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We study the effects of common ownership on syndicated loan market interactions. We find that borrowers and lenders that are commonly held by an institutional blockholder tended to do more business together going forward than those that are not commonly held. We hypothesize that the increased likelihood of striking a deal derives from conversations between borrowers and blockholders about financing plans, which, in turn, increases borrowers' familiarity and perhaps opinion of commonly owned lenders. Consistent with this view, we find that the increase in dealings occurred only when the blockholder followed an active rather than a passive investment strategy.

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Abstract

We study the effects of common ownership on syndicated loan market interactions. We find that borrowers and lenders that are commonly held by an institutional blockholder tended to do more business together going forward than those that are not commonly held. We hypothesize that the increased likelihood of striking a deal derives from conversations between borrowers and blockholders about financing plans, which in turn increases borrowers' familiarity and perhaps opinion of commonly owned lenders. Consistent with this view, we find that the increase in dealings occurred only when the blockholder followed an active rather than a passive investment strategy.

Cross-Company Effects of Common Ownership:
Dealings Between Borrowers and Lenders With a Common Blockholder

Over recent decades, the ownership makeup of publicly traded companies has steadily transitioned from numerous, small positions held by retail investors to more concentrated positions held by large institutional investors. The share of US equities held by institutional investors now approaches 80% (McCahery, Starks, and Sautner (2014); Rydqvist, Spizman, and Strebulaev (2014)). Accompanying this aggregate increase in institutional ownership is a higher frequency of individual institutions simultaneously holding large share blocks of companies that interact with each other in product or financial markets. He and Huang (2014), for example, report that the fraction of US equities held by institutions that concurrently hold blocks of other companies in the same industry is up from less than 10% in 1980 to close to 60% in 2010. This shift raises an important question: How, if at all, are the decisions of companies that interact with each other in product or financial markets affected when they share common large institutional shareholders?

Taking on this question, He and Huang (2014) find that firms from the same industry that are cross-held by an institutional blockholder show significantly higher product market share growth compared to non-cross-held firms. Azar, Schmalz, and Tecu (2015) drill down on the effect of common ownership on the product market of a single industry, the US airline industry. They use within-route variation over time to identify a positive correlation between common ownership and ticket prices. Both studies interpret evidence as consistent with common ownership causing cross-held firms from the same industry to coordinate with each other in product markets rather than compete. Our study adds to this literature and to the broader literature that studies the effects of institutional ownership by examining whether common ownership affects ways in which companies interact across different industries. Importantly, we are able to directly observe the

dealings between cross-held firms. Prior researchers of the effects of common ownership could only observe outcomes that are consistent with changes in firm behavior (i.e., market share growth and ticket price increases). Our focus is on the credit market interactions of borrowers and lenders in the syndicated loan market. Specifically, we examine the likelihood that borrowers and lenders strike a deal with each other when they are cross-held by an institutional blockholder versus when they are not.

We are not suggesting that the credit market influence of interconnected ownership rises to the level found in Japanese keiretsu.[1] Rather we suspect the influence, if any, to be subtler. Institutional investors often communicate out of public view with the management of companies they hold (Carleton, Nelson, and Weisbach (1998); Becht, Bolton, and Röell (2007); Appel, Gormley, and Keim (2014); McCahery, Starks, and Sautner (2014); Mullins (2014); Dimson, Karakas, and Li (2015)). Discussions of operating and financing plans would be a normal part of these conversations. Cross-ownership influence might be as innocuous as an institutional blockholder sharing their high regard for the cross-held lender with management of the credit-seeking firm.

We take advantage of syndicated loan data from DealScan. Critical for our study is a nearly comprehensive list of the syndicated credit customers (i.e., borrowers) and suppliers (i.e., lead lenders). We identify all instances of a single institutional investor simultaneously holding a block of more than five percent in both a borrower and a lender. We then examine loan activity in three-year windows on either side of the year during which the cross holding was first established.

Syndicated loans are contracts that must be initiated by the borrower and then both the borrower and the lender must choose to participate in the contract together. Both sides must decide

[1] In a keiretsu, member companies are linked by cross shareholdings and interlocking business relationships. A lender is a key member of the keiretsu, typically providing credit to members.

to participate in each loan contract; otherwise there is no deal. We cannot differentiate between borrower-lender pairs that have rejected each other and pairs that have never solicited business from each other. Thus, to mitigate any potential selection bias, we first analyze only pairs that had prior dealings. In such a setting we know that our borrowers and lenders have historical precedence for mutually deciding to engage in a syndicated loan contract together. Presumably such pairs that dealt with each other in the past are highly likely to remain in each other's opportunity set when seeking to make further deals.

To determine whether borrowers were more likely to deal again with cross-held lenders than non-cross-held lenders in the post-cross-ownership window, we fit a linear probability model with institutional blockholder by borrower by quarter fixed-effects, controlling for the proportion of funding each lender provided in the pre-cross-ownership window and each lender's institutional ownership concentration, activity in the syndicated loan market, size, and past returns. This fixed effect structure allows us to compare a lender that is cross-held with a given borrower by a given institution during a given quarter with other lenders with which the borrower had prior dealings. In effect, we keep the institutional blockholder, borrower, and time constant. We find that borrowers were significantly more likely to enter into another deal with cross-held lenders than non-cross-held lenders. To give a sense of the economic magnitude, we observe borrowers and lenders–whether cross-held or not–on average entering into another agreement 49.16% of the time. When linked by a common institutional blockholder, borrowers were 347bp more likely to deal again with cross-held lenders.

We posit that this increased likelihood is the result of behind the scenes discussions between institutional blockholders and borrower management, particularly borrower CFOs. CFOs are both central to conversations with important outside investors and are the primary financing

decision makers. The intensity and regularity of conversations are likely greater when the institutional investor follows an active strategy. Passive institutional investors may discuss corporate governance issues to satisfy fiduciary duties to their shareholders, but the very nature of a passive strategy almost certainly precludes regular detailed discussions of operating and financing plans. Thus, we hypothesize that the influence of interconnected ownership we document in the paper is restricted to instances when the joint blockholders are active rather than passive investors.

This is exactly what we find when we split the sample by whether the blockholder follows an active or a passive management strategy. The impact of common ownership is significant when borrowers and lenders are commonly held by active blockholders but not when held by passive blockholders.

Next we consider cases where cross-held pairings had no prior dealings. Results again show that borrowers were more likely to deal with a lender linked by a common institutional blockholder. Borrowers entered into a syndicated loan agreement with a specific lender with which it had no prior dealings–regardless of CO status–on average 5.61% of the time. We find that a borrower was 105bp more likely to enter into a deal with a cross-held lender. In other words, a credit-seeking company was about 19% more likely to borrow from a lender when they shared a common institutional blockholder. Once more, results prove significant only when the blockholder follows an active strategy.

We check the robustness of our results in two ways. In the first, we again fit a linear probability model with borrower fixed effects, but recast our sample by matching each cross-owned lender with one non-cross-owned lender based on propensity scores derived from lender characteristics. In the second, we flip the perspective on the syndicated loan decision from the

borrower to the lender by fitting a linear probability model with lender fixed effects, controlling for characteristics of the borrower such as prior borrowing activity, size, and estimated default probability. Both sets of robustness tests show an increased likelihood of cross-held pairings striking a deal.

