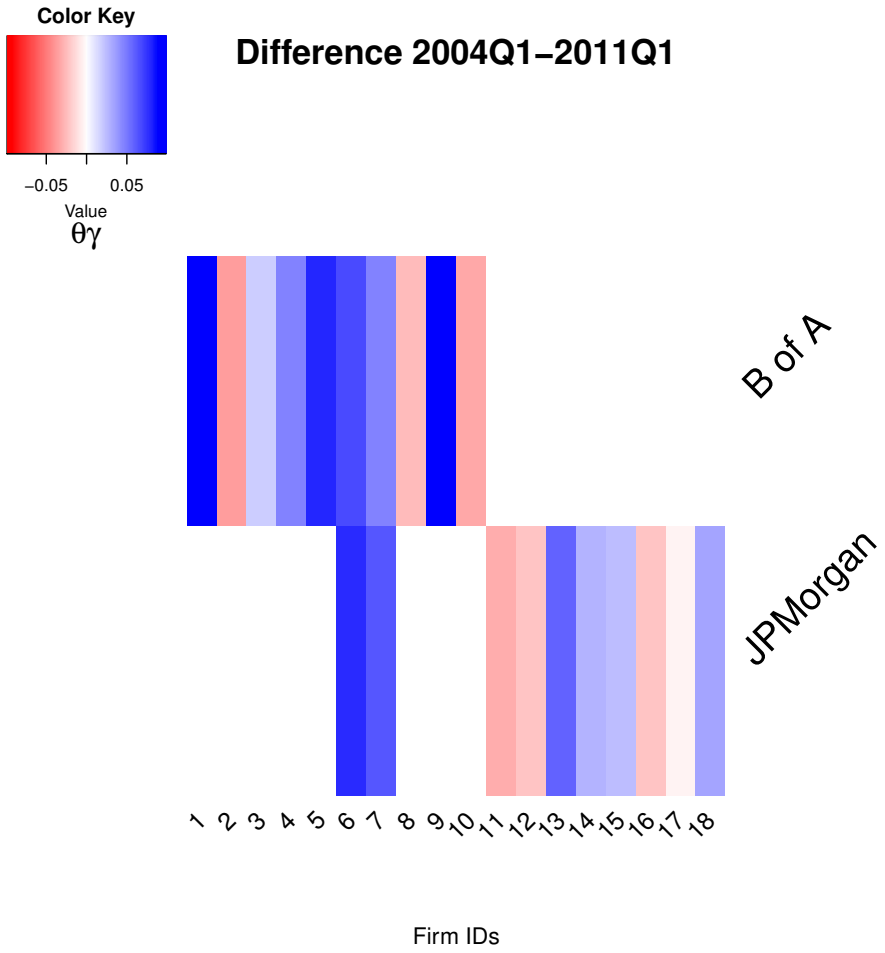

Figure 6: **Average Firm and Bank Common Ownership**. This figure plots the average share held of the firm by investors that also own bank shares (empirical θ) and the average share held of the bank by investors that also own firm shares (empirical γ). Data restricted to firm and bank combinations observed at any point in the DealScan sample used.

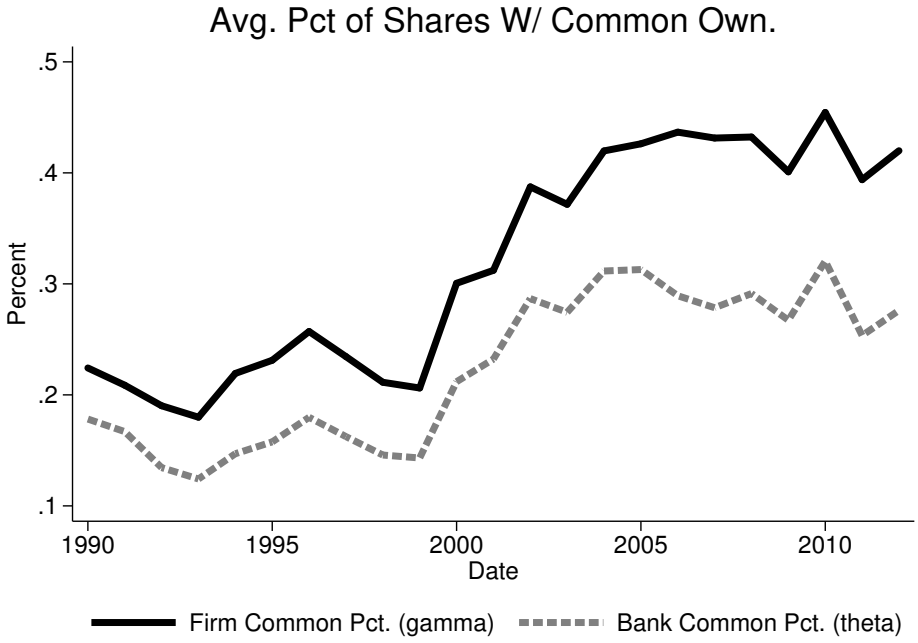

Figure 7: **Percent of Continuing Investors as Common Shareholders**. This figure shows the percent of investors that are firm and bank common shareholders that also were common shareholders in the previous year. Plot shown separately for percent of continuing investors in firms and in banks. Data restricted to firm and bank combinations observed at any point in the DealScan sample used.

