Relationship Banking and Loan Syndicate Structure: The Role of Private Equity Sponsors

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Abstract

Using a sample of syndicated bank loans to U.S. companies after their initial public offerings (IPOs), we examine how private-equity (PE) sponsors' relationships with banks influence their portfolio companies' loan syndicate structure. We find that a stronger relationship between the borrower's PE sponsor and its lead bank enables the bank to retain a significantly smaller share of the loan and form a larger and less concentrated syndicate. A stronger sponsor-bank relationship also attracts foreign bank participation. Our findings suggest that the bank's relationship with a third-party financial sponsor of the borrower mitigates information asymmetry problems in lending.

Key Words: Relationship Banking, Third-Party Banking Relationship, Information Asymmetry, Private Equity, Syndicated Loan, Syndicate Structure, IPO, LBO

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1. Introduction

A bank's relationship with a borrower can facilitate the bank's information acquisition about the borrower.[1] In this paper, we show that a bank's relationship with an informed third-party financial sponsor/investor of the borrower also plays an important role in mitigating information asymmetry problems in lending. We draw our empirical evidence from a large sample of syndicated loans to U.S. companies in the first five years after their initial public offerings (IPOs). Many of the IPOs are sponsored by private-equity (PE) firms. As key institutional investors in these IPO companies, PE firms are unique in two aspects. First, they are active players in the syndicated loan market, and build up their own relationships with lenders (banks) through transactions such as leveraged buyouts (Ivashina and Kovner (2011)). Second, PE firms are also likely to possess valuable (and often non-public) information about their portfolio companies.[2] Therefore, a PE sponsor-bank relationship could be a viable channel via which the bank obtains useful information about the borrower.

Our empirical analysis builds on the literature suggesting that information asymmetries both between a borrower and its lender(s) and within a lending syndicate are a critical determinant of the syndicate structure in equilibrium (e.g., Holmstrom and Tirole (1997), Sufi (2007), Ivashina (2009), Gopalan, Nanda, and Yerramilli (2011), and Lin, Ma, Malatesta, and Xuan (2012)). In the syndicated loan market, the lead bank (lead arranger) of a syndicated loan package conducts due diligence on the borrower and markets the loan package to a group of potential participant lenders. The lead bank is also responsible for ex post monitoring of the borrower during the life of the loan. Because the lead bank owns only a fraction of the loan but

[1] See Boot (2000) and Ongena and Smith (2000) for two reviews of this literature.
[2] PE firms also tend to retain influential equity stakes and/or serve on the boards of their portfolio companies for a few years after the IPO (Cao and Lerner (2009) and Huang, Ritter, and Zhang (2014)). We define private equity as buyouts, with venture capital and growth capital as separate categories. Although some PE firms make all three types of investments, we identify PE-backing at the portfolio company level.

bears virtually all of the due diligence and monitoring costs, it has an incentive to shirk when its efforts are imperfectly observable to the participant lenders. When information asymmetry between the borrower and the lead bank is greater and thus due diligence and monitoring are more costly, the lead bank's incentive to shirk becomes greater. Potential participant lenders would therefore be willing to take part in a deal only when the lead bank itself retains a sufficient share to signal quality due diligence and to commit to close ex-post monitoring. Thus, if the lead bank's relationship with the PE sponsor of a borrower mitigates information asymmetry between the lead bank and the borrower, all else being equal, the lead bank will be able to retain a smaller share of the loan and form a less concentrated syndicate.

We analyze the syndicate structure for a large sample of 2,920 syndicated bank loans, of which 1,627 loans have non-missing information on the lead bank's share of the loan, to both PE-backed and non-PE-backed IPO companies between 1995 and 2011. Our empirical findings suggest that PE sponsors' prior banking relationships mitigate information asymmetry problems of their portfolio companies. We focus on prior relationships between the lead bank of a loan and the borrower's PE sponsor(s), and refer to such relationships as sponsor-bank relationships throughout the paper. Our primary measure of a PE firm's prior relationship with a specific bank is the ratio of the dollar amount of loans from this particular bank to this PE firm's portfolio companies over the dollar amount of all loans to the PE firm's portfolio companies during the past five years.[3] A greater value of the relationship measure indicates a stronger relationship between the PE firm and the bank. We find that lead banks retain significantly smaller factions of loans made to PE-backed IPO companies when these banks have strong prior lending relationships with the PE sponsors. Depending on the model specifications, having a strong

[3] We hand-collect PE firms' identity information from their portfolio companies' IPO prospectus filings on the SEC EDGAR and match them with loan sponsor information in the DealScan loan database.

relationship with the borrower's PE sponsor allows the lead bank to hold 13% to 21% less of a loan for the sample of 1,627 loans with lead bank share information. For an average loan of $126 million, this represents $16 to $27 million less capital contribution from the lead bank.

In addition to reducing the lead bank share, sponsor-bank relationships can also increase the number of participant banks. We estimate Poisson regressions on the total number of participant lenders in a loan syndicate and find that a PE sponsorship or a strong sponsor-bank relationship attracts more participant lenders to the syndicate. Everything else being equal, a strong PE sponsor-bank relationship is on average associated with 2.2 more participant banks.

We also examine the determination of syndicate concentration, as measured by the Herfindahl index of loan shares retained by all lenders in the syndicate. We show that the Herfindahl index is significantly smaller and the syndicate is less concentrated when sponsor-bank relationships are stronger. It is important to point out that the effects of sponsor-bank relationships on the lead bank share, Herfindahl index, and number of lenders hold after controlling for existing lending and underwriting relationships between the lead bank and the borrower, lead bank reputation, and PE firm reputation.

Our paper further examines whether sponsor-bank relationships are also associated with more active participation of foreign lenders in a syndicate. We find that a strong sponsor-bank relationship significantly increases the probability of having a non-US participant lender. This finding suggests that when the lead bank can more credibly demonstrate effective due diligence and monitoring due to the existing sponsor-bank relationship, it is able to choose participant lenders that are farther from the borrower (Sufi (2007)).

A smaller loan share for the lead bank and more participant (or foreign) lenders imply a potentially larger loan or more lending in the future since the lead bank may face capital constraints. For example, assume that the lead bank faces a capital constraint and can only lend $100 million to the borrower. If the borrower is PE sponsored and the lead bank holds 51% of the loan, then the total loan amount is about $196 million. If the lead bank has a strong relationship with the PE sponsor and thus the lead bank only needs to hold 38% (30%) of the loan, then the total loan amount is about $263 million ($333 million). Therefore, a 13% (21%) reduction in the lead bank share is associated with roughly $67 million ($137 million) more credit for the borrower.[4] This role of sponsor-bank relationships in increasing credit supply is consistent with Petersen and Rajan (1994), who find that borrower-bank relationships help small businesses gain more access to credit. IPO companies also often have great needs for external financing but are prone to information asymmetry problems (Helwege and Liang (1996), Bates, Kahle, and Stulz (2009), Bouwman and Lowry (2012), and Hertzel, Huson, and Parrino (2012)). It is important if a PE sponsor can help an IPO company to gain access to extra credit by alleviating informational problems faced by the company.

The contributions of our paper are three-fold. First, we shed light on how the relationship between a borrower's third-party financial sponsor and its bank facilitates information transmission. This is a new layer of banking relationship that has not been explicitly discussed in the relationship banking literature (e.g., Sharpe (1990), Rajan (1992), Petersen and Rajan (1994), Berger and Udell (1995), Boot (2000), and Ongena and Smith (2000)), which provides extensive

[4] This example ignores the possibility that loan size is jointly determined by both supply and demand factors. Consistent with this example, however, loans to PE-backed IPO companies tend to be much larger than those to non-PE-backed companies (see Table 1). Our untabulated analysis also finds that sponsor-bank relationships more substantially reduce the lead bank share during the periods when banks tighten their lending standards. Also note that, although more participant bank lending and increased loan size would mechanically reduce lead bank share, this does not invalidate the link between the lead bank share and information asymmetry-related agency issues within a lending syndicate. At equilibrium, the lead bank has to have enough skin in the game if it wants to increase loan size, reduce its capital contribution, or both. Consequently, its share of the loan has to be big enough to signal its commitment for adequate due diligence and monitoring under certain strength of sponsor-bank relationships.

evidence for the advantage of relationship lending over arm's length lending in the presence of information asymmetry. The early relationship banking literature largely focuses on the relationships between banks and small/private borrowers. In a recent study using large syndicated bank loans, Bharath, Dahiya, Saunders, and Srinivasan (2011) find that the lead bank's relationship with the borrower of a loan facilitates the lead bank's information acquisition and results in more favorable loan contract terms for the borrower. Their study indicates that bank relationships matter even for large public corporate borrowers.

Only recently have researchers started to investigate whether the bank's information collection benefits from its relationship with an informed institutional shareholder, such as a PE sponsor, of the borrower. In an important and related study, Ivashina and Kovner (2011) shed light on the importance of the relationship between a shadow borrower and a bank by documenting a negative relation between sponsor-bank relationships and the yield spread of syndicated loans financing leveraged buyout (LBO) transactions. While both study sponsor-bank relationships, our paper differs in several aspects. First, we study post-IPO loans while they examine loans for the funding of LBOs. Target companies of LBO transactions are about to go through major changes in their financial and operational structures, and these companies are private for at least the first few years of the loans. On the other hand, IPO companies are public. It is thus much easier to control for the impact of borrower characteristics on loan syndicates. Second, the significance of PE ownership in the borrowing companies differs between the LBO loan sample and the post-IPO loan sample. PE firms almost always have a controlling equity ownership in their portfolio companies shortly after the LBO. For the IPO companies in our sample, the PE firms play more of a third-party sponsor/investor role since they generally do not own the majority of their portfolio companies' shares immediately before the loan start date.