Our study is not subject to the reverse causality and endogeniety issues that have complicated the studies of common ownership effects on within-industry product markets. Prior research suggests that active institutional investors possess better information or stock-picking abilities that allow them to identify, on average, companies that outperform (see, e.g., Alexander, Cici, and Gibson (2007)). Does common institutional ownership influence product-market decisions or rather do "smart" institutions buy shares of product-market outperformers ahead of time? He and Huang (2014) and Azar, Schmalz, and Tecu (2015) both present clever tests that address the question.[2] Nevertheless, some may interpret product-market evidence with caution (see, e.g., Zweig (2015)). With regard to our study, it seems unlikely that an institutional investor would have foreknowledge of the participants on a future syndicated loan deal and, even if so, that it would lead it to make large investments in both parties.

Our paper contributes to the literature by adding to a pattern of evidence consistent with the thesis that common institutional ownership influences the actions of cross-held companies. Our study contributes in at least four ways. First, we directly observe the changes in the interactions between cross-held firms, whereas prior studies could only observe outcomes that are consistent with changes in interactions. Second, we provide evidence of a common-ownership influence in a

[2] To establish causality, He and Huang (2014) use a difference-in-differences approach based on the quasi-natural experiment of mergers and a two-stage least squares approach using the geographic distance between companies and peers' blockholders as an instrument. To address reverse causality and endogeniety concerns, Azar, Schmalz, and Tecu (2015) examine airline fares in the window around the 2009 BlackRock acquisition of Barclays Global Investors. They find fares increased for flights affected by the combination in comparison to those unaffected.

setting largely free of reverse causality and endogeneity issues. Third, our results suggest that the scope of this influence extends beyond within-industry product markets. Specifically we find that establishment of a 5% block in both a credit-seeking firm and a lender is followed by increased credit activity between the commonly held parties. Fourth, we find a significant uptick in syndicated loan dealings only when the joint blockholder follows an active management strategy. We interpret this finding as consistent with active blockholders influencing borrower management through conversations about financing plans that are more intense and regular than those between passive blockholders and borrower management.

The remainder of the paper is organized as follows: Section 1 describes the data, details the sample construction, and provides descriptive statistics. Section 2 presents the methodology and results for our main tests. Section 3 provides robustness checks. Section 4 concludes.

1. Preliminaries: Data and sample construction

In this section we start by providing information on our data sources and the cross-ownership timeline we use to design our tests. We then describe how we construct the two main samples studied in the paper. Descriptive statistics for both samples are provided.

1.1 Data and cross-ownership timeline

We use six data sources in our study. Historical syndicated loan data are from Thomson Reuters LPC's DealScan. Lender identifiers, hierarchies, and mergers are from the FDIC's Research Information System (RIS) and the National Information Center (NIC). Borrower and lender stock performance and financial information data are from the Center for Research in

Security Prices (CRSP) and COMPUSTAT, respectively. Finally, comprehensive holdings of US institutional investors are from Thompson Reuters Ownership database.

We match DealScan lenders to RIS and NIC databases by lender name and, when relevant, location. Using RIS's Structure database and NIC, we link the individual lender to its high holder.[3] Since syndicated loan decisions are made at the high holder level, we track relationships at the high holder level. Further, all our controls and performance measures describe the high holder. We also match DealScan's lenders and borrowing firms to CRSP PERMCO by name and location. We omit from our sample financial borrowers as identified by SIC code.

We use DealScan's records to generate a list of the borrowers and lenders that are active in the syndicated loan market. Then we create a rolling quarterly measure of deal activity between each borrower and each lender. For each borrower, for each calendar quarter end, we search DealScan's history for loan tranches over the prior three years. We consider the lending history between the borrower and all lead lenders. We construct two relationship variables based on dollar amounts: one assigning the total value of each syndicated loan to each lead lender, as in Bharath, Dahiya, Saunders, and Srinivasan (2007 and 2011) and Dahiya, Saunders and Srinivasan (2003), and one assigning an equal dollar amount of each loan to each lead lender,[4] as in Ljungqvist, Marston and Wilhelm (2006). We call the first measure "version 1" and the second "version 2". Thus, for any given quarter-end from December 31, 1986, through the end of 2012, we have a list of activity over the past three years between all lenders and borrowers measured by two proportions of funding that each lender supplied each borrower. This list also includes which DealScan-active lenders have *not* originated loans for each borrower. We track relationships

[3] A high holder is the hierarchical ultimate parent.
[4] Although this is not an accurate measure of the dollar value attributable to each lender, it is as close an approximation as is possible. DealScan lists the proportion of funding on some loans, but this reporting of allocations is limited and unpredictable. Thus, we use this approximation that the extant literature has adopted.

through lender mergers via RIS, NIC, and CRSP. Details of how we treat lender mergers are provided below. We calculate relationships for all lenders—public and private—before limiting our sample to public lenders and public borrowers.

We then search quarterly 13f filings to identify the first time a non-bank institutional investor establishes a concurrent five percent or greater ownership stake in both a borrower and a lender. [5] To more cleanly evaluate the impact of cross-ownership, we extend the event window to include the three quarters before the quarter in which the cross holding was first established. By extending the event window, we allow for the accumulation of shares leading up to the five-percent block, thus mitigating cross-ownership effects from transmitting into our benchmarking window. This lapse in time also prevents the prospect of a syndicated deal that is already in the lengthy solicitation process during the pre-cross-ownership-window, but is not yet completed, from affecting the level of institutional ownership in either the lender or the borrower. We then examine loan activity in three-year windows on either side of this event window. Figure 1 summarizes the timeline, where time *t* marks the end of the event window.

[Insert Figure 1]

We require sample borrowers to have at least one DealScan-listed loan in the pre-cross-ownership (hereafter "pre-CO") window, [*t-4*, *t-1*], and at least one DealScan-listed loan in the post-cross-ownership (hereafter "post-CO") window, [*t*, *t+3*]. We require the same DealScan presence for our sample lenders. Further, sample lenders must still be DealScan-active in year *t+3*. Thus, we capture whether a transaction occurred (or not) between each borrower and each lender

[5] We obtained the classification of bank versus non-bank institutional investors from Brian Bushee's website.

that we know to be active in the syndicated loan market during both the pre-CO and post-CO windows. To accurately make this comparison of lending activity, we require that the lender was not acquired in the window [*t-1*, *t+3*].[6]

1.2. Sample construction of borrower-lender pairs with a prior relationship

Given that we cannot differentiate between borrower-lender pairs that rejected each other and those that never solicited business from each other, we first create a sample of only pairs that had prior dealings. In such a setting we know that our borrowers and lenders have historical precedence for mutually deciding to engage in a syndicated loan contract together. Presumably such pairs are highly likely to remain in each other's opportunity sets when seeking to make further deals.

We hold the cross-owned (hereafter "CO") borrower constant and analyze the loan transactions of lenders with which the firm has a borrowing history. That is, holding the CO borrower constant, we determine within the lenders that have a history of dealing with that borrower whether the borrower is more likely to enter into a future syndicated loan transaction with a CO prior lender than a non-CO prior lender.