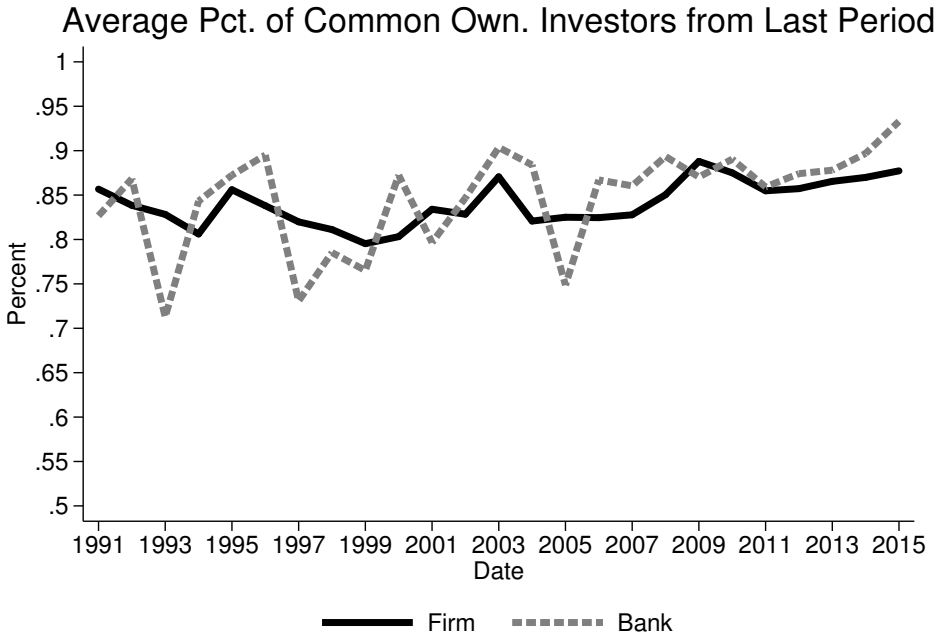

Figure 8: **Percent of Shares Held by Continuing Investors as Common Shareholders**. This figure shows the percent of shares held by investors that are firm and bank common shareholders that also were common shareholders in the previous year. Plot shown separately for percent of shares held by continuing investors in firms and in banks. Data restricted to firm and bank combinations observed at any point in the DealScan sample used.

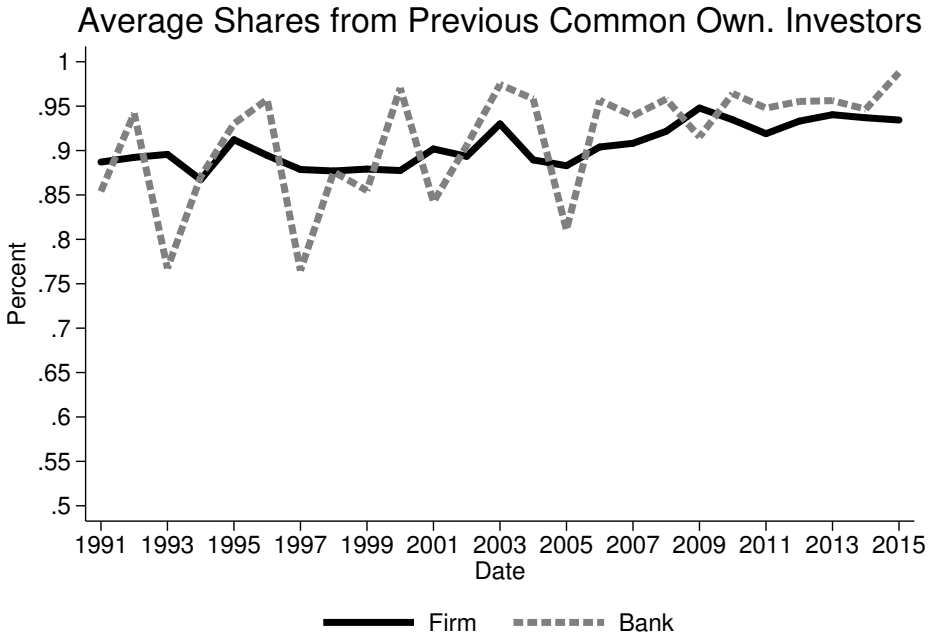

Figure 9: **Average Firm and Bank Common Ownership**. This figure plots a hazard curve for periods an institutional investor remains a shareholder until exiting by not holding the firm for over one year. Data restricted to firms and banks observed at any point in the DealScan sample used.