Third, LBO financing marks the beginning of a series of financial transactions involving a portfolio company and its PE sponsor. For example, an LBO financing package sometimes includes a bridge loan, and the lead bank can generate fees by being chosen as the lead underwriter for a following bond offering. The cross-selling of investment banking business can thus have a significant impact on the terms of LBO loans (Ivashina and Kovner (2011)). Finally, we focus on loan syndicate structure, a key non-pricing aspect of syndicated loan financing. Although information asymmetry affects loan spreads, fees and cross-selling opportunities of related banking products can also be an important motivation for lower loan spreads. Our focus on syndicate structure allows a cleaner test of the role of third-party banking relationship in mitigating information asymmetry problems.

Second, our paper also contributes to the recent literature on loan syndicate structure. The syndicated loan market is the primary source of external financing for U.S. companies. According to Thomson Reuters, U. S. companies raised $2.3 trillion through syndicated loans alone in 2013. This is compared with $1.5 trillion that U.S. companies raised through corporate bonds during the same period. Therefore, it is highly important to understand how loan syndicates are structured to address information asymmetry problems in lending. Sufi (2007) finds that the lead bank retains a larger share of a loan and forms a more concentrated syndicate when the borrower is more opaque. Graham, Li, and Qiu (2008) find that borrowers' financial restatements are followed by fewer lenders for their loans, consistent with their hypothesis that more concentrated syndicates are formed to enhance monitoring after a borrower being perceived as having high risk and information asymmetry. Lin *et al*. (2012) find that loans to borrowers with large divergence between control and cash-flow rights tend to have more concentrated syndicates due to increased credit risk associated with such divergence. Furthermore, both Sufi

(2007) and Lin *et al*. (2012) contend that lead bank reputation can only partially alleviate information asymmetry problems. Gopalan *et al*. (2011) identify a negative effect of borrower bankruptcies on the lead arranger's subsequent syndication activities. Our paper highlights that the relationship between the lender and a third-party financial sponsor of the borrower also mitigates information asymmetry problems and affects syndicate structures.

Finally, our focus on post-IPO financing deepens our understanding of private equity firms as a special (and controversial) group of investors.[5] Private equity firms have significant equity stakes in an increasing number of U.S. companies, and the fraction of U.S. IPOs sponsored by PE firms has increased substantially from the 1990s to the 2000s (Huang, Ritter, and Zhang (2014)). It is crucial to understand PE firms' roles in their portfolio companies. Some studies find that PE-sponsored IPOs tend to have better stock and operating performance than other IPOs (see, e.g., Cao and Lerner (2009) and Guo, Hotchkiss, and Song (2011)). Our results suggest that PE-backed IPO companies can potentially benefit from their PE sponsors' relationships with banks. Given that access to post-IPO financing is critical, our results may partially explain the documented superior performance of PE-backed IPOs.

2. Hypothesis Development

In a syndicated loan, a group of lenders lend jointly to a borrower and the lead arranger (lead bank) originates the loan and performs due diligence and monitoring (Esty (2001) and Ivashina and Sun (2011)). Theories argue that the syndication outcome is affected by information asymmetry (Holmstrom and Tirole (1997)). The classic agency problems exist due to information asymmetry between a borrower and a lender. Costly due diligence and monitoring

[5] PE sponsors can bring in more effective monitoring to their portfolio companies and provide management with a stronger incentive to improve efficiency (Jensen (1986) and Kaplan (1989)). Alternatively, PE sponsors may gain via transferring wealth from other stakeholders (Shleifer and Summers (1988) and Warga and Welch (1993)).

by the lender are necessary to deal with such problems (e.g., Harris and Raviv (1979), Holmstrom (1979), and Smith and Warner (1979)). There are also incentive problems for the lead bank due to information asymmetry within the lending syndicate. Because the lead bank of a loan passes along a portion of the loan to the participant lenders, there is an adverse selection concern among the participant lenders that they receive more low quality loans (Leland and Pyle (1977)). Because the lead bank is also the "delegated monitor" of the syndicate, it has an incentive to shirk from monitoring when its monitoring effort cannot be observed and thus fairly compensated by the participant banks (Diamond (1984)). Holmstrom and Tirole (1997) suggest that in equilibrium the lead bank has to hold a certain portion of a loan that it syndicates so that the other lenders can be assured that the borrower is of acceptable quality and will be monitored properly. The lead bank also has to take a larger fraction of a loan if an opaque borrower requires more intense due diligence and greater monitoring effort.

A borrower can mitigate its information asymmetry problems by forming a relationship with a bank, and the primary benefit of a borrower-bank relationship is a Pareto-improving exchange of information (Boot (2000) and Ongena and Smith (2000)). Compared with arms-length lenders, banks specialize in collecting private information about borrowers (Ramakrishnan and Thakor (1984), Diamond (1984), and Fama (1985)). A durable relationship with a borrower provides the bank an incentive to produce proprietary borrower-specific information that cannot be easily learned by outside lenders and can be reused by the bank in subsequent business with the same borrower (Sharpe (1990), Rajan (1992), Boot (2000), and Ongena and Smith (2000)). Although proprietary information production costs can be initially high, it can be offset later as long as there is an intertemporal information reusability. Bhattacharya and Chiesa (1995) also argue that a borrower might be willing to reveal proprietary

information only to a relationship bank without worrying about the bank spilling it over to the financial market.

PE sponsors also establish their own bank relationships because of their frequent participation in loan markets (Ivashina and Kovner (2011)).[6] Although PE firms are only a third-party sponsor/investor for the IPO companies in our sample, a sponsor-bank relationship could still help mitigate the borrower's information asymmetry problems for the following reasons. First, a PE firm's relationship bank is likely to have private information about the PE firm through prior interactions. Such private information includes, but is not limited to, for example, the PE sponsor's skill in choosing a competent management team for its portfolio company, the PE sponsor's ability to provide sensible strategic guidance, the PE sponsor's willingness to support its portfolio company should there be an unexpected difficulty, and so on. We generally term this type of information as the "style" of a PE sponsor.

Importantly, knowledge about the "style" of the PE sponsor can be valuable for the relationship bank in understanding the quality of the borrowing portfolio company. For example, knowing the PE sponsor's skill is likely to help a relationship bank evaluate the portfolio company's management quality. Knowledge about management quality could still help the bank even if the PE sponsor no longer has a sizable ownership in the borrower. Knowing the PE sponsor's strategic guidance ability is also likely to help the relationship bank determine the prospect of future investment projects of the borrower sponsored by the PE firm. Therefore, a prior relationship with a PE sponsor would enable the bank to acquire valuable PE-specific information and this information can then be used by the bank to better assess the borrower's quality and riskiness. The information about PE sponsor style is likely to be "soft" and thus not

[6] Some PE sponsors even have direct affiliations with banks (Fang, Ivashina, and Lerner (2013)).

easily transferrable. It can also be reused by the relationship bank in later business with all portfolio companies of this PE sponsor. These features suggest that a bank would have a better understanding of a PE sponsor (and its portfolio companies) as a sponsor-bank relationship gets stronger.

Second, PE sponsors are likely to possess some proprietary borrower-specific information that is beyond the borrower's readily available public disclosure. Such information may be commercially sensitive so that a borrower is not willing to publicize it. For example, as strategic advisors, PE sponsors could have a vision for short-term planned investment projects, long-run strategic blueprints, etc. This type of information, if made public, can also benefit the borrower's product-market competitors. When a relationship bank is the financier, the PE sponsor can disclose it to the relationship bank without worrying about the bank disseminating the information to the borrower's rivals.

Furthermore, a relationship between the PE sponsor and the bank could also help to ease the lender's concern about being exploited. Although PE sponsors do not bear much direct recourse against the debt taken by their portfolio companies, they are viewed as *shadow borrowers* because they have significant influences on their portfolio companies' policies and strategic decisions. So if a bank is exploited by one company under the PE firm's sponsorship, the PE firm is likely to be penalized in subsequent deals with this bank. To avoid this situation, the PE firm would have an incentive to monitor its portfolio companies to stay clear of exploitation. The incentive to maintain a good reputation with a lender becomes greater as the PE sponsor builds a closer relationship with the lender because switching costs increase with the exclusiveness of a relationship (Rajan (1992)).

Taken together, the above discussion suggests that a strong sponsor-bank relationship can mitigate the information asymmetry problems of PE-backed companies. All else being equal, if the lead bank of a borrower has a strong relationship with the borrower's PE sponsor, the lead bank will hold a smaller share of the loan, the lending syndicate will be larger and less concentrated, and a bank that is farther from the borrower (e.g., a foreign bank) will be more likely to participate in the syndicate. We will test these predictions in our empirical analysis.

3. Data, Model Specifications, and Summary Statistics

3.1. Data and Sample Construction

Our empirical analysis relies on a unique sample of syndicated loans by U.S. IPO companies. We start with 97,731 bank loans (a.k.a. facilities) with an origination year between 1995 and 2011 by U. S. companies in the DealScan database.[7] Among them, 47,602 facilities have a valid link to the Compustat Annual database and 43,715 facilities can also be linked to the Center for Research in Security Prices (CRSP) database.[8] The number of facilities is reduced to 34,687 when requiring key Compustat and CRSP data to be available in the fiscal year prior to the facility start date.

We then match these loan facilities to Thomson Reuters' IPO data and find IPO information for 17,332 facilities. Information for the founding year of the IPO company is available for 17,224 facilities.[9] Key facility characteristics (facility amount, maturity, yield spread, performance pricing, and secured status) are available for 11,026 facilities. Among them,

[7] A number of facilities can belong to the same loan package. All the facilities in a loan package share the same contract terms such as covenants, but they differ in loan type (for example, one facility can be credit lines and the other can be term loans), maturity, yield spreads, and other features. The identities of lenders and their contributions of funding are at the facility level, so we focus on facilities.