Specifically, we begin with our list of CO borrowers that DealScan shows as having procured a syndicated loan over the pre-CO window, [*t-4, t-1*]. Then, we restrict the sample to CO borrowers that procured at least one loan during the pre-CO window from a lead lender that is cross-owned by the same financial institution at time *t*. We omit from the sample any observation where the lender is also the institutional blockholder or the institutional blockholder is the ultimate

[6] To maximize sample size, we allow lender mergers and acquisitions in the window [*t-4, t-1*).

parent of the lender.[7] We also require that the CO borrower's list of lenders at time *t-1* includes at least one non-CO lender that is publicly traded. These non-CO prior lenders serve as our benchmark for whether the borrower engages in future syndicated loan transactions with its CO prior lender. Finally, we evaluate all the CO borrower's deals over the post-CO window, [*t*, *t+3*], to determine whether it enters into at least one deal with each prior lender, and we denote such post-CO deals with an indicator variable, which we call *Deal*.

In Table 1, Panel A, we list descriptive statistics of CO lenders and non-CO lenders that have a lending history with this sample of CO borrowers. This sample consists of 73 lenders, 589 borrowers, and 42 institutional blockholders. We have 6,704 quarter-lender observations in the sample. Of those observations, 1,269 are CO and 5,435 are non-CO. *Relationship Funding* is the version 1 proportion of dollars of funding that the borrower received in the pre-CO window from the paired lender. *Ownership Concentration* is the Herfindahl-Hirschman Index of the ownership stakes of all institutional investors in the lender as of *t-1*. *Lender Activity* is the total millions of attributable dollars lent by the lender in the year of *t-1*. *Lender Size* is the market capitalization of the lender in millions of dollars as of *t-1*. *Lender Past Return* is the compounded stock return of the lender over the 12 months ending at *t-1*.

We note that overall, 49.16% of all prior lenders enter into a deal in the post-CO window. There is an insignificant difference in this proportion when comparing the CO lenders to the non-CO lenders. Although CO and non-CO lenders exhibit statistically significant differences in the other characteristics, not all of those differences appear economically significant. For example, although there is a statistically significant different proportion of funding provided from CO lenders as compared to non-CO lenders, the economic difference in this proportion is small. The

[7] In several instances, Goldman Sachs was the institutional blockholder and Goldman Sachs or one of its underlying institutions (e.g., Goldman Sachs Bank) was the lender.

most notable differences in terms of economic magnitude are with respect to size, activity, and past returns. Specifically, CO lenders are roughly half the size of the non-CO lenders, engage in lending activity that is roughly one fourth smaller than the lending activity of non-CO lenders, and experienced stock returns that were 374bp lower. In light of the observed differences between the two lender groups, in subsequent sections we employ three approaches to control for cross-sectional differences in lender characteristics: 1) regression controls, 2) matched sample analysis, and 3) a methodological variation of our main testing approach that keeps the lender constant.

[Insert Table 1]

1.3. Sample construction of borrower-lender pairs with no prior relationship

We also analyze the effect of joint institutional ownership on lending behavior between lenders and borrowers that do *not* share a lending history. We begin creating our sample as we did before, with the list of publicly-held DealScan-active borrowers and lenders. From there, we create a rolling quarterly list of borrowers and lenders that have *not* interacted with each other in the prior three years. We then determine the first cross-ownership date between these lenders and borrowers and, again, keep the CO borrower constant. We include in the sample only the borrowers that have *not* borrowed from the CO lender during the pre-CO window. Again, we omit from the sample any observation where the lender is also the institutional blockholder or the institutional blockholder is the ultimate parent of the lender. Then, we include in our sample all publicly-held lenders from which the borrower has *not* borrowed during the pre-CO window. We further tailor the sample for computational feasibility to include only those lenders that are in the same quarterly market equity size tercile as the CO lender. Finally, just as with the relationship sample, we

determine which lenders entered into a syndicated loan transaction with the CO borrower in the post-CO window.

In Table 1, Panel B, we list the summary statistics of our key variables for this non-relationship sample. This sample includes 101 lenders, 1,703 companies, and 68 institutional blockholders. We have 78,252 quarter-lender observations, 14,513 of which are CO and 63,739 are non-CO. The proportion of pre-CO window non-relationship lenders that strike a deal with the CO borrower in the post-CO window is 5.61%. This figure is significantly lower economically than for the relationship sample, as is sensible since it takes fewer resources to continue to do business with prior lenders. Also, there is no statistical difference in this measure between CO and non-CO lenders. The CO and non-CO lenders exhibit differences in size and activity that are qualitatively similar to the relationship sample, however, their past returns are not statistically different.

2. Main Tests of Cross-Ownership Influence

In this section we introduce our main testing methodology and results for the sample of borrower-lender pairs that had prior dealings. We then stratify our analysis by whether the common institutional blockholders followed active or passive investment strategies. Finally, we extend the analysis to the sample of borrower lender pairs that had no prior dealings.

2.1. Borrower-lender pairs with a prior relationship

We first analyze the sample of borrowers and lenders that had prior dealings. For these entities, we want to know whether CO borrowers are more likely to enter into a deal with CO prior lenders than non-CO prior lenders in the post-CO window. To this end, we estimate a linear

probability model where the dependent variable is an indicator variable for whether a given borrower *i* cross-owned by institutional blockholder *k* enters into a deal with a given lender *j* in the post-CO window. The key independent variable is *Cross-Ownership*, an indicator variable reflecting that the k^{th} institutional investor established a joint ownership position of at least 5% concurrently at time *t* in borrower *i* and lender *j*. By including the cross-ownership indicator variable, we isolate the effect of cross ownership on borrowers' behavior. In addition, we include borrower by quarter by institutional blockholder fixed-effects, which allows us to directly compare the likelihood of a deal with a CO lender versus with a non-CO lender, holding constant the borrower, institutional blockholder, and time that the CO was established.

To account for differences in characteristics between CO and non-CO lenders, we control for the proportion of funding each lender provided in the pre-CO window and each lender's institutional ownership concentration, activity in the syndicated loan market, size, and past returns. *Relationship Funding* is the proportion of funding lender *j* provided to borrower *i* during the pre-CO window, [*t-4*, *t-1*]. As detailed above, we measure relationship funding in two ways: version 1 assigns the total value of each syndicated loan to each lead lender and version 2 assigns an equal dollar amount of each loan to each lead lender. *Ownership Concentration* is the Herfindahl-Hirschman Index of concentration of ownership in lender *j* as of the end of the pre-CO window, *t-1*. *Lender Activity* is the natural log of the total millions of attributable dollars lent by lender *j* in the syndicated loan market over [*t-4*, *t-1*]. *Lender Size* is the natural log of lender *j*'s market capitalization in millions of dollars at *t-1*. Finally, *Lender Past Returns* is lender *j*'s compounded stock return over the twelve months ending at *t-1*.

Table 2 presents results. The key *Cross-Ownership* coefficient in both specifications shows that borrowers were significantly more likely to enter into another deal with a CO prior lender than

with a non-CO prior lender. When linked by a common institutional blockholder, our two specifications indicate that borrowers were 347bp and 336bp, respectively, more likely to deal again with the CO prior lender than a non-CO prior lender. The magnitude is economically significant given that borrowers and lenders–whether cross-held or not–on average entered into another agreement 49.16% of the time.