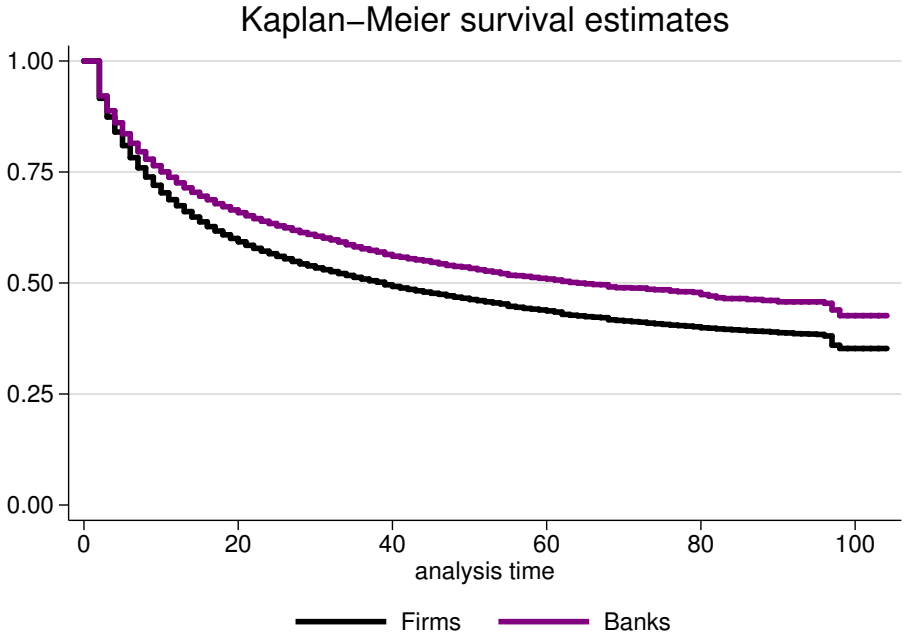

Figure 10: **Binscatter: Average Residualized Interest Rate and Common Ownership Percentage**. This figure shows the average interest rate spread residual by increasing bins of common ownership percentage between firms and banks. Common ownership percentage is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank at the time of loan origination (empirical $\theta\gamma$). Firm Controls include assets, tangibility, profitability, market capitalization, quarters since first loan with the bank, credit rating, Tobin q and industry and state fixed effects. Bank Controls include bank assets and capitalization measures. Loan Controls include maturity, loan type and loan purpose.

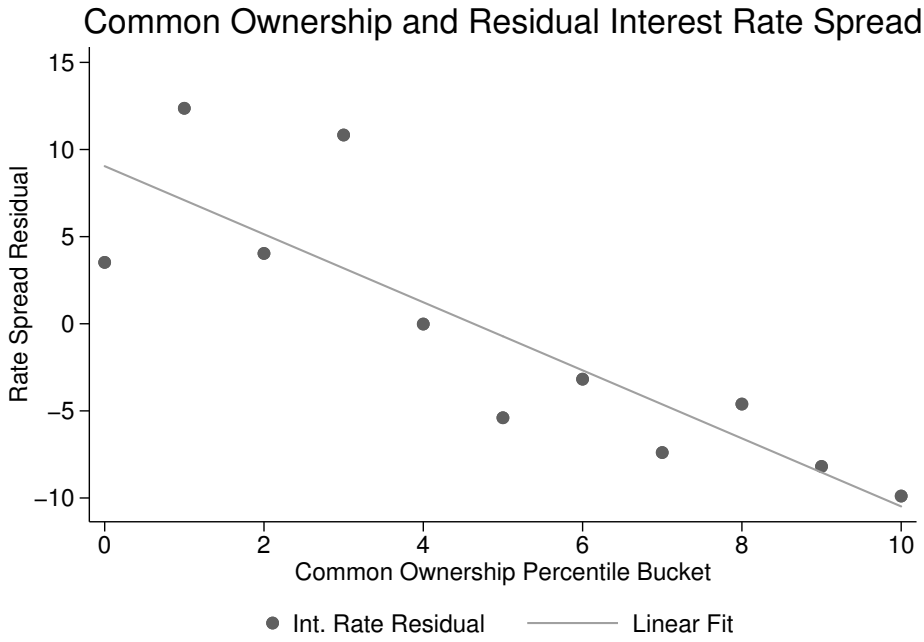

Table 1: **Summary Statistics**. This table reports summary statistics for the sample of loans merged with borrower, bank characteristics and institutional investor ownership. The sample contains new loan originations matched with lead arrangers with characteristics observed at the time of origination.