[8] The Dealscan database was downloaded in May 2013, together with the August 2012 version of the Dealscan-Compustat link file. See Chava and Roberts (2008) for details about the link file.

[9] The founding date of a reverse leveraged buyout (RLBO) company is the founding date of its predecessor company (Loughran and Ritter (2004)). We thank Jay Ritter for sharing the IPO founding year data.

we keep 4,223 facilities that are made within five years after the IPO.[10] We examine loans within five years after the IPO because PE firms have a reduced influence on their portfolio companies as the time since the IPO gets longer. We further require the IPO date to be during 1995-2011 because the SEC's EDGAR filing information became available from 1995. So we are able to collect and verify information on PE sponsors from the IPO prospectus. This requirement allows us to retain 2,973 of the 4,223 facilities.

For each of the 2,973 facilities, we follow Ivashina (2009) and Bharath *et al*. (2011) to identify its lead arranging bank(s). More specifically, if an administrative agent of a facility is identified, the administrative agent is defined to be the lead bank. If the syndicate does not have an administrative agent, then lenders carrying the titles of agent, arranger, book-runner, lead arranger, lead bank, or lead manager are defined as the lead banks. We then keep 2,920 facilities whose lead bank's role can be identified and market share information (as the proxy of its reputation) can be computed.

Our analyses on lead bank share require a measure for the lead bank's contribution of funds as a fraction of the total facility amount. The DealScan database reports the number of lenders in a facility. For the facilities with only one lender, we set the lead bank share to 100%. The DealScan database also provides information on the fraction, or share, of a facility amount contributed by each lender, but such information is unavailable for many facilities in the original database, as also reported by Ivashina (2009).

Among the 2,920 facilities, 1,627 facilities have reliable lender share information. We call the sample of 2,920 facilities as the full sample, and the sample of 1,627 facilities with

[10] Most loans during the first year after the IPO are not included in our sample because we require stock returns over the 200 trading days ending 11 days prior to the loan start date to compute the beta coefficient and the return volatility of each borrower's stock.

lender share information as the lead share sample.[11] The full sample includes 824 facilities to 280 unique PE-backed IPO companies and 2,096 facilities to 943 non-PE-backed IPO companies. The lead bank share sample includes 291 facilities to 151 unique PE-backed IPO companies and 1,336 facilities to 759 non-PE-backed IPO companies.

3.2. Empirical Model Specifications and Variable Definitions

To examine the effect of a PE sponsor and its bank relationship on loan syndicate structure, we estimate several variations of the following regression model:

$$Syndicate\ Structure_i = \alpha + \beta \times Sponsor\text{-}bank\ Relationship_i + \gamma \times Controls + \varepsilon_i$$

For the dependent variable in the above model, *Syndicate Structure*$_i$, we use either the share retained by the lead bank or the Herfindahl index of shares retained by all lenders in loan *i*.[12] The Herfindahl index is defined as the sum of the squares of shares retained by each lender in a loan. We adopt similar model specifications to estimate the effect of sponsor-bank relationships on the number of lenders per facility or the participation of foreign lenders in a loan facility.

Following the literature, we construct two measures of sponsor-bank relationship duration and intensity (e.g., Dahiya, Saunders, and Srinivasan (2003), Bharath, Dahiya, Saunders, and Srinivasan (2007, 2011), and Ivashina and Kovner (2011)). Our main measure, *Sponsor-bank Relationship ($)*, is based on the dollar amounts of previous loans. For example, suppose an IPO company sponsored by PE sponsor *k* takes a loan for which the lead bank is *m*. Then for this specific loan, PE sponsor *k*'s prior lending relationship with bank *m* is equal to the total dollar amount of loans sponsored by PE firm *k* from lead bank *m* of the current facility in the past five

[11] There are also cases where shares of only some (but not all) lenders within a facility are reported. To ensure accuracy, we exclude facilities with any missing information on lender shares from the lead share sample. We also drop from the lead share sample facilities with obviously incorrect lender share information (e.g. those facilities with total shares that are added up to far more than 100%).

[12] If there are multiple lead banks in a loan, we use the average of shares retained by them. In the full sample of 2,920 loan facilities, only 65 facilities have two or more lead banks.

years scaled by the total dollar amount of loans sponsored by PE firm *k* in the past five years. The second measure, *Sponsor-bank relationship (#),* is based on the number of previous loans. It is equal to the total number of loan facilities sponsored by PE firm *k* from lead bank *m* of the current facility in the past five years divided by the number of loan facilities sponsored by PE firm *k* in the past five years.

An IPO company is sometimes backed by several PE firms (i.e., club deals). In these cases, the *Sponsor-bank Relationship* is the relationship between the primary PE sponsor and the lead bank. We define the primary PE sponsor as the one that has the largest equity stake in the company among all PE sponsors at the time of the IPO. If several PE sponsors have the same largest equity stake, we use the first one listed on the IPO prospectus. Our definition of a sponsor-bank relationship does not differentiate between individual funds under the same PE firm. For example, we would give "Castle Harlan Partners" 40% equity ownership if "Castle Harlan Partners II" fund has 10% and "Castle Harlan Partners IV" fund has 30% in an IPO company. Also, we follow Ivashina and Kovner (2011) to use the highest *Sponsor-bank Relationship* value when there are multiple lead banks in a facility.

By design, the continuous measures of *Sponsor-bank Relationship* would be between zero and one for companies with a PE sponsor and would be zero for companies without a PE sponsor. To alleviate the impact of potential measurement error and nonlinearity associated with the continuous measures, we also use two dummy variables to represent strong and weak sponsor-bank relationships. The *Strong Relationship Dummy ($)* equals one if *Sponsor-bank Relationship ($)* is greater than or equal to 20%, and zero otherwise. The *Weak Relationship Dummy ($)* equals one if *Sponsor-bank Relationship ($)* is less than 20% for loans to PE-backed companies, and is set zero if the loan is to a non-PE-backed company or *Sponsor-bank*

Relationship ($) is greater than or equal to 20%. The *Strong Relationship Dummy (#)* and the *Weak Relationship Dummy (#)* are similarly defined. We choose as the cutoff point the mean value (20%) of *Sponsor-bank Relationship ($)* for the 824 loans by the PE-sponsored companies in the full sample of 2,920 loan facilities for which lead banks can be identified. Our results are generally robust to different cutoff points (e.g., 10%, 30%, or 40%).

In our regressions, we include a broad set of control variables: borrower characteristics, loan terms, as well as fixed effects for loan purposes, loan types, industries, and years. In some of our regressions, we also control for borrower-bank relationship, lender reputation, and PE firm reputation. The definitions of these variables can be found in Appendix A1.

3.3. Summary Statistics

Table 1 reports the summary statistics of the regression variables for the full sample of 2,920 loan facilities and for the lead share sample of 1,627 loan facilities with non-missing lender shares. Table 1 also reports the mean and median values for the PE-backed and the non-PE-backed loans in the lead share sample separately. The differences between the PE-backed and the non-PE-backed loans are qualitatively similar for the full sample and the lead share sample.

The *Lead Bank Share* is the fraction of a loan facility held by the lead bank. This variable, as well as *Herfindahl Index*, is missing for 1,293 loan facilities in the full sample. For the lead share sample, the mean value of this variable is 0.73 and the median value is 1.[13] Both the mean and the median values of the lead bank share are smaller for the loans to PE-backed companies than those for the loans to non-PE-backed companies. A similar pattern is observed for the *Herfindahl Index* of lender shares in a facility. The average *Herfindahl Index* for the lead share

[13] Our average lead bank share is larger than those reported in Sufi (2007) and Gopalan *et al*. (2011) for two reasons. First, we set the lead bank share to 100% if the lead bank share is missing and the number of lenders equals one, while they exclude all loans when the lead bank share is missing. Second, the size of loans in our sample is much smaller than that in theirs.

sample is 0.71, and it is smaller for the loans to PE-backed IPO companies than for the loans to other companies.

The *All-In-Spread Drawn* is the overall cost that a borrower pays in basis points over the LIBOR for each dollar drawn down plus the annual fee. The average *All-In-Spread Drawn* for the lead share sample is 241.20 basis points, and the loans to PE-backed IPO companies on average carry a lower overall cost than those to non-PE-backed IPO companies. The average overall cost of loans is similar between the lead share sample and the full sample.[14]

The mean value of *No. of All Lenders* per facility is 4.07 for the lead share sample. The loans to PE-backed companies tend to have a larger syndicate than the loans to non-PE-backed companies, with the average number of lenders being 7.54 and 3.31, respectively. The mean value of *No. of Participant Lenders* per facility, which excludes the lead banks (one per facility for the majority of the sample), is 3.04 for the lead share sample. Note that the loans in the full sample tend to have a larger syndicate than those in the lead share sample, at least partly because the lead share sample includes all sole lender loans for which we set the lead bank share to 100% when it is missing in the DealScan database. We find in our later sections that sponsor-bank relationships have a negative impact on the lead bank share for the lead share sample and a consistent, positive impact on syndicate size for the full sample, suggesting that sample selection does not create a known bias for our results.

The mean value for a dummy variable equals the fraction of observations for which the dummy variable equals one. A foreign lender is a participant lender for 20% and 38% of the loan facilities in the lead share sample and the full sample, respectively. A foreign lender is more

[14] As discussed in the introduction, we focus on syndicate structure so that we can get a clean measure of the effect of sponsor-bank relationship on mitigating information asymmetry. In unreported regressions, we also find that PE sponsorships and sponsor-bank relationships help lower the net loan yield spreads (the all-in-spreads after upfront fees).

likely to be a participant lender for the PE-backed loans than for the non-PE-backed loans. On average, the loans to PE-backed companies are larger and have longer maturities than those to non-PE-backed companies. The loans to PE-backed companies also seem to contain more financial and non-financial covenants.[15] The loans to PE-backed companies tend to be more likely to contain a performance pricing schedule and slightly more likely to be secured.