[Insert Table 2]

2.2. Actively versus passively cross-held borrower-lender pairs with a prior relationship

The results so far show that borrowers are more likely to deal again with prior lenders when they are linked by a common institutional blockholder. One consideration to address is whether these results hold for all types of institutional investors. Specifically, we would expect that actively managed institutions would have a different level of company contact than passively managed institutions. Over the course of day-to-day business, active institutional investors should be in more regular and infiltrative contact with corporate CFOs regarding a variety of operating and financing issues than passive institutional investors. To be clear, we are not suggesting that active blockholders pressure CFOs to borrow from CO lenders. Rather, when discussing financing plans, we envision blockholders asking CFOs for their opinion of CO lenders, or the blockholders sharing their favorable opinions of CO lenders. In such scenarios, the increased likelihood of striking a deal derives from the borrowing firm's CFO having an increased familiarity (and perhaps a more favorable opinion) of the CO lender. Thus, we hypothesize that the influence of interconnected ownership is restricted to instances when the joint blockholders are active rather than passive.

To test this hypothesis, we again estimate the linear probability model specified above, but now split the sample into active and passive institutional blockholders using Bushee's (2001) classification. We define active investors as those classified as "transient" and "dedicated" and passive investors as those classified as "quasi-indexers".[8]

Table 3 presents results. Consistent with our hypothesis, the key cross-ownership coefficient proves significant only when the joint blockholder follows an active management strategy. When linked by a common active blockholder, our two specifications indicate that borrowers were 382bp and 391bp, respectively, more likely to deal again with the CO lender than a non-CO lender. In contrast, the cross-ownership coefficient differs insignificantly from zero for the passive sample. In sum, these results suggest that the influence of interconnected ownership materializes only when the joint blockholders are active, which is consistent with the view that intensity and regularity of conversations are likely greater when the institutional investor follows an active strategy.

[Insert Table 3]

2.3. Borrower-lender pairs with no prior relationship

We now turn to cases where cross-held pairings had no prior dealings. For these cross-held pairings, we want to know whether CO borrowers are more likely to enter into a deal with CO lenders than non-CO lenders in the post-CO window.[9]

[8] We obtained the dedicated/transient/quasi-indexer classification of institutional investors from Brian Bushee's website.

[9] In this setting, we cannot differentiate between borrower-lender pairs that rejected each other and those that never solicited business from each other. If the CO borrowers and CO lenders are more likely to never have solicited business from each other than CO borrowers and non-CO lenders, this could bias the results in the direction of finding that CO borrowers are more likely to enter into a deal with CO lenders than non-CO lenders in the post-CO window. That said, we have no reason to believe that CO borrowers and CO lenders are more likely to never have solicited business from each other than CO borrowers and non-CO lenders.

We use the same methodology that we used for the sample of borrower-lender pairings that had prior dealings, but now drop the control for relationship funding. Table 4 presents results for all borrower-lender pairs, and Table 5 presents results for the samples split by whether the common institutional blockholder is active or passive.

[Insert Tables 4 and 5]

Borrowers entered into a syndicated loan agreement with a specific lender with which it had no prior dealings–regardless of CO status–on average 5.61% of the time, as reported in Panel B of Table 1. Table 4 shows that a borrower was 105bp more likely to enter into a deal with a CO lender. In other words, a credit-seeking company was about 19% more likely to borrow from a new lender when they shared a common institutional blockholder. Results from Table 5 are consistent with those of Table 3 in that the key cross-ownership coefficient proves significant only when the joint blockholder follows an active management strategy. When linked by a common active blockholder, borrowers were 110bp more likely to deal with the CO lender than a non-CO lender. In contrast, the cross-ownership coefficient differs insignificantly from zero for the passive sample. In sum, these results suggest that the influence of interconnected ownership materializes even when borrowers and lenders had no prior dealings in the past and that this effect of interconnected ownership is restricted to instances whether the common institutional blockholders follow active rather than passive strategies.

3. Robustness Tests

Recall that the descriptive statistics presented in Table 1 show that CO lenders tended to be smaller in size and less active in the syndicated loan market than non-CO lenders. In our main tests, we controlled for cross-sectional differences in size, activity, and other lender characteristics by including corresponding independent variables in our linear probability model with borrower fixed effects. If some of these lender variables affect deal likelihood between the borrower-lender pairs in a non-linear fashion, simply including them as controls in our linear probability model might not be adequate. To alleviate this concern, we check the robustness of these results in two ways. In the first, we use the same linear probability model with borrower fixed effects, but recast our samples by matching each CO lender with one non-CO lender based on propensity scores derived from lender characteristics. In the second, we flip the perspective on the syndicated loan decision from the borrower to the lender by fitting a linear probability model with lender fixed effects, controlling for characteristics of the borrower such as prior borrowing activity, estimated default probability, and size.

3.1. Matched lender approach

For our first robustness tests, within our relationship and non-relationship samples, we match each CO lender with a non-CO lender based on propensity scores derived from lender characteristics. The matching approach is implemented as follows for borrower-lender pairs with a prior relationship: We include all quarterly observations, which include borrower-lender pairs that had at least one deal in the previous three years. In a given quarter *t*, we identify pairs in which a given institutional investor holds an ownership block of more than five percent for the first time. Next, in that same quarter, the borrower is paired with all the other lenders with which it had at least one deal in the prior three years. Among these pairs, we keep the non-CO lender that has the

closest *Propensity Score* to the CO lender. *Propensity Score* is computed for each lender as the predicted probability of the lender being cross-owned given its characteristics, which simultaneously include *Relationship Funding, Ownership Concentration, Lender Activity, Lender Size, Lender Past Returns*, and *Propensity Score*, respectively. All the matching variables are measured either during the pre-CO window, [*t-4*, *t-1*] or at the end of the pre-CO window, *t-1*. We repeat an analogous process for borrower-lender pairs with no prior relationship.

Table 6 reports results when we fit the linear probability model employed in Section 2.1. for the sample constructed using the matched lender approach. Panel A (Panel B) shows results for borrowers and lenders that had (did not have) prior dealings. In both sets of regressions, the key cross-ownership coefficient is significant for joint blockholders that follow an active management strategy, but differs insignificantly from zero for those that follow a passive management strategy. Thus, our earlier results for the main tests are robust when we drop from the sample the non-CO lenders with propensity scores furthest from those of their matched CO lender.

[Insert Table 6]

3.2. Lender fixed effects

For our second robustness check, we flip the perspective on the syndicated loan decision from the borrower to the lender. Now we analyze whether CO lenders are more likely to enter into a deal with CO borrowers than non-CO borrowers in the post-CO window. With this approach, we will be able to keep the lender constant, in effect, and eliminate the concern that our results are driven by differences in characteristics across lenders.

We construct this sample similarly to the main sample. We begin with our list of DealScan-active borrowers and lenders. Then we identify all CO lenders at time *t* that originated a syndicated loan during the pre-CO window, [*t-4*, *t-1*]. Then, we restrict the sample to CO lenders that originated at least one loan during the pre-CO window to a borrower that is cross-owned by the same financial institution at time *t*. We also require that the CO lender's list of borrowers at time *t-1* includes at least one non-CO borrower that is publicly traded. Again, we omit from the sample any observation where the lender is also the institutional blockholder or the institutional blockholder is the ultimate parent of the lender.

We estimate a linear probability model where the dependent variable is an indicator for whether a given lender *j* cross-owned by institutional blockholder *k* enters into a deal with a given borrower *i* in the post-CO window. As before, the key variable is *Cross-Ownership*, an indicator variable that reflects that the k^{th} institutional investor established a joint ownership position of at least 5% concurrently at time *t* in lender *j* and borrower *i*. By including a cross-ownership indicator variable in this fixed effects structure, we isolate the effect of cross ownership on lenders' behavior. In addition, we include institutional blockholder by lender by quarter fixed-effects, which allows us to directly compare the likelihood of a deal with a CO borrower versus with a non-CO borrower, holding constant the lender, institutional blockholder, and time that the CO was established.