	Mean	SD	P25	P75
Loan Variables				
Credit Spread (bps)	191.16	131.22	90.00	255.00
Maturity (yrs)	3.74	1.88	2.08	5.00
Facility Amount ($MM)	337.88	666.37	42.74	351.73
Amount/Firm Assets	0.18	0.16	0.07	0.25
Revolving	0.11	0.31	0.00	0.00
Working Capital	0.21	0.41	0.00	0.00
Firm Variables				
Assets ($B)	4.56	11.69	0.33	3.57
Cash	0.20	0.20	0.04	0.30
Tangibility	2.19	3.91	0.27	2.18
Profitability	0.14	0.23	0.05	0.18
Tobin's Q	1.36	1.12	0.77	1.61
Relationship Length (qtrs)	13.34	16.20	0.00	21.00
Has Above A- S&P Rating	0.10	0.30	0.00	0.00
Issued Public Debt or Equity	0.14	0.35	0.00	0.00
Credit Downgrade	0.07	0.25	0.00	0.00
Increases Profitability	0.49	0.50	0.00	1.00
Increases CapEx	0.47	0.50	0.00	1.00
Experiences Layoffs	0.42	0.49	0.00	1.00
Sells Assets	0.30	0.46	0.00	1.00
Bank Variables				
Assets ($B)	347.88	575.00	48.75	343.34
Tier 1 Capital	9.25	1.97	7.82	10.36
Non-Performing/Total Assets (%)	0.01	0.01	0.00	0.01
Deposits/Total Assets (%)	0.63	0.13	0.59	0.70
Common Ownership Variables				
Indicator Common Ownership	0.60	0.49	0.00	1.00
% Firm Common Ownership	0.28	0.31	0.00	0.56
% Firm-Bank Common Ownership	0.11	0.15	0.00	0.22
N	15467			

Table 2: **Common Ownership: Example**. This table reports the fraction of shares held by the top ten shareholders for Wells Fargo and PetSmart in 2012Q1. In bold are the shareholders among the top ten that appear in common between the firm and bank when they established a loan relationship.

WELLS FARGO

Institutional Investor	Fraction
BERKSHIRE HATHAWAY INC.	.07
VANGUARD GROUP, INC.	.04
FIDELITY MGMT & RESEARCH CO	.04
STATE STR CORPORATION	.04
BLACKROCK INC	.04
CAPITAL WORLD INVESTORS	.03
WELLINGTON MANAGEMENT CO, LLP	.03
DODGE & COX	.02
DAVIS SELECTED ADVISERS, L.P.	.02
NORTHERN TRUST CORP	.01

PETSMART

Institutional Investor	Fraction
LONGVIEW ASSET MGMT, L.L.C.	.06
VANGUARD GROUP, INC.	.05
BLACKROCK INC	.05
FIDELITY MGMT & RESEARCH CO	.04
CI FUND MANAGEMENT INC	.04
STATE STR CORPORATION	.03
WELLINGTON MANAGEMENT CO, LLP	.03
FIRST PACIFIC ADVISORS, LLC	.02
FIRST TRUST ADVR L.P.	.02
AMERICAN CENT INVT MGMT, INC.	.02

Table 3: **Regression Analysis of Common Ownership: Loan Spreads and Loan Size**. This table reports regressions estimates of interest rate spreads and log loan size on common ownership between bank and firm as well as bank, firm and loan characteristics. Connected is defined as an indicator variable if there exists at least one institutional investor the owns shares of the firm and bank at the time of loan origination. Firm-Bank Common Own is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank at the time of loan origination. Firm Common Own is defined as the percent of firm shares held by institutional investors that also hold shares of the lending bank at the time of loan origination. Firm Controls include assets, tangibility, profitability, market capitalization, quarters since first loan with the bank, credit rating, Tobin q and industry and state fixed effects. Bank Controls include bank assets and capitalization measures. Loan Controls include maturity, loan type and loan purpose. Standard errors clustered by bank and quarter are reported in parenthesis.

	(1)	(2)	(3)
Panel A: Rate Spread			
Connected	-8.24*		
	(4.18)		
Firm-Bank Common Own.		-41.58***	
		(6.88)	
Firm Common Own.			-22.86***
			(4.28)
R^2	0.60	0.60	0.60
SD Effect		-6.26	-7.01
Panel B: Log Loan Size			
Connected	0.02**		
	(0.01)		
Firm-Bank Common Own		0.04**	
		(0.02)	
Firm Common Own			0.02*
			(0.01)
R^2	0.89	0.89	0.89
SD Effect		0.01	0.01
Observations	15467	15467	15467
Bank FE	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes

Table 4: **First-Stage**. This table reports regression estimates of overall common ownership between banks and firms on index fund common ownership as well as bank, firm and loan characteristics. Firm-Bank Common Own is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank at the time of loan origination. Firm-Bank Index Common Own is defined as the percent of firm shares times the percent of bank shares held by the five largest index funds that hold shares in both the firm and the bank at the time of loan origination. Firm Common Own is defined as the percent of firm shares held by institutional investors that also hold shares of the lending bank at the time of loan origination. Firm Index Common Own is defined as the percent of firm shares held by the five largest index funds that also hold shares of the lending bank at the time of loan origination. Firm Controls include assets, tangibility, profitability, market capitalization, quarters since first loan with the bank, credit rating, Tobin q and industry and state fixed effects. Bank Controls include bank assets and capitalization measures. Standard errors clustered by bank and quarter are reported in parenthesis.