The average value of the continuous measure for the sponsor-bank relationship constructed using the dollar amount, *Sponsor-bank Relationship ($)*, is 0.13 for the subsample of 291 loans to PE-backed companies with non-missing lender share information. As discussed earlier, the average *Sponsor-bank Relationship ($)* is 0.20 for the sample of 824 loans to PE-backed IPO companies if we do not require non-missing lender share information. The mean value of the *Strong Relationship Dummy ($)* is 0.21 for the PE-backed loans, suggesting that the primary PE sponsors have a strong relationship with the lead banks in about 21% of the 291 loans.[16] The continuous and discrete measures for sponsor-bank relationship have similar mean values when they are constructed using the number of deals instead of dollar amounts. The lenders to PE-backed IPO companies have a larger market share (*Lead Lender Reputation*) and are more likely to have a prior lending relationship with the borrowers (i.e., smaller mean value for the *New Lender Dummy*).

Table 1 also reports the summary statistics of key borrower-specific characteristics at the time of loan origination. The IPO companies in our lead share sample have an average market capitalization of about $1.32 billion. The companies in the full sample have a larger mean value of market capitalization, $1.88 billion. With an average age of 18.26 years for the lead share

[15] See the list of financial and non-financial covenants in Appendix A2.
[16] The primary sponsor has a strong relationship with the lead banks in about 39% of the 824 loans to PE-backed companies in the full sample.

sample and 24.11 years for the full sample, the companies in our sample are on average older than typical IPO companies.[17] In Huang *et al*. (2014), the average age of the IPO companies that issued public bonds between 1992 and 2011 was 29.29. The companies in our loan samples tend to be younger than the bond issuers, consistent with Diamond (1989), who reports that companies tend to use private bank debt when they are young and have short track records. In our lead share sample, the PE-backed IPO companies are on average older than the non-PE-backed IPO companies. Relative to the non-PE backed companies, the PE-backed IPO companies also tend to have higher book leverage and greater tangibility.

The PE-backed companies have fewer growth opportunities, as measured by the market-to-book ratio, than the non-PE-backed companies. The companies in our lead share sample on average have negative net income and about 40% of them are experiencing an operating loss at the time of loan origination. On average, the PE-backed companies are more profitable and have a smaller beta than the non-PE-backed companies. When the term spread and the default spread are higher, PE-backed IPO companies are more likely to be in our sample than non-PE-backed IPO companies. Compared with the loan samples used by Sufi (2007), Ivashina (2009), and Gopalan *et al*. (2011), the loans in our sample seem to be much smaller, have fewer lenders, and carry higher yield spreads. This is perhaps because the IPO companies in our sample are generally smaller and riskier.

4. Regression Results

4.1. Sponsor-bank Relationship and Syndicate Structure: Baseline Regressions

This subsection reports the results of our baseline Ordinary Least Squares (OLS) regressions of the effect of sponsor-bank relationships on loan syndicate structures. Table 2

[17] In general, IPO companies have a median age of about eight years, as reported on Jay Ritter's website (http://bear.warrington.ufl.edu/ritter/IPOs2013Age.pdf).

presents the baseline results using the 291 loans to PE-backed IPO companies in the lead share sample. The analysis using this pool of loans provides a cleaner test of the relationship effect *per se* because we can largely ignore any possible differences in loan syndicate structure caused by the general effect of a PE sponsor (Huang *et al*. (2014)). In all regressions in Table 2, as well as in the subsequent tables, we include year dummy variables to capture changes in the macroeconomic environment of bank credit demand and supply. We also include Fama-French 17 industry dummies to control for industry effects. Loan type and deal package purpose fixed effects are also included to account for any differences among loans that are used for diverse corporate aims. For brevity, the coefficients on these dummy variables are not reported.

Panel A of Table 2 presents the estimated impact of sponsor-bank relationships on the share held by the lead bank. In model (1), we use the continuous measure of prior lending relationship between the PE sponsor and the lead bank, *Sponsor-bank Relationship ($)*, which is based on the dollar amount of previous loans. The coefficient on this variable is -0.28 and is statistically significant at the one percent level. This result suggests that, after controlling for observable borrower characteristics, a stronger prior relationship between the PE sponsor and a lead bank significantly reduces the share held by the lead bank in a loan. This result is consistent with our hypothesis that a close relationship between the PE sponsor and the lead bank significantly reduces information asymmetry problems between the borrower and the lead bank and thus lowers the lead bank's screening and monitoring costs for the loan. The coefficient on the variable, *Sponsor-bank Relationship ($)*, is also economically significant. An increase in *Sponsor-bank Relationship ($)* from no relationship at all (*0*) to the average relationship value (*0.13*) decreases the share of the lead bank by 0.28×0.13=3.64% (e.g., from 51% to 47.36%). Given that the average loan amount for the PE-backed loan sample is about $215.81 million, a

3.64% decrease in *Sponsor-bank Relationship ($)* is roughly equivalent to a $7.86 million reduction of required capital contribution by the lead bank.

In model (2) of Panel A of Table 2, we use the *Strong Relationship Dummy ($)* to denote whether the sponsor-bank relationship is strong or not. As discussed earlier, this variable equals one if the value of the continuous relationship measure for a specific loan is above 20% and zero otherwise. Note that we treat loans with missing sponsor-bank relationships as zero (our results remain very similar if we simply exclude these loans from our analysis). The coefficient on the *Strong Relationship Dummy ($)* is -0.16 and is statistically significant at the one percent level, suggesting that the lead share is 16% lower (e.g., from 51% to 35%) when the sponsor-bank relationship is strong. This result is consistent with the result using the continuous measure. In models (3) and (4), we use the relationship measures based on the number of previous deals (*Sponsor-bank Relationship (#)* and the *Strong Relationship Dummy (#)*) and our results are qualitatively the same.

In the regressions in Panel A of Table 2, we control for several proxies of information asymmetry and credit riskiness of the borrowing company since they are also likely to affect loan syndicate structure (Sufi (2007) and Ivashina (2009)). The coefficients on *Ln(Market cap. ($millions))* are negative and statistically significant at the one percent level in all regressions, consistent with the common notion that a larger company has lower information asymmetry so that the lead bank can hold a smaller fraction of a loan.[18] The coefficients on *Leverage* are negative and statistically significant in all models. Given that the average leverage for our sample is 47% (60% for the PE-backed sample), higher leverage likely indicates that the

[18] The coefficient on *Ln(Market cap.)* can also partly capture the effect of loan size since a larger firm often borrows more and a bigger loan can mechanically reduce the lead bank share. We do not control for loan size in Table 2 to minimize potential endogeneity issues. However, the coefficient on *Ln(Market cap.)* remains statistically significant when we control for loan size (see Table 4).

borrowing company has greater access to the bond market. Bond market access likely reduces concerns of participant lenders and in turn allows the lead bank to hold a smaller share. The coefficients on *Ln(1+Borrower Age)* are positive and statistically significant in all models. Note that the coefficient on this variable is only significant for PE-backed loans and is insignificant when both PE and non-PE backed loans are pooled (see Table 3). Given that PE-backed IPO companies are on average much older, a greater value of *Ln(1+Borrower Age)* can capture the effect of tighter financial constraints and is thus associated with a higher share by the lead bank.

Panel B of Table 2 reports the estimated effect of sponsor-bank relationships on the *Herfindahl Index*. Sufi (2007) argues that the Herfindahl index measure differs from the lead bank share in that it captures the effect of "joint" monitoring. Consider, for example, two loans that both have two lead banks. In loan A, lead bank X holds 70% and lead bank Y holds 10%. In loan B, lead banks X and Y hold 40% equally. While the average lead bank holding is 40% in both cases, loan B is considerably more "dispersed". Hence, in some cases the Herfindahl index can more accurately measure the "concentration" among lenders. The empirical results for the *Herfindahl Index* in Panel B are very similar to those in Panel A for the lead bank share. For example, in model (5), the coefficient on *Sponsor-bank Relationship ($)* is -0.28 and is statistically significant at the one percent level. This result indicates that a closer relationship between the PE sponsor and the lead bank allows the syndicate to be less concentrated. Similar estimations are conducted using *Sponsor-bank Relationship (#)* in model (7) and the discrete relationship measures in models (6) and (8). The findings again support our hypothesis: When a strong sponsor-bank relationship facilitates information acquisition and monitoring, the lead bank does not have to form a very concentrated syndicate.

To provide further support for our hypothesis, we report in Table 3 the regression results using the 1,627 loan facilities with non-missing lender share information (i.e., the lead share sample). The analysis using the loans to both PE- and non-PE-backed companies sheds light on some additional issues that cannot be captured in the analysis in Table 2. First, using both types of loans, we can examine the general effect of PE sponsors as a group on bank loan syndicates of their portfolio IPO companies. The overall effect of having a private-equity sponsorship on loan syndicate structure remains an unexplored empirical question in the literature. Second, we are interested in seeing whether a sponsor-bank relationship provides some incremental benefits, if any, beyond the general effect of having a PE sponsorship.

In model (1) of Panel A in Table 3, we are interested in the effect of PE sponsorship on the lead bank share. The coefficient on the *PE Sponsor Dummy* is -0.10 and is statistically significant at the one percent level, suggesting that having PE sponsorship on average reduces the lead bank's share of a loan facility by 10% (e.g., from 51% to 41%). This finding is consistent with studies of Demiroglu and James (2010) and Huang *et al*. (2014): A PE sponsor's general reputational concerns could mitigate adverse selection and its incentive to exploit creditors so that the lead bank can hold a smaller fraction of a loan. In model (2), we replace the *PE Sponsor Dummy* with *Sponsor-bank Relationship ($).* Note that we set *Sponsor-bank Relationship ($)* to zero for loans to non-PE-backed IPO companies. The coefficient on *Sponsor-bank Relationship ($)* is negative and statistically significant at the one percent level. This suggests that a strong prior lending relationship between the PE sponsor and the lead bank lowers the lead lender share.