To control for differences in the characteristics across borrowers, we control for the proportion of funding each borrower borrowed from the lender in the pre-CO window and each borrower's institutional ownership concentration, activity in the syndicated loan market, size, past returns and credit risk. *Relationship Funding* is the proportion of funding lender *j* provided to borrower *i* during the pre-CO window, [*t-4*, *t-1*]. As before, we measure relationship funding in

two ways: version 1 assigns the total value of each syndicated loan to each lead lender and version 2 assigns an equal dollar amount of each loan to each lead lender. *Ownership Concentration* is the Herfindahl-Hirschman Index of concentration of ownership in borrower *i* as of the end of the pre-CO window, *t-1*. *Borrower Activity* is the natural log of the total millions of attributable dollars borrowed by borrower *i* in the syndicated loan market over [*t-4*, *t-1*]. *Borrower Size* is the natural log of borrower *i*'s market capitalization in millions of dollars at *t-1*. *Borrower Past Returns* is borrower *i*'s compounded stock return over the twelve months ending at *t-1*. Finally, *Simulated Expected Default Frequency* (*SEDF*) controls for borrower *i*'s credit risk.

We use the SAS code furnished by Bharath and Shumway (2004), which calculates a SEDF based on the Merton (1974) model where the firm's equity is a call option on the underlying firm value with the face value of the firm's debt serving as the strike price. Because neither the underlying firm value nor its volatility is directly observable, we infer them using an iterative process on the model's assumptions. The results can be used to generate a distance to default, which is the number of standard deviations the firm is away from defaulting. Finally, the distance to default is mapped into a probability of default (SEDF) using the normal cumulative density function.[10] This final mapping into SEDFs is performed quarterly, and by design, the output is not comparable from one quarter to another. That is, an SEDF of 0.8 one quarter is not the same as 0.8 another quarter. Further, a firm with an SEDF of 0.4 is not half as likely to default over the following year as a firm with an SEDF of 0.8. However, the mapping does preserve the ranking of severity of credit risk. For these reasons, we use the decile rank of the borrower's SEDF as our measure of credit risk. This rank measure is largely comparable from one period to the next.

[10] "Expected Default Frequency" is term that is trade-marked by Moody's KMV, which uses historical default probabilities to map from distance to default into EDFs. Since this default data is proprietary, we use the normal cumulative density function for our mapping.

Table 7 presents results for the sample of borrowers and lenders that had prior dealings. For the overall sample, lenders were significantly more likely to enter into another deal with a cross-held borrower. Our two specifications indicate that lenders were 248bp and 255bp, respectively, more likely to deal again with a CO prior borrower than a non-CO prior borrower. Again, evidence is consistent with our hypothesis that the influence of interconnected ownership is restricted to instances when the joint blockholders are active rather than passive. Lenders held by an active blockholder are 305bp and 308bp, respectively, more likely to enter into another deal with a CO prior borrower. In contrast, lenders held by a passive blockholder show no statistical preference for entering into another deal with a CO prior borrower.

[Insert Table 7]

Table 8 presents results for the sample of borrowers and lenders that had no prior dealings.[11] Once again for the overall and the active samples, lenders are more likely to enter into a deal with a CO borrower. In contrast for the passive sample, lenders are no more likely to deal with a CO borrower than a non-CO borrower.

[Insert Table 8]

3. Concluding Remarks

[11] The non-relationship sample was constructed in a similar fashion to the relationship sample used in Table 7. However, in order to maintain a computationally feasible sample, we add further restrictions: (1) the CO and non-CO borrower have similar pre-CO deal activity: they are within one deal of each other; (2) the CO borrower and non-CO borrower are similar credit quality: they are within one SEDF rank of each other; and (3) the CO borrower and non-CO borrower are in the same industry according to the Fama-French 49 industry classification.

Our results show that borrowers and lenders linked by a common institutional blockholder tended to do more syndicated loan business together going forward. This was true regardless of whether the linked borrower-lender pairs had prior dealings or not. Importantly, the increase in dealings between linked pairs only occurred when the common blockholder followed an active investment strategy. Pairs held by passive blockholders showed no such uptick in future dealings.

Our study provides direction for future research on the influence common institutional ownership has on the actions of cross-held companies. Our results suggest that the influence extends beyond within-industry product markets and raises questions about how far it reaches. Do our findings in the syndicated loan market describe other financial markets where cross-held companies interact? Do companies buy more from cross-owned suppliers than non-cross-owned suppliers? Do companies spend more advertising dollars at cross-owned media companies than non-cross-owned media companies? Common ownership could potentially affect any dealings that occur between cross-held companies.

Our study also suggests that future research should control for whether institutional investors follow an active or passive management strategy. Our results show that the significant increase in syndicated loan dealings occurred only when the joint blockholder followed an active management strategy. We interpret our syndicated loan-market finding as consistent with active blockholders influencing borrowers through conversations about financing plans that are more intense and regular than those between passive blockholders and borrower management. Does this active-passive dichotomy extend to other areas where common ownership affects the behaviors of cross-held firms?

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Table 1
Descriptive Statistics

This table reports descriptive statistics for lenders that are part of the borrower-lender pairs used in our analysis. The borrower-lender pairs are constructed as follows: In a given quarter *t*, we first identify a borrower and lender, in which a given institution holds an ownership block of more than five percent for the first time. Next, at *t-1*, the borrower is paired with all the other public lead lenders with which the borrower has had at least one deal in the period [*t-4*, *t-1*]. Panel A includes only the lenders that had at least one deal with the given borrower in the period [*t-4*, *t-1*], and Panel B includes only the lenders that had *no* prior deals with the given borrower. *Deal* is an indicator variable, which equals one when a paired lender entered into at least one deal with the given borrower in the post-CO window. *Relationship Funding* is the version 1 proportion of dollars of funding that the borrower received in the pre-CO window from the paired lender. *Ownership Concentration* is the Herfindahl-Hirschman Index of the ownership stakes of all institutional investors in the lender as of *t-1*. *Lender Activity* is the total millions of attributable dollars lent by the lender in the year of *t-1*. *Lender Size* is the market capitalization of the lender in $ millions as of *t-1*. *Lender Past Return* is the compounded stock return of the lender over the 12 months ending at *t-1*.