	(1)	(2)
	Firm-Bank Common Own.	Firm Common Own.
Firm-Bank Index Common Own.	5.17***	
	(0.79)	
Firm Index Common Own.		2.13***
		(0.18)
Observations	15467	15467
R^2	0.56	0.58
Bank FE	Yes	Yes
Qtr FE	Yes	Yes
Loan Controls	Yes	Yes
Firm Controls	Yes	Yes
Bank Controls	Yes	Yes
1st St. F-stat	43.21	137.01

Table 5: **2SLS Regression Analysis of Common Ownership: Loan Spreads and Loan Size**. This table reports regressions of interest rate spreads and log loan size on common ownership between bank and firm as well as bank, firm and loan characteristics. Firm-Bank Common Own is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank at the time of loan origination. Firm Common Own is defined as the percent of firm shares held by institutional investors that also hold shares of the lending bank at the time of loan origination. In the first stage, both connected percentage variables are regressed on the equivalent variables constructed with only index fund holdings. SD Effect shows the effect of a one standard deviation increase of common ownership times the coefficient estimated. F-stats from the first stage are reported. Firm Controls include assets, tangibility, profitability, market capitalization, quarters since first loan with the bank, credit rating, Tobin q and industry and state fixed effects. Bank Controls include bank assets and capitalization measures. Loan Controls include maturity, loan type and loan purpose. Standard errors clustered by bank and quarter are reported in parenthesis.

	(1)	(2)	(3)	(4)
Panel A: Rate Spread	OLS	2SLS	OLS	2SLS
Firm-Bank Common Own	-41.58***	-33.47*		
	(6.88)	(19.21)		
Firm Common Own			-22.86***	-15.55**
			(4.28)	(6.19)
R^2	0.60	0.60	0.60	0.60
SD Effect	-6.26	-5.04	-7.01	-4.77
Panel B: Log Loan Size				
Firm-Bank Common Own	0.04**	0.18*		
	(0.02)	(0.09)		
Firm Common Own			0.02*	0.07***
			(0.01)	(0.02)
R^2	0.89	0.89	0.89	0.89
SD Effect	0.01	0.03	0.01	0.02
Observations	15467	15467	15467	15467
Bank FE	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes
1st St. F-stat		43.21		137.01

Table 6: **2SLS Regression Analysis of Common Ownership, Intensive Margin: Loan Spreads and Loan Size**. This table reports regressions of interest rate spreads and log loan size on common ownership between bank and firm as well as bank, firm and loan characteristics. Data is restricted to only loan observations where there exists positive common ownership. Firm-Bank Common Own is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank at the time of loan origination. Firm Common Own is defined as the percent of firm shares held by institutional investors that also hold shares of the lending bank at the time of loan origination. In the first stage, both connected percentage variables are regressed on the equivalent variables constructed with only index fund holdings. SD Effect shows the effect of a one standard deviation increase of common ownership times the coefficient estimated. F-stats from the first stage are reported. Firm Controls include assets, tangibility, profitability, market capitalization, quarters since first loan with the bank, credit rating, Tobin q and industry and state fixed effects. Bank Controls include bank assets and capitalization measures. Loan Controls include maturity, loan type and loan purpose. Standard errors clustered by bank and quarter are reported in parenthesis.

	(1)	(2)	(3)	(4)
Panel A: Rate Spread	OLS	2SLS	OLS	2SLS
Firm-Bank Common Own.	-93.95***	-112.56*		
	(16.62)	(63.29)		
Firm Common Own.			-53.94***	-50.48***
			(9.87)	(17.07)
R^2	0.63	0.63	0.63	0.63
SD Effect	-14.47	-17.34	-14.40	-13.48
Panel B: Log Loan Size				
Firm-Bank Common Own.	0.03	0.64***		
	(0.04)	(0.17)		
Firm Common Own.			0.03	0.17**
			(0.03)	(0.08)
R^2	0.89	0.88	0.89	0.89
Observations	9276	9276	9276	9276
Bank FE	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes
1st St. F-stat		24.70		110.43