In model (3) of Table 3, we split our sample into three groups based on whether the loan is by an IPO company backed by a PE sponsor and, if PE-backed, whether the relationship

between the PE sponsor and the lead bank is strong or weak. The regression uses the loans to non-PE-backed IPOs as the reference group. The dummy variable *Strong Relationship Dummy ($)* equals to one if *Sponsor-bank Relationship ($)* is above 20%. The dummy variable *Weak Relationship Dummy ($)* equals to one if the company is PE-backed but *Sponsor-bank Relationship ($)* is equal to or below 20% (including missing values). The coefficient on the *Strong Relationship Dummy ($)* is -0.21 and is statistically significant at the one percent level. This result suggests that, compared with the loans to non-PE-backed IPOs, the lead banks of the loans to PE-backed IPO companies hold 21% less (e.g., from 51% to 31%) when the lead banks have a strong relationship with the PE sponsors. On the other hand, the *Weak Relationship Dummy ($)* has a coefficient of -0.08, which is statistically significant at the five percent level. It means that a moderate relationship between the PE sponsor and the lead bank can still reduce the lead bank holding, albeit by a much smaller amount.

In Panel B of Table 3, we present the results for a similar set of tests using the Herfindahl index as the dependent variable. The results are almost identical to those in Panel A. Overall, the results in Tables 2 and 3 are consistent with our argument that there is a significant reduction of information asymmetry and the associated problems in the presence of a sponsor-bank relationship. Ivashina and Kovner (2011) suggest that the reduction of information asymmetry could come either from a relationship bank's advantage in obtaining private information and/or come from a PE sponsor's reputation building via repeated interactions with a lender. In subsequent tables we show that the effect of sponsor-bank relationships holds even after we explicitly control for PE sponsor reputation, measured by the total dollar amount of all loans to the portfolio companies of a PE firm. But we do want to point out that, since the dollar volume

may not be able to capture all aspects of a PE sponsor's reputation building efforts, we may also not be able to completely distinguish between the two possible channels.

4.2. Sponsor-bank Relationship and Syndicate Structure: Expanded Regressions

In this subsection, we address the concerns about some potentially confounding factors that could drive our baseline results in Tables 2 and 3. First, it is possible that both a borrower and its PE sponsor have a relationship with the lead bank, and the effect of the borrower-bank relationship dominates the effect of the sponsor-bank relationship. We tackle this issue by explicitly controlling for the existence of a borrower-bank relationship.[19] Following Ivashina and Kovner (2011), we use an indicator variable to denote whether the lender in the current deal was also the lead lender of the previous deal of this borrower. We check to see whether the sponsor-bank relationship adds to the reduction of information asymmetry beyond the classic borrower-bank relationship.

Second, it is possible that the reputation concern of a lead bank could deter it from shirking in monitoring (Diamond (1989) and Chemmanur and Fulghieri (1994)). A lender's good reputation can also certify its ability of information collection as well as the quality of a borrower chosen by the lender. We thus use a lender's market share in the syndicated loan market in dollar amount in the five years prior to the current loan as a proxy for the lender's reputation. We use this reputation measure as a control in our regressions. Another reason to control for lender reputation is that this variable could be correlated with sponsor-bank relationships because a lender with a larger market share would naturally has a higher probability to be selected as the lead bank in a deal.

[19] In our sample, PE-backed IPO companies include those that had been through leveraged buyouts and those that had never been public before the IPO. A borrower, especially a company that had never been public before the IPO, could have developed a relationship with a bank through the help of the borrower's PE sponsor. Therefore, borrower-bank relationships at least partially capture the effect of sponsor-bank relationships. Our controlling for the borrower-bank relationship thus biases against us finding an effect for the sponsor-bank relationship.

Third, a lead bank can use alternative means to demonstrate its commitment to information collection and monitoring. In particular, Rajan and Winton (1995) propose that covenants and collateral requirements can be set up to increase a lender's incentive to collect information and monitor. If sponsor-bank relationships affect the lead bank's incentive to produce information, it could impact the usage of covenants and collateral. Thus, it might be important to control for loan covenants and collateral requirements to avoid the potential omitted variables problem. We also control for loan size considering that a lead bank would naturally hold smaller share in a larger loan ((Sufi (2007)).

Finally, we control for a PE sponsor's reputation in the syndicated loan market. A PE sponsor would become more recognized as they repeatedly access the loan market. A PE sponsor with good reputation could also mitigate information asymmetry problems of the borrowing firm (Demiroglu and James (2010) and Huang *et al*. (2014)). We use the natural log of total dollar amount of borrowing by a PE sponsor in the past five years to represent its recognition in the syndicated loan market and control for it in our regressions.

We present the results involving these control variables in Tables 4 and 5. Before we discuss the regression results, it is important to note that our reduced-form baseline models in Tables 2 and 3 have the advantage of avoiding problems associated with endogeneity issues due to the possible simultaneous nature of the aforementioned control variables and the dependent variable. It is challenging to find instrumental variables to address the potential endogeneity issue, so we choose the reduced-form models as our baseline regressions.

Similar to Tables 2 and 3, Table 4 only uses the 291 loans to PE-backed IPO companies and Table 5 uses all of the 1,627 loans with lender share information to both PE-backed and non-

PE-backed companies. Note that in these two tables we only report the results using the sponsor-bank relationship measures based on previous deal amounts. Our results using the sponsor-bank relationship measures based on the number of previous deals are qualitatively similar.

Panel A of Table 4 reports the results of the regressions using the lead bank share as the dependent variable. Models (1) and (2) in Table 4 are the same as models (1) and (2) in Table 2 except that we include a number of loan specific characteristics as additional control variables. We further control for the *Lead Lender Reputation*, *New Lender Dummy*, and *PE Firm Reputation* in models (3) and (4) in Table 4. With the additional controls, the adjusted R^2 for the regressions increases from 0.58-0.60 in Panel A of Table 2 to 0.70-0.72 in Panel A of Table 4, suggesting that these additional variables are useful to explain the lead bank share variations in our sample. Importantly, the coefficients on *Sponsor-bank Relationship ($)* and the *Strong Relationship Dummy* are little changed compared to those in Panel A of Table 2 and are still statistically significant at the one percent level. This suggests that, after controlling for observable loan characteristics, borrower-bank relationship, and bank and PE reputation, a strong sponsor-bank relationship still significantly reduces the loan share held by the lead bank.

The coefficients on the loan terms are largely in line with our expectation. For example, the coefficients on *No. of Fin. Covenants* are negative and statistically significant at the ten percent level in models (1) and (2), and the coefficients on *No. of Non-Fin. Covenants* are negative and statistically significant at the five or ten percent level in models (1) through (4).[20] If more covenants would incentivize the lead bank to collect more information (Rajan and Winton

[20] We control for both types of covenants as Christensen and Nikolaev (2012) suggest that capital (i.e. financial) covenants align interest between debtholders and shareholders and performance (i.e. non-financial) covenants serve as tripwires that transfer control rights to creditors in certain states and thus motivates monitoring.

(1995)) and/or mitigate agency problems of debt (Smith and Warner (1979) and Christensen and Nikolaev (2012)), then the lead bank could hold a smaller fraction of a loan.

The coefficient on the *Performance Pricing Dummy* is negative and statistically significant at the five percent level in all four models in Panel A of Table 4. A performance pricing schedule gives a borrower the motivation to perform well so that the loan interest spread goes down once its credit quality improves (Asquith, Beatty, and Weber (2005)). We expect that a better motivated borrower requires less monitoring so that the lead bank can hold a smaller fraction of the loan. The coefficients on loan size (*Ln(Loan Amount ($millions)*) are negative and statistically significant, consistent with our conjecture.

In Panel A of Table 4, the coefficients on the *New Lender Dummy* are 0.12 in model (3) and 0.11 in model (4), respectively, and are statistically significant at the one percent level in both models. This result suggests that lending to a new borrower would require the lead bank to hold more of a loan to certify the borrower's quality and/or signal its commitment to ex post monitoring. The coefficients on the *Lead Lender Reputation* and *PE Firm Reputation* are both negative but not statistically significant, providing some weak evidence that reputations of the lead bank and the PE sponsor could mitigate information asymmetry problems. The results in Panel B of Table 4 using the *Herfindahl Index* are similar to the results in Panel A of Table 4.

Table 5 presents the regression results of the augmented models based on the sample of 1,627 loans with non-missing lender share information. In Panel A, models (1) through (3) are the same as models (1) through (3) of Table 3 except that we control for the additional loan characteristics beyond the baseline models in Table 3. The coefficient on the *PE Sponsor Dummy* is -0.06 in model (1) and is statistically significant at the five percent level. It is smaller

in absolute value than the coefficient of -0.10 in model (1) of Table 3. In model (2), the coefficient on *Sponsor-bank Relationship ($)* is -0.19 and is statistically significant at the five percent level, suggesting that the effect of sponsor-bank relationships for the full lead share sample is robust to the control of loan terms as well. In model (3) of Table 5, we use two dummy variables (*Strong Relationship Dummy ($)* and *Weak Relationship Dummy ($)*) to gauge the impact of sponsor-bank relationship strength. The coefficient on the *Strong Relationship Dummy ($)* is -0.16 and is statistically significant at the one percent level. It is four times the coefficient of -0.04 on the *Weak Relationship Dummy ($)*. Therefore, a strong sponsor-bank relationship significantly reduces the lead bank share of the loan and the resulted reduction is much greater in magnitude than that associated with a weak sponsor-bank relationship.