Panel A. Relationship Lenders

	All		Cross-Owned			
Characteristic	Mean	Std	Yes	No	Difference	
Deal (Post)	0.4916	0.4037	0.4835	0.4943	-0.0108	
Relationship Funding	0.7126	0.1841	0.6932	0.7171	-0.0240	**
Ownership Concentration	0.0427	0.0683	0.0506	0.0396	0.0110	**
Lender Activity (in $mill)	160,866	123,498	131,489	172,209	-40,720	***
Lender Size (in $mill)	48,426	44,643	30,065	54,956	-24,891	***
Lender Past Return	0.0989	0.2137	0.0674	0.1049	-0.0374	**
Quarter-Lender Observations	6,704		1,269	5,435		
Number of Lenders	73					
Number of Borrowers	589					
Number of Blockholders	42					

Panel B. Non-Relationship Lenders

	All		Cross-Owned			
Characteristic	Mean	Std	Yes	No	Difference	
Deal (Post)	0.0561	0.1545	0.0574	0.0557	0.0017	
Ownership Concentration	0.0637	0.1231	0.0529	0.0664	-0.0135	***
Lender Activity (in $mill)	57,800	58,749	49,334	59,248	-9,913	***
Lender Size (in $mill)	18,874	18,092	15,065	19,574	-4,509	***
Lender Past Return	0.1249	0.2317	0.1291	0.1230	0.0061	
Quarter-Lender Observations	78,252		14,513	63,739		
Number of Lenders	101					
Number of Borrowers	1,703					
Number of Blockholders	68					

Table 2
Linear probability model with borrower-by-quarter-by-institution fixed effects

This table presents results from linear probability models where the dependent variable is an indicator variable for whether a borrower borrows from a given lender in the post-CO window. Observations include borrower-lender pairs at different times. The borrower-lender pairs are constructed as follows: In a given quarter *t*, we first identify a borrower and lender, in which a given institution holds an ownership block of more than five percent for the first time. Next, at *t-1*, the borrower is paired with all the other public lead lenders with which the borrower has had at least one deal in the period [*t-4*, *t-1*]. Three-year pre- and post-CO windows are defined as follow: pre-CO window [*t*-4, *t-1*] and post-CO window [*t*, *t*+3].The key independent variable, *Cross-Ownership*, is an indicator variable, which equals one for the borrower-lender pairs where a given institution has a joint five or more percent ownership stake at time *t*. *Relationship Funding* is the proportion of dollars of funding that the borrower received in the pre-CO window from the paired lender. Version 1 of the measure follows Bharath, Dahiya, Saunders and Srinivasan (2007 and 2011), among others, which attribute the entire loan amount to each lead lender. Version 2 of the measure follows Ljungqvist, Marston and Wilhelm (2006), which attributes one-n^{th} of the loan amount to each of n lead lenders. *Ownership Concentration* is the Herfindahl-Hirschman Index of the ownership stakes of all institutional investors in the lender as of *t-1*. *Lender Activity* is the natural log of the total millions of attributable dollars lent by the lender in the year of *t-1*. *Lender Size* is the natural log of the market capitalization of the lender in $ millions as of *t-1*. *Lender Past Return* is the compounded stock return of the lender over the 12 months ending at *t-1*. The specifications include borrower-by-quarter-by-institution fixed effects. T-statistics are presented in parentheses.

Linear Probability Model		
Relationship Measure:	Version 1	Version 2
Cross-Ownership	0.0347	0.0336
	(2.49)	*(2.41)*
Relationship Funding	0.3888	0.4352
	(14.69)	*(14.39)*
Ownership Concentration	0.1268	0.1234
	(2.75)	*(2.70)*
Lender Activity	0.0899	0.0957
	(13.63)	*(14.90)*
Lender Size	0.0423	0.0403
	(9.56)	*(9.08)*
Lender Past Returns	0.0364	0.0359
	(1.66)	*(1.63)*
Borrower*Quarter*Institution	Yes	Yes
R^2	41.70%	41.51%
N	6,704	6,704

Table 3
Linear probability model by institution type with borrower-by-quarter-by-institution fixed effects

This table presents results from linear probability models run on subsamples formed based on whether the block-holding institutions are passive or active. Based on Bushee's (2001) classification, we define passive investors as institutions that are classified as "quasi-indexers" and define active investors as institutions classified as "transient" and "dedicated" institutions. The dependent variable is an indicator variable for whether a borrower borrows from a given lender in the post-CO window. Observations include borrower-lender pairs at different times. The borrower-lender pairs are constructed as follows: In a given quarter *t*, we first identify a borrower and lender, in which a given institution holds an ownership block of more than five percent for the first time. Next, at *t-1*, the borrower is paired with all the other public lead lenders with which the borrower has had at least one deal in the period [*t-4*, *t-1*]. Three-year pre- and post-CO windows are defined as follow: pre-CO window [*t*-4, *t-1*] and post-CO window [*t*, *t*+3]. The key independent variable, *Cross-Ownership*, is an indicator variable, which equals one for the borrower-lender pairs where a given institution has a joint five or more percent ownership stake at time *t*. *Relationship Funding* is the proportion of dollars of funding that the borrower received in the pre-CO window from the paired lender. Version 1 of the measure follows Bharath, Dahiya, Saunders and Srinivasan (2007 and 2011), among others, which attribute the entire loan amount to each lead lender. Version 2 of the measure follows Ljungqvist, Marston and Wilhelm (2006), which attributes one-nth of the loan amount to each of n lead lenders. *Ownership Concentration* is the Herfindahl-Hirschman Index of the ownership stakes of all institutional investors in the lender as of *t-1*. *Lender Activity* is the natural log of total millions of attributable dollars lent by the lender in the year of *t-1*. *Lender Size* is the natural log of the market capitalization of the lender in $ millions as of *t-1*. *Lender Past Return* is the compounded stock return of the lender over the 12 months ending at *t-1*. The specifications include borrower-by-quarter-by-institution fixed effects. T-statistics are presented in parentheses.

Relationship Measure:	Version 1		Version 2	
Institution Type:	Active	Passive	Active	Passive
Cross-Ownership	0.0382	0.0121	0.0391	0.0018
	(2.40)	*(0.38)*	*(2.46)*	*(0.05)*
Relationship Funding	0.3784	0.4209	0.4240	0.4873
	(12.55)	*(7.46)*	*(12.23)*	*(7.84)*
Ownership Concentration	0.1234	0.1429	0.1186	0.1435
	(2.33)	*(1.51)*	*(2.25)*	*(1.54)*
Lender Activity	0.0904	0.0884	0.0966	0.0923
	(12.23)	*(5.70)*	*(13.47)*	*(6.04)*
Lender Size	0.0421	0.0391	0.0401	0.0357
	(8.29)	*(4.08)*	*(7.88)*	*(3.74)*
Lender Past Returns	0.0466	-0.0119	0.0448	-0.0026
	(1.93)	*(-0.21)*	*(1.85)*	*(-0.05)*
Borrower*Quarter*Institution FE	Yes	Yes	Yes	Yes
R^2	41.62%	42.16%	41.42%	42.29%
N	5,160	1,416	5,160	1,416

Table 4
Linear probability model for borrower-lender pairs with no prior relation with borrower-by-quarter-by-institution fixed effects

This table presents results from a linear probability models where the dependent variable is an indicator variable for whether a borrower borrows from a given lender in the post-CO window. Observations include borrower-lender pairs at different times. The borrower-lender pairs are constructed as follows: In a given quarter *t*, we first identify a lender and borrower, in which a given institution holds an ownership block of more than five percent for the first time. Next, at *t-1*, the borrower is paired with all the other public lead lenders with which the borrower has not done any deals in the period [*t-4*, *t-1*]. Three-year pre- and post-CO windows are defined as follows: pre-CO window [*t*-4, *t-1*] and post-CO window [*t*, *t*+3].The key independent variable, *Cross-Ownership*, is an indicator variable, which equals one for the borrower-lender pairs where a given institution has a joint five or more percent ownership stake at time *t*. *Ownership Concentration* is the Herfindahl-Hirschman Index of the ownership stakes of all institutional investors in the lender as of *t-1*. *Lender Activity* is the natural log of total millions of attributable dollars lent by the lender in the year of *t-1*. *Lender Size* is the natural log of the market capitalization of the lender in $ millions as of *t-1*. *Lender Past Return* is the compounded stock return of the lender over the 12 months ending at *t-1*. The specifications include borrower-by-quarter-by-institution fixed effects. T-statistics are presented in parentheses.