Table 7: **2SLS Regression Analysis of Common Ownership: Firm Outcomes**. This table reports estimates from linear probability regressions of an indicator of different firm outcomes a year after obtaining a loan on common ownership between bank and firm at the time of loan origination as well as bank, firm and loan characteristics. Panel A: Has a S&P credit rating downgrade. Panel B: Increases Profitability. Panel C: Increases Capital Expenditures. Panel D: Experiences a one percent decrease in Employment. Panel E: Experiences Asset Sales. Firm-Bank Common Own is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank at the time of loan origination. Firm Common Own is defined as the percent of firm shares held by institutional investors that also hold shares of the lending bank at the time of loan origination. In the first stage, both connected percentage variables are regressed on the equivalent variables constructed with only index fund holdings. SD Effect shows the effect of a one standard deviation increase of common ownership times the coefficient estimated. F-stats from the first stage are reported. Firm Controls include assets, tangibility, profitability, market capitalization, quarters since first loan with the bank, credit rating, Tobin q and industry and state fixed effects. Bank Controls include bank assets and capitalization measures. Loan Controls include maturity, loan type and loan purpose. Standard errors clustered by bank and quarter are reported in parenthesis.

	(1)	(2)	(3)	(4)
Panel A: Rating Downgrade	OLS	2SLS	OLS	2SLS
Firm-Bank Common Own.	-0.11***	-0.18**		
	(0.03)	(0.07)		
Firm Common Own.			-0.06***	-0.04
			(0.02)	(0.04)
Observations	15467	15467	15467	15467
R^2	0.19	0.19	0.19	0.19
SD Effect	-0.02	-0.03	-0.02	-0.01
Mean Y	0.07	0.07	0.07	0.07
Panel B: Profitability				
Firm-Bank Common Own.	-0.06	0.11		
	(0.05)	(0.17)		
Firm Common Own.			-0.020	0.04
			(0.03)	(0.06)
R^2	0.13	0.13	0.13	0.13
SD Effect	-0.00	0.02	-0.01	0.01
Mean Y	0.49	0.49	0.49	0.49
Panel C: Capital Expenditures				
Firm-Bank Common Own.	0.05	0.05		
	(0.05)	(0.16)		
Firm Common Own.			0.02	0.06
			(0.02)	(0.05)
R^2	0.14	0.14	0.14	0.14
SD Effect	0.01	0.01	0.00	0.02
Mean Y	0.47	0.47	0.47	0.47

Table 7: (continued) **2SLS Analysis of Common Ownership: Firm Outcomes**.

Panel D: Employment Layoffs				
Firm-Bank Common Own.	-0.04	0.47***		
	(0.04)	(0.15)		
Firm Common Own.			-0.01	0.12**
			(0.02)	(0.05)
R^2	0.20	0.20	0.20	0.20
SD Effect	-0.01	0.07	-0.00	0.04
Mean Y	0.42	0.42	0.42	0.42
Panel E: Asset Sales				
Firm-Bank Common Own.	-0.02	-0.17		
	(0.04)	(0.20)		
Firm Common Own.			-0.01	-0.10*
			(0.02)	(0.06)
R^2	0.20	0.20	0.20	0.20
SD Effect	-0.00	-0.03	-0.00	-0.03
Mean Y	0.30	0.30	0.30	0.30
Observations	15467	15467	15467	15467
Bank FE	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes
1st St. F-stat		43.21		137.01

Table 8: **2SLS Analysis of Common Ownership by Firm Size: Loan Spreads**. This table reports regression of interest rate spreads on common ownership between bank and firm interacted with an indicator for small firm size as well as bank, firm and loan characteristics as well as bank, firm and loan characteristics. Small Firm is an indicator if the firm is below the median in total assets by year among firms in the sample. Firm-Bank Common Own is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank at the time of loan origination. Firm Common Own is defined as the percent of firm shares held by institutional investors that also hold shares of the lending bank at the time of loan origination. In the first stage, both connected percentage variables are regressed on the equivalent variables constructed with only index fund holdings. SD Effect shows the effect of a one standard deviation increase of common ownership times the coefficient estimated. SD Effect Int. shows the extra effect of a one standard deviation increase of common ownership times the coefficient estimated for small firms. F-stats from the first stage are reported. Firm Controls include assets, tangibility, profitability, market capitalization, quarters since first loan with the bank, credit rating, Tobin q and industry and state fixed effects. Bank Controls include bank assets and capitalization measures. Loan Controls include maturity, loan type and loan purpose. Standard errors clustered by bank and quarter are reported in parenthesis.