In models (4)-(6) in Panel A of Table 5, we further control for the *Lead Lender Reputation*, *New Lender Dummy*, and *PE Firm Reputation*. In models (4) and (5), the coefficients on the *PE Sponsor Dummy* and *Sponsor-bank Relationship ($)* are negative but become statistically insignificant. Nevertheless, in model (6), the coefficient on the *Strong Relationship Dummy ($)* is negative and is statistically significant at the five percent level.

The coefficient estimates on the *Lead Lender Reputation* are negative in all models but not statistically significant. The negative sign is consistent with the notion that lead bank reputation plays a role in mitigating information asymmetry between the lead bank and syndicate participants (Sufi (2007) and Gopalan *et al*. (2011)). The coefficients on the *New Lender Dummy* are positive and statistically significant at the one percent level, suggesting that a prior borrow-bank relationship would serve to alleviate information asymmetries between the borrower and the lead bank. In Panel B of Table 5, we present very similar results using the Herfindahl index. Taken together, the results in Tables 4 and 5 suggest that the effect of sponsor-bank relationships

on loan syndicate structure is robust after controlling for a variety of loan, lead bank, and PE sponsor characteristics. This robustness is consistent with our hypothesis that the lead bank acquires private and reusable information from repeated interactions with the PE sponsor and this information is beyond what can be obtained in a borrower-bank relationship and/or with good lender and PE sponsor reputation.

4.3. Sponsor-bank Relationship and Syndicate Size

We examine the effect of sponsor-bank relationships on syndicate size in this subsection. We use syndicate size as a measure of syndicate concentration. Specifically, we use the total number of *participant* lenders of a facility (number of all lenders minus number of lead banks) as a measure of syndicate size. We expect that, all else being equal, reduced information asymmetry between the borrower and the lead bank would mitigate potential participant banks' concerns about the lead bank's incentives to shirk due diligence and monitoring. With the presence of a stronger sponsor-bank relationship, the lead bank can thus attract more of the potential participant banks to the syndicate.

Unlike the scarcity of lender allocation information, the number of participant lenders is available for almost all loan facilities. We are thus able to estimate our models using the full sample of 2,920 loan facilities, which includes loans that do not have lead bank share information. As shown in the summary statistics in Table 1, the 1,293 loans with missing lender share information tend to be larger loans with more lenders in the syndicate. The regression results using number of lenders as a measure of syndicate concentration for the full sample thus

help alleviate any concerns that sample selections affect our baseline and expanded regression results reported in Tables 2 through 5.[21]

The estimation results are reported in Table 6. Note that the dependent variable is the total number of participant lenders per loan facility, excluding lead banks. Since this variable is a count variable, we estimate Poisson regressions. Similar to the early tables, we only use the 824 facilities to PE-backed IPO companies in the full sample in Panel A, while in Panel B we include all of the 2,920 facilities to both PE-backed and non-PE backed companies.

In model (1) of Panel A, we estimate the reduced-from model. The coefficient on the *Strong Relationship Dummy ($)* is positive and statistically significant at the one percent level. Note that for the Poisson regressions in Table 6, the marginal impact of the dummy variable is simply the product of the coefficient times the mean value of the dependent variable. So economically, if we vary the *Strong Relationship Dummy ($)* from zero to one, on average the number of participant lenders increases by 2.20 (0.26×8.46, where 8.46 is the average number of participant lenders in a syndicate for the PE-backed loans in the full sample), other things being held constant. In model (2) of Panel A, where an expanded model with additional control variables is estimated, the coefficient on the *Strong Relationship Dummy ($)* remains positive and statistically significant at the one percent level.

In models (3) and (4) of Panel B, both PE-backed and non-PE-backed loans in the full sample are used, and the coefficients on the variable *Strong Relationship Dummy ($)* are again positive and statistically significant at the one percent level. The coefficients on the variable *Weak Relationship Dummy ($)* in both models (3) and (4) are positive and statistically significant

[21] The loans with missing share information also have stronger sponsor-bank relationships, suggesting that any sample selection biases, if exist, would be against us finding that sponsor-bank relationships help reduce syndicate concentration.

at the five percent level. In both models (3) and (4), the coefficients on the *Strong Relationship Dummy ($)* are larger in absolute value than the coefficients on the *Weak Relationship Dummy ($)*. Economically, if we vary the *Strong Relationship Dummy* or the *Weak Relationship Dummy ($)* from zero to one in model (3), for example, on average the number of participant lenders increases by 2.17 (0.39×5.56, where 5.56 is the average number of participant lenders, excluding lead banks, in a syndicate for the loans in the full sample) or 1.11 (0.20×5.56), respectively.

In summary, the results reported in Table 6 suggest that a stronger sponsor-bank relationship is associated with a greater number of participant lenders, providing further support for our hypothesis that a stronger PE sponsor-bank relationship reduces information asymmetry between the borrower and the lead bank.

4.4. Sponsor-bank Relationship and Foreign Bank Participation

In this subsection, we explore the impact of sponsor-bank relationships on loan syndicate composition to offer additional insights over how sponsor-bank relationships mitigate asymmetry information-related issues. We focus on one feature of syndicate composition – the participation of foreign lenders in a syndicate. Because foreign banks are farther away, they are presumably more sensitive to asymmetric information issues when they participate in syndicated lending to U.S. borrowers (Stein (2002) and Esty (2004)). Sufi (2007) finds that a lead bank tends to choose participant banks that are closer in geographical location to a borrower when the borrower is more informationally opaque. Lin *et al*. (2012) show that the participation rate of foreign lenders is negatively related to the divergence between ownership rights and cash-flow rights at the borrowing firm. We thus conjecture that a strong sponsor-bank relationship is associated with a greater chance of having one or more foreign lenders in the syndicate as it helps alleviate information asymmetries between a borrower and its lenders. Empirically, we identify whether

there is any non-US participant lender(s) in the syndicate for each facility and set a *Foreign Bank Dummy* to one if yes and zero otherwise.[22] We then estimate a logit model to assess the impact of PE-lead bank relationship on the probability of having a foreign participant lender.

Table 7 reports the regression results. In Panel A, the sample only includes the loans to PE-backed IPO companies. For the baseline model, or model (1), the coefficient on the variable *Strong Relationship Dummy ($)* is positive and statistically significant at the ten percent level. Economically, if we vary the *Strong Relationship Dummy* from zero to one, on average the likelihood of foreign lender participation increases by 9.43%. In model (2) with additional controls, the coefficient on the *Strong Relationship Dummy ($)* remains positive and becomes statistically significant at the five percent level.

Panel B uses the full sample of loans to both PE-backed and non-PE backed IPO companies. In both models (3) and (4), the coefficients on the variable *Strong Relationship Dummy ($)* are positive and statistically significant at the one or five percent level. Their economic effects, the 11.55% increase in the likelihood of foreign bank participation in model (3) and the 9.89% increase in model (4), also remain large. The coefficients on the variable *Weak Relationship Dummy ($)* are about half in magnitude of the coefficients on *Strong Relationship Dummy ($)* and are only statistically significant in model (3).

Overall, these findings again indicate that a stronger sponsor-bank relationship significantly increases the odds of having a foreign lender in the syndicate, consistent with the notion that sponsor-bank relationships mitigate information asymmetry-related issues in lending.

[22] Among the 824 facilities to PE-backed IPO companies, about 56.7% of them have one or more foreign lender presence. This number is approximately 37.1% for the 291 facilities to PE-backed IPO companies and with lead bank share information. Among the 2,920 facilities to both PE-backed and non-PE backed IPO companies, about 38.4% of them have one or more foreign lender presence. A foreign lender is present for approximately 19.6% of the 1,627 facilities to both PE-backed and non-PE backed IPO companies in the lead share sample.

4.5. Additional Tests and Robustness Checks

This subsection further presents the results for an array of additional tests and robustness checks. Table 8 reports the regression results using the lead share sample.

We first investigate whether the information asymmetry reduction and the resulted lead share reduction effect is caused by the joint lending and underwriting relationships between the borrower and the lead bank. A borrowing firm often uses the same bank for both banking and underwriting so that the costs of both can be lower due to the economy of scope in information production by the bank (see, e.g., Drucker and Puri (2005) and Bharath *et al*. (2007)). A strong PE sponsor-bank relationship could just capture the effect of the borrowing company using the lead bank of the current loan as the lead underwriter of its IPO. Consequently, the lead bank of the current loan gains more insight about the borrowing company not through its prior lending relationships with the PE sponsor. Instead, it gains insight from its prior underwriting relationships with the borrowing company. To rule out this underwriting channel as the main driver for our early results, we check whether the lead bank is also a lead underwriter of the borrowing company's IPO for each of the 291 loans to PE-backed companies. There are 38 loans that have overlapping lead banks/underwriters. We then include a dummy variable, *Lead Bank-IPO Underwriter Overlapping Dummy*, in both our baseline and expanded regressions for the PE-backed loan sample as a control variable. The *Lead Bank-IPO Underwriter Overlapping Dummy* variable equals one if the lead bank of the current loan is the lead or one of the lead underwriters of the borrowing company's IPO, and it is set to zero otherwise.

The regression results are reported in Panel A of Table 8. In both the baseline models (models (1) and (2)) and the expanded models (models (3) and (4)), the coefficients on the *Lead Bank-IPO Underwriter Overlapping Dummy* variable are always insignificant. The coefficients

on *Sponsor-Bank Relationship ($)* and *Strong Relationship Dummy ($)* are virtually the same as those in Tables 2 and 4. These results suggest that the underwriting channel cannot explain our earlier results.[23]

For Panels B through D, we estimate regressions for both the sub-sample of PE-backed loans (models (1) and (2)) and the sample of all loans (models (3) and (4)). In each of these three panels, models (1) and (3) are the baseline reduced-form models, while models (2) and (4) are the expanded models that also controls for borrower-bank relationship, lead bank reputation, PE firm reputation, and loan characteristics. The coefficients on the control variables behave similarly as those in the early tables with similar model specifications, and are not reported.