Linear Probability Model	
Cross-Ownership	0.0105
	(4.99)
Ownership Concentration	0.0172
	(3.39)
Lender Activity	0.0152
	(32.32)
Lender Size	0.0137
	(21.49)
Lender Past Returns	-0.0093
	(-3.00)
Borrower*Quarter*Institution FE	Yes
R^2	13.13%
N	78,252

Table 5
Linear probability model by institution type for borrower-lender pairs with no prior relationship and borrower-by-quarter-by-institution fixed effects

This table presents results from linear probability models run on subsamples formed based on whether the block-holding institutions are passive or active. Based on Bushee's (2001) classification, we define passive investors as institutions that are classified as quasi-indexers and define active investors as institutions classified as transient and dedicated institutions. The dependent variable is an indicator variable for whether a borrower borrows from a given lender in the post-CO window. Observations include borrower-lender pairs at different times. The borrower-lender pairs are constructed as follows: In a given quarter *t*, we first identify a lender and borrower, in which a given institution holds an ownership block of more than five percent for the first time. Next, at *t-1*, the borrower is paired with all the other public lead lenders with which the borrower has not done any deals in the period [*t-4*, *t-1*].. Three-year pre- and post-CO windows are defined as follows: pre-CO window [*t*-4, *t-1*] and post-CO window [*t*, *t*+3].The key independent variable, *Cross-Ownership*, is an indicator variable, which equals one for the borrower-lender pairs where a given institution has a joint five or more percent ownership stake at time *t*. *Ownership Concentration* is the Herfindahl-Hirschman Index of the ownership stakes of all institutional investors in the lender as of *t-1*. *Lender Activity* is the natural log of total millions of attributable dollars lent by the lender in the year of *t-1*. *Lender Size* is the natural log of the market capitalization of the lender in $ millions as of *t-1*. *Lender Past Return* is the compounded stock return of the lender over the 12 months ending at *t-1*. The specifications include borrower-by-quarter-by-institution fixed effects. T-statistics are presented in parentheses.

Institution Type:	Active	Passive
Cross-Ownership	0.0110	0.0121
	(4.78)	*(1.57)*
Ownership Concentration	0.0187	0.0214
	(3.32)	*(1.50)*
Lender Activity	0.0149	0.0185
	(29.02)	*(11.06)*
Lender Size	0.0144	0.0132
	(20.12)	*(6.75)*
Lender Past Returns	-0.0071	-0.0303
	(-2.11)	*(-2.78)*
Borrower*Quarter*Institution FE	Yes	Yes
R^2	13.20%	13.11%
N	65,366	9,103

Table 6
Matched Sample Approach

This table presents coefficients on the *Cross-Owned* variable from linear probability models specified as in Tables 3 and 5 but are estimated based on matched samples. In Panel A, the matched samples are based on the borrower-lender pairs that had a relationship in the pre-CO window, while in Panel B, the matched samples are based on borrower-lender pairs that did *not* have a relationship in the pre-CO window. The matching approach is implemented as follows: Observations include borrower-lender pairs at different times which had at least one prior deal in the previous 3 years (Panel A) or no prior deal (Panel B). In a given quarter *t*, we first identify a lender and borrower, in which a given institution holds an ownership block of more than five percent for the first time. Next, at time *t-1*, the borrower is paired with all the other public lead lenders with which the borrower has had at least one deal (Panel A) or has not done any deals (Panel B) in the period [*t-4*, *t-1*]. Among these pairs, we keep the pair with the lender that has the closest *Propensity Score* to the cross-owned lender. *Propensity Score* is computed for each lender in the borrower-lender pairs described above as the predicted probability of the lender being cross-owned given its characteristics, which simultaneously include *Relationship Funding, Ownership Concentration, Lender Activity, Lender Size, Lender Past Returns,* and *Propensity Score,* respectively. All the matching variables are measured at time *t-1*. *Relationship Funding* is the proportion of dollars of funding that the borrower received in the pre-CO window from the paired lender. The proportion is measured following Bharath, Dahiya, Saunders and Srinivasan (2007 and 2011), among others, which attribute the entire loan amount to each lead lender. *Ownership Concentration* is the Herfindahl-Hirschman Index of the ownership stakes of all institutional investors in the lender as of *t-1*. *Lender Activity* is the natural log of total millions of attributable dollars lent by the lender in the year of *t-1*. *Lender Size* is the natural log of the market capitalization of the lender in $ millions as of *t-1*. *Lender Past Return* is the compounded stock return of the lender over the 12 months ending at *t-1*. The specifications include all the controls used in Table 3. Based on Bushee's (2001) classification, we define passive investors as institutions that are classified as quasi-indexers and define active investors as institutions classified as transient and dedicated institutions. The specifications include borrower-by-quarter-by-institution fixed effects. T-statistics are presented in parentheses.

Panel A. Lender-borrower pairs with prior relationship			
Independent Variables	All	Active	Passive
Cross-Ownership	0.0479	0.0584	-0.0505
	(2.50)	*(2.69)*	*(-1.07)*
Controls	Yes	Yes	Yes
Borrower*Quarter*Institution FE	Yes	Yes	Yes
R^2	61.46%	60.00%	68.35%
N	2,252	1,760	448
Panel B. Lender-borrower pairs with *no* prior relationship			
Independent Variables	All	Active	Passive
Cross-Ownership	0.0165	0.0197	0.0069
	(3.43)	*(3.62)*	*(0.61)*
Controls	Yes	Yes	Yes
Borrower*Quarter*Institution FE	Yes	Yes	Yes
R^2	52.72%	52.57%	52.23%
N	9,085	7,579	1,202

Table 7
Linear probability model with lender-by-quarter-by-institution fixed effects

This table presents results from linear probability models where the dependent variable is an indicator variable for whether a borrower borrows from a given lender in the post-CO window. Observations include lender-borrower pairs at different times. The lender-borrower pairs are constructed as follows: In a given quarter *t*, we first identify a lender and borrower, in which a given institution holds an ownership block of more than five percent for the first time. Next, at *t-1*, the borrower is paired with all the other public lead lenders with which the borrower has had at least one deal in the period [*t-4*, *t-1*]. Three-year pre- and post-CO windows are defined as follow: pre-CO window [*t*-4, *t-1*] and post-CO window [*t*, *t*+3].The key independent variable, *Cross-Ownership*, is an indicator variable, which equals one for the lender-borrower pairs where a given institution has a joint five or more percent ownership stake at time *t*. *Relationship Funding* is the proportion of dollars of funding that the borrower received in the pre-CO window from the paired lender. Version 1 of the measure follows Bharath, Dahiya, Saunders and Srinivasan (2007 and 2011), among others, which attribute the entire loan amount to each lead lender. Version 2 of the measure follows Ljungqvist, Marston and Wilhelm (2006), which attributes one-n^{th} of the loan amount to each of n lead lenders. *Ownership Concentration* is the Herfindahl-Hirschman Index of the ownership stakes of all institutional investors in the lender as of *t-1*. *Borrower Number of Deals* is the log of the number of deals the borrower activated in the pre-CO window. *Total Borrowed* is the dollar amount of total borrowing by the firm in the pre-CO window as a fraction of the firm's market cap at the end of the pre-CO window. *Borrower SEDF Rank* is the decile rank (0 is lowest; 9 is highest) of the simulated Expected Default Frequency as of *t-1*, as estimated by the SAS code in Bharath and Shumway (2004). *Borrower Size* is the natural log of the market capitalization of the borrower in $ millions as of *t-1*. *Borrower Past Return* is the compounded stock return of the borrower over the 12 months ending at *t-1*. The specifications include lender-by-quarter-by-institution fixed effects. T-statistics are presented in parentheses.