	(1) OLS	(2) 2SLS	(3) OLS	(4) 2SLS
Small Firm	11.70**	12.45	10.59*	10.47
	(4.98)	(9.20)	(5.40)	(6.92)
Firm-Bank Common Own.	-15.90**	-30.05		
	(7.42)	(19.88)		
Firm-Bank Common Own.*Small	-74.81***	-76.52		
	(16.81)	(52.94)		
Firm Common Own.			-9.77*	-9.87
			(5.02)	(6.65)
Firm Common Own.*Small			-26.79***	-26.39**
			(5.68)	(11.92)
Observations	15467	15467	15467	15467
R^2	0.60	0.60	0.60	0.60
SD Effect	-2.40	-4.53	-3.00	-3.03
SD Effect Int.	-11.27	-11.53	-8.21	-8.09
Bank FE	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes
1st St. F-stat		7.91		12.86

Table 9: **2SLS Analysis of Common Ownership by Firm Size: Loan Size**. This table reports regression of log loan size on common ownership between bank and firm interacted with an indicator for small firm size as well as bank, firm and loan characteristics. Small Firm is an indicator if the firm is below the median in total assets by year among firms in the sample. Firm-Bank Common Own is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank at the time of loan origination. Firm Common Own is defined as the percent of firm shares held by institutional investors that also hold shares of the lending bank at the time of loan origination. In the first stage, both connected percentage variables are regressed on the equivalent variables constructed with only index fund holdings. SD Effect shows the effect of a one standard deviation increase of common ownership times the coefficient estimated. SD Effect Int. shows the extra effect of a one standard deviation increase of common ownership times the coefficient estimated for small firms. F-stats from the first stage are reported. Firm Controls include assets, tangibility, profitability, market capitalization, quarters since first loan with the bank, credit rating, Tobin q and industry and state fixed effects. Bank Controls include bank assets and capitalization measures. Loan Controls include maturity, loan type and loan purpose. Standard errors clustered by bank and quarter are reported in parenthesis.

	(1) OLS	(2) 2SLS	(3) OLS	(4) 2SLS
Small Firm	-0.05***	-0.05***	-0.05***	-0.05***
	(0.01)	(0.01)	(0.01)	(0.01)
Firm-Bank Common Own.	0.03	0.18*		
	(0.02)	(0.10)		
Firm-Bank Common Own.*Small	0.04	0.06		
	(0.03)	(0.12)		
Firm Common Own.			0.01	0.06**
			(0.01)	(0.03)
Firm Common Own.* Small			0.02	0.02
			(0.02)	(0.02)
Observations	15467	15467	15467	15467
R^2	0.89	0.89	0.89	0.89
SD Effect	0.00	0.03	0.00	0.02
SD Effect Int.	0.01	0.01	0.01	0.00
Bank FE	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes
1st St. F-stat		7.91		12.86

Table 10: **2SLS Analysis of Common Ownership by Firm Rated Status: Loan Spreads**. This table reports regression of interest rate spreads on common ownership between bank and firm interacted with an indicator for a firm not having a S&P credit rating as well as bank, firm and loan characteristics. No Rating is an indicator if the firm does not have a credit rating by S&P at the time of loan origination. Firm-Bank Common Own is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank at the time of loan origination. Firm Common Own is defined as the percent of firm shares held by institutional investors that also hold shares of the lending bank at the time of loan origination. In the first stage, both connected percentage variables are regressed on the equivalent variables constructed with only index fund holdings. SD Effect shows the effect of a one standard deviation increase of common ownership times the coefficient estimated. SD Effect Int. shows the extra effect of a one standard deviation increase of common ownership times the coefficient estimated for firms with no credit rating at the time of loan origination. F-stats from the first stage are reported. Firm Controls include assets, tangibility, profitability, market capitalization, quarters since first loan with the bank, credit rating, Tobin q and industry and state fixed effects. Bank Controls include bank assets and capitalization measures. Loan Controls include maturity, loan type and loan purpose. Standard errors clustered by bank and quarter are reported in parenthesis.

	(1) OLS	(2) 2SLS	(3) OLS	(4) 2SLS
No Rating	71.14***	71.56***	68.75***	69.26***
	(20.06)	(21.85)	(19.68)	(20.67)
Firm-Bank Common Own.	-12.88	-24.48		
	(8.26)	(26.28)		
Firm-Bank Common Own.*No Rating	-104.29***	-111.84		
	(24.61)	(72.69)		
Firm Common Own.			-8.07	-7.17
			(5.07)	(8.73)
Firm Common Own.*No Rating			-39.61***	-41.40*
			(7.25)	(21.73)
Observations	15467	15467	15467	15467
R^2	0.60	0.60	0.60	0.60
SD Effect	-1.94	-3.69	-2.48	-2.20
SD Effect Int.	-15.71	-16.85	-12.14	-12.69
Bank FE	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes
1st St. F-stat		8.19		19.50