In Panel B of Table 8, we check to see whether our major results on the lead bank share are robust if we control for the lead bank fixed effects. This analysis would mitigate any biases due to the correlation between sponsor-bank relationships and unobservable time invariant lead bank characteristics. The coefficients on the *Strong Relationship Dummy ($)* remain negative and statistically significant in models (1)-(4) in Panels B. Their absolute values are greater than those of the coefficients on the *Weak Relationship Dummy ($)* in the regressions in models (3) and (4) when all loans are included. Therefore, unobserved lead bank characteristics are not responsible for our results on the lead bank share of the loan.[24]

23 The joint lending-underwriting relationships can also exist for non-PE-backed IPO companies. It is against us finding the sponsor-bank relationship effect if such joint relationships for non-PE-backed companies mitigate information asymmetry and reduce lead bank shares. It is also possible that a large PE firm can have relationships with many banks and such relationships make the participation of these banks in the syndicate more likely. We do control for PE firm reputation in our expanded regressions, although it has little effect on syndicate structure measures. More importantly, such network of relationships does not explain why the relationships between the lead bank and the PE sponsor reduce the lead bank share.

[24] The sample used in Panel B of Table 8 is slightly smaller. The number of observations for PE-backed loans is 245 and that for all loans is only 1,379. We use the average share of lead banks as the dependent variable when there are multiple lead banks in a facility in previous analysis. This presents a problem in the lead bank fixed effect model since we cannot determine which lead bank's fixed effect to include. Thus, we limit ourselves to a slightly smaller sub-sample of facilities with exactly one lead bank.

In Panel C of Table 8, we show that the effect of sponsor-bank relationships on the lead bank share is robust to the usage of a Tobit model that deals with censored dependent variables.[25] In Panel D of Table 8, we present the package level results. In DealScan, a loan package may consist of several individual facilities of different types. We initially focus on the facility level because within the same package a term loan may inherently differ from a revolving credit line. Nevertheless, it is still useful to check if our findings are robust at the package level. We aggregate a lender's loan amounts in all facilities within a package and divide it by the total loan amount of the package to get the package level bank share. Then we use the package level share as the dependent variable and regress it on a sponsor-bank relationship measure and the control variables. The 291 facilities made to PE-backed IPO companies correspond to 187 packages and the full lead share sample of 1,627 facilities corresponds to 1,188 packages. From Panel D of Table 8, we can see that the package level estimation results are, qualitatively and quantitatively, similar to the facility level results.[26]

Additionally, we examine the effect of sponsor-bank relationships on the lead bank share for a sub-sample of leveraged facilities.[27] If a strong sponsor-bank relationship lessens the participant banks' concern about the lead bank's moral hazard problem, we expect this effect to be more pronounced among leveraged facilities since riskier borrowers require more intensive screening and monitoring. Compared with the previous estimation results using all loan facilities, the estimated coefficients on the *Strong Relationship Dummy ($)* for the leveraged subsample

[25] The original dependent variable, *Lead Bank Share*, has a lower limit of 0 and an upper limit of 1. Although it is unlikely that any artificial censoring is involved, we still make sure that our results are robust. Note that Stata automatically drops some observations and independent variables to avoid multicollinearity when estimating a Tobit model. However, at least some versions of Stata occasionally handle multicollearity erroneously, understating the standard errors and inflating the t-statistics. In such cases, we manually drop the few independent variables that cause the multicollinearity-related problems.

[26] Our facility level regressions correct the standard errors for clustering at the borrowing company level. Our major facility level results are essentially the same if we correct the standard errors for clustering at the package level instead.

[27] We consider a loan facility to be leveraged if, in the DealScan database, its market segment is marked as either "Leveraged", "Highly Leveraged", or "Non-investment Grade".

remain negative and increase in their economic and statistical significance. We find the three most active lead banks in our lead share sample of 1,627 loans are Silicon Valley Bank, Bank of America, and JP Morgan Chase, with 150, 130, and 62 loans led, respectively. Our major results are also qualitatively the same if we exclude the loans by the three most active lead banks from our sample. Also, our initial measure for a PE firm's reputation is the total dollar amount of loans sponsored by the PE firm in the past five years. This measure could be subject to fluctuations in the volume of the LBO market across time. To remove the time-series effect, we scale the initial measure by the total amount of sponsored loans by all PE firms in the past five years. Our major results remain essentially the same. Finally, we conduct similar analyses of loan syndicate structures using a smaller sample between 1996 and 2009 to ensure that this sample captures all loans made within five years after IPOs. Our key findings change little. All these robustness checks are not sensitive to the usage of the *Herfindahl Index* as the dependent variable, either. For brevity, these results are not tabulated but available upon request.

5. Conclusions

Private equity (PE) firms are an important player in the economy. They have significant equity stakes in many companies, and interact frequently and develop relationships with banks. In the last decade, an increasing number and a significant fraction of U.S. IPO companies were backed by PE sponsors. Using a sample of bank loans to IPO companies, we find that a stronger PE sponsor-bank relationship allows the lead bank to hold a significantly smaller fraction of a loan to a PE-sponsored company and form a significantly larger and less concentrated syndicate. The likelihood of foreign bank participation in a syndicate also increases with the strength of a sponsor-bank relationship. These findings are robust to different measures of sponsor-bank relationship and to the control of lender reputation, lender fixed effects, PE sponsor reputation,

and borrower-bank relationship. The effects of sponsor-bank relationships are economically significant. For example, on average, a strong relationship with the borrower's PE sponsor enables the lead bank to hold 13% to 21% less of a loan for our sample of 1,627 loans with lead bank share information. A strong sponsor-bank relationship is also on average associated with at least two more participant lenders in the loan syndicate for our full sample of 2,920 loans. These findings provide strong support for the hypothesis that third-party sponsor-bank relationships mitigate information asymmetry-related problems in lending.

The relationship banking literature has focused on the direct bilateral relationship between the borrower and the lender (e.g., Boot (2000) and Bharath *et al*. (2007, 2011)). We contribute to the literature by showing that a close past lending relationship between a borrower's lead bank and a third-party financial sponsor also facilitates the lead bank's information acquisition about the borrower. Our findings also shed light on the influence of informed investors on a company's access to credit.

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Appendix A1: Variable Definitions

This appendix contains the detailed variable definitions. Note that for some of the variables in this appendix, their natural logarithms are used in the regressions. Ln(X) denotes the natural logarithm of variable X.

Variable Name	Detailed Definition
No. of All (Participant) Lenders	The total number of all lenders (participant lenders, excluding lead) in the syndicate of the loan facility.
Lead Bank Share	The lead lender's share of the dollar amount of the loan facility. If the syndicate has more than one lead lender, this is the average share of the lead lenders. To increase the number of usable observations, we set *Lead Bank Share* to 100% if *No. of All Lenders* equals one.
Herfindahl Index	The Herfindahl index of lenders' shares in the loan facility, computed as the sum of the squares of each lender's share in the loan.
Foreign Bank Dummy	A dummy variable that equals one if the loan facility has a foreign bank as a participant bank, and equals zero otherwise.
Sponsor-bank Relationship ($)	For a loan to a PE-backed company, the dollar-based relationship measure is defined as the ratio of the total dollar amount of loans from the lead bank of the current loan facility to companies sponsored by the PE sponsor of the current borrower in the past five years scaled by the total dollar amount of loans to companies sponsored by the same PE firm in the past five years (regardless of lead banks). This measure is set zero for all loans to non-PE-backed companies.
Strong Relationship Dummy ($)	This dummy variable equals one if *Sponsor-bank Relationship ($)* is greater than or equal to 20%, and zero otherwise.
Weak Relationship Dummy ($)	For a loan to a PE-backed company, this dummy variable equals one if *Sponsor-bank Relationship ($)* is less than 20%, and zero otherwise. The dummy variable is set zero for loans to non-PE-backed companies.
Sponsor-bank Relationship (#)	This continuous relationship measure is defined in the same way as *Sponsor-bank Relationship ($)* except that the number of loans instead of the loan amount is used in calculating the ratio.
Strong Relationship Dummy (#)	This dummy variable equals one if *Sponsor-bank Relationship (#)* is greater than or equal to 20%, and zero otherwise.
Weak Relationship Dummy (#)	For a loan to a PE-backed company, this dummy variable equals one if *Sponsor-bank Relationship (#)* is less than 20%, and zero otherwise. The dummy variable is set zero for loans to non-PE-backed companies.
All-In-Spread Drawn (bps)	The spread the borrower pays in basis points over LIBOR for each dollar drawn down. It adds the yield spread of the loan with any annual (or facility) fee paid to the bank group.
Loan Amount ($millions)	The actual amount of the loan facility committed by the facility's lender pool, in millions of dollars of the 2011 purchasing power.
Maturity	The number of months the facility will be active from the start date to the expiration date
Secured Loan Dummy	A dummy variable that equals one if the loan facility is secured, and equals zero otherwise.
Performance Pricing Dummy	A dummy variable that equals one if there is a grid displaying different pricing levels based on a predefined trigger such as a company's ratings and ratios, and equals zero otherwise.

Appendix A1: Continued.