Table 7
Linear probability model by institution type
with lender-by-quarter-by-institution fixed effects

Relationship Measure:	Version 1			Version 2		
Institution Type:	All	Active	Passive	All	Active	Passive
Cross-Ownership	0.0248	0.0305	0.0071	0.0255	0.0308	0.0092
	(1.98)	*(2.17)*	*(0.25)*	*(2.02)*	*(2.17)*	*(0.32)*
Relationship Funding	0.3820	0.3874	0.3392	0.3048	0.3203	0.2410
	(36.76)	*(32.58)*	*(15.34)*	*(28.40)*	*(26.12)*	*(10.61)*
Ownership Concentration	0.0920	0.0273	0.1254	0.0772	-0.0028	0.1464
	(1.30)	*(0.32)*	*(1.07)*	*(1.06)*	*(-0.03)*	*(1.23)*
Borrower Number of Deals	0.0726	0.0713	0.0671	0.0583	0.0606	0.0430
	(12.39)	*(10.87)*	*(4.99)*	*(9.58)*	*(8.90)*	*(3.09)*
Total Borrowed	-0.0003	-0.0003	0.0007	-0.0004	-0.0004	0.0006
	(-1.16)	*(-1.08)*	*(0.55)*	*(-1.67)*	*(-1.59)*	*(0.46)*
Borrower Size	-0.0085	-0.0085	-0.0073	-0.0078	-0.0077	-0.0068
	(-6.87)	*(-6.05)*	*(-2.66)*	*(-6.23)*	*(-5.40)*	*(-2.47)*
Borrower Past Returns	0.0257	0.0289	0.0142	0.0260	0.0293	0.0149
	(12.83)	*(12.87)*	*(3.09)*	*(12.87)*	*(12.90)*	*(3.23)*
Borrower SEDF Rank	0.0034	0.0034	0.0047	0.0045	0.0042	0.0087
	(0.63)	*(0.59)*	*(0.34)*	*(0.83)*	*(0.73)*	*(0.62)*
Lender*Time*Institution FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	22.61%	22.39%	23.02%	21.35%	21.28%	21.58%
N	31,438	24,290	6,831	31,438	24,290	6,831

Table 8
Linear probability model for lender-borrower pairs with no prior relationship and with lender-by-quarter-by-institution fixed effects

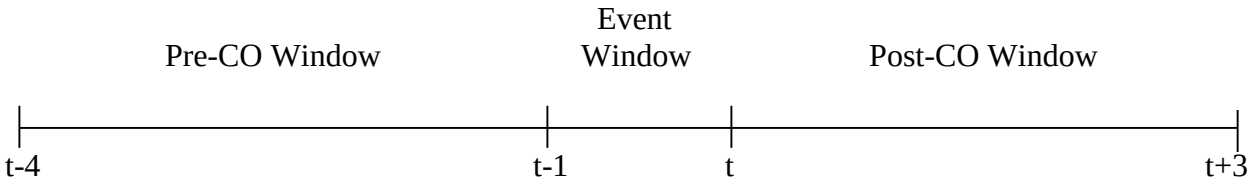
This table presents results from linear probability models where the dependent variable is an indicator variable for whether a borrower borrows from a given lender in the post-CO window. Based on Bushee's (2001) classification, we define passive investors as institutions that are classified as quasi-indexers and define active investors as institutions classified as transient and dedicated institutions. Observations include lender-borrower pairs at different times. The lender-borrower pairs are constructed as follows: In a given quarter *t*, we first identify a borrower and lender, in which a given institution holds an ownership block of more than five percent for the first time. Next, at *t-1*, the borrower is paired with all the other public lead lenders with which the borrower has not done any deals in the period [*t-4*, *t-1*]. Three-year pre- and post-CO windows are defined as follow: pre-CO window [*t*-4, *t-1*] and post-CO window [*t*, *t*+3]. The key independent variable, *Cross-Ownership*, is an indicator variable, which equals one for the lender-borrower pairs where a given institution has a joint five or more percent ownership stake at time *t*. *Relationship Funding* is the proportion of dollars of funding that the borrower received in the pre-CO window from the paired lender. The proportion is measured following Bharath, Dahiya, Saunders and Srinivasan (2007 and 2011), among others, which attribute the entire loan amount to each lead lender. *Ownership Concentration* is the Herfindahl-Hirschman Index of the ownership stakes of all institutional investors in the lender as of *t-1*. *Borrower Number of Deals* is the log of the number of deals the borrower activated in the pre-CO window. *Total Borrowed* is the dollar amount of total borrowing by the firm in the pre-CO window as a fraction of the firm's market cap at the end of the pre-CO window. *Borrower SEDF Rank* is the decile rank (0 is lowest; 9 is highest) of the simulated Expected Default Frequency as of *t-1*, as estimated by the SAS code in Bharath and Shumway (2004 WP). *Borrower Size* is the natural log of the market capitalization of the borrower in $ millions as of *t-1*. *Borrower Past Return* is the compounded stock return of the borrower over the 12 months ending at *t-1*. The specifications include lender-by-quarter-by-institution fixed effects. T-statistics are presented in parentheses.

Table 8
Linear probability model for lender-borrower pairs with no prior relationship and with lender-by-quarter-by-institution fixed effects

Institution Type:	All	Active	Passive
Cross-Ownership	0.0023	0.0031	0.0008
	(2.82)	*(2.87)*	*(0.62)*
Ownership Concentration	0.0207	0.0120	0.0288
	(2.49)	*(1.07)*	*(2.28)*
Borrower Number of Deals	0.0006	0.0008	-0.0003
	(0.92)	*(0.94)*	*(-0.36)*
Total Borrowed	0.0001	0.0003	0.0002
	(1.66)	*(2.42)*	*(1.44)*
Borrower Size	0.0010	0.0009	0.0009
	(6.95)	*(5.01)*	*(4.51)*
Borrower Past Returns	0.0091	0.0098	0.0086
	(45.29)	*(35.62)*	*(28.51)*
Borrower SEDF Rank	-0.0004	-0.0006	-0.0001
	(-1.04)	*(-1.00)*	*(-0.20)*
Lender*Time*Institution FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
R^2	7.67%	8.73%	5.09%
N	341,119	208,952	121,920

Figure 1
Cross-Ownership Timeline

Time [*t-4*, *t-1*] is the pre-cross-ownership window (pre-CO window), when we track the history of loans between DealScan borrowers and lenders. Over the year [*t-1*, *t*], the institution establishes its positions in the lender and borrower and all loans that began the syndicated process during the pre-CO window are activated. At time *t*, the concurrent cross-ownership position is first observed. In [*t*, *t+3*], the post-cross-ownership window (post-CO window), we determine whether future DealScan transactions occurred between borrowers and lenders.



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