Table 11: **2SLS Analysis of Common Ownership by Firm Rated Status: Loan Size**. This table reports regression of interest rate spreads on common ownership between bank and firm interacted with an indicator for a firm not having a S&P credit rating as well as bank, firm and loan characteristics. No Rating is an indicator if the firm does not have a credit rating by S&P at the time of loan origination. Firm-Bank Common Own is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank at the time of loan origination. Firm Common Own is defined as the percent of firm shares held by institutional investors that also hold shares of the lending bank at the time of loan origination. In the first stage, both connected percentage variables are regressed on the equivalent variables constructed with only index fund holdings. SD Effect shows the effect of a one standard deviation increase of common ownership times the coefficient estimated. SD Effect Int. shows the extra effect of a one standard deviation increase of common ownership times the coefficient estimated for firms with no credit rating at the time of loan origination. F-stats from the first stage are reported. Firm Controls include assets, tangibility, profitability, market capitalization, quarters since first loan with the bank, credit rating, Tobin q and industry and state fixed effects. Bank Controls include bank assets and capitalization measures. Loan Controls include maturity, loan type and loan purpose. Standard errors clustered by bank and quarter are reported in parenthesis.

	(1) OLS	(2) 2SLS	(3) OLS	(4) 2SLS
No Rating	-0.09*	-0.08	-0.09*	-0.08
	(0.05)	(0.06)	(0.05)	(0.05)
Firm-Bank Common Own.	0.04**	0.18*		
	(0.02)	(0.09)		
Firm-Bank Common Own.*No Rating	0.02	0.02		
	(0.03)	(0.08)		
Firm Common Own.			0.01	0.07**
			(0.01)	(0.02)
Firm Common Own.*No Rating			0.02	0.02
			(0.02)	(0.03)
Observations	15467	15467	15467	15467
R^2	0.89	0.89	0.89	0.89
SD Effect	0.01	0.03	0.00	0.02
SD Effect Int.	0.00	0.00	0.01	0.00
Bank FE	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes
1st St. F-stat		8.19		19.50

Table 12: **2SLS Analysis of Common Ownership: LPM Lead Arranger**. This table reports estimates from a linear probability regression of an indicator on the bank being the lead arranger out of all banks in the syndicate on common ownership between bank and firm at the time of loan origination as well as bank, firm and loan characteristics. Firm-Bank Common Own is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank at the time of loan origination. Firm Common Own is defined as the percent of firm shares held by institutional investors that also hold shares of the lending bank at the time of loan origination. In the first stage, both connected percentage variables are regressed on the equivalent variables constructed with only index fund holdings. SD Effect shows the effect of a one standard deviation increase of common ownership times the coefficient estimated. F-stats from the first stage are reported. Regression include bank and credit facility fixed effects. Bank Controls include bank assets and capitalization measures. Standard errors clustered by credit facility and quarter are reported in parenthesis.

	(1) OLS	(2) 2SLS	(3) OLS	(4) 2SLS
Firm-Bank Common Own. Pct.	0.09***	0.04		
	(0.03)	(0.10)		
Firm Common Own. Pct.			0.06***	0.04
			(0.02)	(0.04)
Observations	75394	75394	75394	75394
R^2	0.31	0.32	0.32	0.31
SD Effect	0.01	0.01	0.02	0.01
Bank FE	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes
1st St. F-stat		48.24		129.97

Table 13: **2SLS Analysis of Common Ownership: Number of Banks in Loan Syndicate**. This table reports estimates from a regression of the number of banks in the loan syndicate on common ownership between bank and firm at the time of loan origination as well as bank, firm and loan characteristics. Firm-Bank Common Own is defined as the percent of firm shares times the percent of bank shares held by institutional investors that hold shares in both the firm and the bank at the time of loan origination. Firm Common Own is defined as the percent of firm shares held by institutional investors that also hold shares of the lending bank at the time of loan origination. In the first stage, both connected percentage variables are regressed on the equivalent variables constructed with only index fund holdings. SD Effect shows the effect of a one standard deviation increase of common ownership times the coefficient estimated. F-stats from the first stage are reported. Firm Controls include assets, tangibility, profitability, market capitalization, quarters since first loan with the bank, credit rating, Tobin q and industry and state fixed effects. Bank Controls include bank assets and capitalization measures. Loan Controls include maturity, loan type and loan purpose. Standard errors clustered by bank and quarter are reported in parenthesis.

	(1) OLS	(2) 2SLS	(3) OLS	(4) 2SLS
Firm-Bank Common Own.	1.04***	4.30**		
	(0.32)	(1.99)		
Firm Common Own.			0.32*	1.59***
			(0.19)	(0.41)
Observations	15467	15467	15467	15467
R^2	0.58	0.58	0.58	0.58
SD Effect	0.16	0.65	0.10	0.49
Mean Y	5.37	5.37	5.37	5.37
Bank FE	Yes	Yes	Yes	Yes
Qtr FE	Yes	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes
1st St. F-stat		43.21		137.01