Variable Name	Detailed Definition
No. of Fin. Covenants	The total number of covenants based on financial ratios (see Appendix A2). We first create a dummy variable that equals one if a financial ratio covenant exists, and equals zero otherwise. Note that to avoid losing too many observations, we set the dummy variable to zero if there is no covenant based on a financial ratio or information about it is missing. We then add up the dummy variables to obtain the number of financial covenants.
No. of Non-Fin. Covenants	The total number of non-financial covenants (see Appendix A2). This variable is constructed in the same way as *No. of Fin. Covenants* based on non-financial ratio covenants.
Loan Type Dummies	Including (1) 364-Day Dummy, (2) Revolver (<1 Year) Dummy, (3) Revolver (≥1 Year) Dummy, (4) Term Loan Dummy, (5) Term Loan A Dummy, and (6) Term Loan B-G Dummy. The omitted group includes all other much less common loan types (e.g. "Bridge Loan", "Delay Draw Term Loan", "Note", "Other Loan", "Revolver/Term Loan", and "Standby Letter of Credit", among others). The group definition follows Drucker and Puri (2009).
Deal Purpose Dummies	Including (1) Acquire Dummy, (2) General Dummy, (3) LBO Dummy, and (4) Recap Dummy. The omitted group includes "Miscellaneous" and "Other" purposes. The group definition follows Drucker and Puri (2009).
PE Sponsor Dummy	A dummy variable that equals one if the borrower was a PE-backed company at the IPO, and equals zero otherwise.
Lead Lender Reputation	Measured by the lead lender market share, which is the total amount of all loans for which the lead lender of the current loan was also a lead lender divided by the total amount of loans in the DealsScan universe during the five years prior to the current loan's start date. If there are multiple lead lenders for the current loan, the maximum lender market share is used.
New Lender Dummy	A dummy variable that equals one if none of the lead lenders is a lead lender in the loans by the same borrower during the five years prior to the current loan's start date, and equals zero otherwise.
PE Firm Reputation	Ln(1+ the total amount of borrowing by the PE firm over the past five years, in millions of dollars of the 2011 purchasing power).
Market Cap. ($millions)	Market capitalization (Compustat items CSHO × TEM PRCC_F) of the borrower at the fiscal year end immediately prior to the loan start date, in millions of dollars of the 2011 purchasing power.
Borrower Age	The number of years from the borrower's founding date to the loan start date. The founding date of a RLBO firm is the founding date of its predecessor company and is taken from the Field-Ritter dataset available on Jay Ritter's website (Loughran and Ritter (2004)).
Leverage	The book value of debt (total liabilities + minority interest – deferred taxes and investment tax credit + liquidating value of preferred stock – convertible debt, or Compustat items LT+MTB-TXDITC+PSTKL-DCVT) divided by total assets (item AT) at the fiscal year end immediately prior to the loan start date. Note that convertible debt (DCVT) is set to zero if it is missing in Compustat.
Tangibility	The fraction of net property, plant, and equipment in the total assets (items PPENT/AT) at the fiscal year end immediately prior to the loan start date.
Profitability	The net income (Compustat item NI) of the borrower during the fiscal year immediately prior to the loan start date divided by its book value of total assets (AT) at the fiscal year end immediately prior to the loan start date.

Appendix A1: Continued.

Variable Name	Detailed Definition
Operating Loss Dummy	A dummy variable that equals one if item NI is negative during the fiscal year immediately prior to the loan start date, and equals zero otherwise.
Beta	The beta coefficient from the market model using the equal-weighted CRSP market index and daily close-to-close percentage returns over the 200 trading days ending 11 days prior to the loan start date.
Stock Return Volatility	The standard error of residuals from the market model using the equal-weighted CRSP market index and daily close-to-close percentage returns over the 200 trading days ending 11 days prior to the loan start date.
Industry Dummies	Dummy variables using Ken French's 17 industry classification at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/.
Term Spread (%)	The daily percentage yield difference between ten- and one-year constant fixed maturity treasuries at http://woodrow.mpls.frb.fed.us/research/data/us/.
Default Spread (%)	The daily percentage yield difference between Moody's Baa and Aaa rated corporate bonds at http://woodrow.mpls.frb.fed.us/research/data/us/.
Year Dummies	Dummy variables for the years from 1995-2011.

Appendix A2: List of Bank Loan Covenants

Financial Covenants:

Max. Capex, Max. Debt to EBITDA, Max. Debt to Equity, Max. Debt to Tangible Net Worth, Max. Leverage Ratio, Max. Loan to Value, Max. Long-Term Investment to Net Worth, Max. Net Debt to Assets, Max. Senior Debt to EBITDA, Max. Senior Leverage, Max. Total Debt (including Contingent Liabilities) to Tangible Net Worth, Min. Cash Interest Coverage, Min. Current Ratio, Min. Debt Service Coverage, Min. EBITDA, Min. Equity to Asset Ratio, Min. Fixed Charge Coverage, Min. Interest Coverage, Min. Net Worth to Total Asset, Min. Quick Ratio, Other Ratio, Net Worth, Tangible Net Worth.

Non-Financial Covenants:

Insurance Proceeds Sweep, Dividend Restriction, Equity Issuance Sweep, Debt Issuance Sweep, Asset Sales Sweep, Excess Cash Flow Sweep, Percentage of Net Income, Percentage of Excess Cash Flow.

Table 1: Summary Statistics

This table reports the summary statistics of the variables for the lead share sample of 1,627 loan facilities and the full sample of 2,920 loan facilities. The loans in the lead share sample all have a non-missing value for *Lead Bank Share*. For the lead share sample, we also report the mean and the median of the variables separately for the 291 facilities to PE-backed IPO companies and the 1,336 facilities to non-PE-backed IPO companies. The sample period is 1995-2011. Std. denotes standard deviation. See Appendix A1 for variable definitions. Ln(X) denotes the natural logarithm of variable X.

	Lead Share Sample			**PE-backed Loans**		**Non-PE-backed Loans**		**Full Sample**		
	Mean	Median	Std.	Mean	Median	Mean	Median	Mean	Median	Std.
Lead Bank Share	0.73	1.00	0.36	0.51	0.33	0.78	1.00			
Herfindahl Index	0.71	1.00	0.38	0.48	0.26	0.76	1.00			
All-In-Spread Drawn (bps)	241.20	225.00	127.39	229.85	200.00	243.67	250.00	243.61	225.00	131.84
No. of All Lenders	4.07	1.00	6.74	7.54	5.00	3.31	1.00	6.59	3.00	8.51
No. of Participant Lenders	3.04	0.00	6.73	6.52	4.00	2.29	0.00	5.56	2.00	8.50
Foreign Bank Dummy	0.20	0.00	0.40	0.37	0.00	0.16	0.00	0.38	0.00	0.49
Loan Amount ($m)	126.09	31.75	298.51	215.81	99.28	106.55	27.00	213.05	77.08	415.03
Ln(Loan Amount ($m))	3.55	3.46	1.65	4.53	4.60	3.33	3.30	4.24	4.34	1.65
Maturity (months)	37.89	36.00	23.18	48.88	59.00	35.49	36.00	46.21	48.00	24.56
Ln(Maturity)	3.40	3.58	0.76	3.74	4.08	3.33	3.58	3.63	3.87	0.73
No. of Fin. Covenants	2.43	3.00	1.50	2.55	3.00	2.41	2.50	2.60	3.00	1.56
No. of Non-Fin. Covenants	2.46	1.00	2.40	3.23	3.00	2.29	1.00	3.13	3.00	2.50
Performance Pricing Dummy	0.47	0.00	0.50	0.66	1.00	0.43	0.00	0.55	1.00	0.50
Secured Loan Dummy	0.86	1.00	0.34	0.89	1.00	0.86	1.00	0.87	1.00	0.33
Sponsor-bank Relationship ($)	0.02	0.00	0.11	0.13	0.00	0.00	0.00	0.06	0.00	0.16
Strong Relationship Dummy ($)	0.04	0.00	0.19	0.21	0.00	0.00	0.00	0.11	0.00	0.31
Weak Relationship Dummy ($)	0.14	0.00	0.35	0.79	1.00	0.00	0.00	0.17	0.00	0.38
Sponsor-bank Relationship (#)	0.02	0.00	0.11	0.14	0.00	0.00	0.00	0.06	0.00	0.16
Strong Relationship Dummy (#)	0.04	0.00	0.20	0.23	0.00	0.00	0.00	0.11	0.00	0.31
Weak Relationship Dummy (#)	0.14	0.00	0.34	0.77	1.00	0.00	0.00	0.17	0.00	0.38
Lead Lender Reputation	0.09	0.03	0.11	0.12	0.08	0.08	0.03	0.12	0.08	0.12
New Lender Dummy	0.56	1.00	0.50	0.40	0.00	0.60	1.00	0.50	0.00	0.50
PE Firm Reputation	1.07	0.00	2.92	5.97	7.82	0.00	0.00	1.80	0.00	3.59
Market Cap. ($m)	1,319.97	231.90	6,333.75	1,052.62	485.37	1,378.20	203.05	1,875.55	420.38	7,798.46
Ln(Market Cap. ($m))	5.52	5.45	1.63	6.07	6.18	5.40	5.31	5.99	6.04	1.66
Borrower Age (years)	18.26	11.00	20.94	22.14	15.00	17.41	10.00	24.11	13.00	27.84
Ln(1+Borrower Age)	2.57	2.48	0.83	2.78	2.77	2.53	2.40	2.76	2.64	0.94
Leverage	0.47	0.43	0.30	0.60	0.57	0.44	0.40	0.53	0.51	0.32
Tangibility	0.25	0.16	0.23	0.34	0.29	0.23	0.14	0.26	0.17	0.24
Dividend Payer Dummy	0.14	0.00	0.35	0.15	0.00	0.14	0.00	0.17	0.00	0.37
Market-to-Book	2.44	1.83	2.56	1.91	1.51	2.56	1.94	2.24	1.69	2.12
Profitability	-0.09	0.02	0.41	-0.02	0.04	-0.10	0.02	-0.04	0.02	0.32
Operating Loss Dummy	0.40	0.00	0.49	0.30	0.00	0.42	0.00	0.35	0.00	0.48
Beta	1.35	1.24	0.91	1.18	1.18	1.38	1.26	1.31	1.21	0.83
Stock Return Volatility	0.05	0.04	0.03	0.04	0.03	0.05	0.04	0.04	0.04	0.03
Term Spread (%)	1.00	0.70	1.02	1.32	0.91	0.93	0.65	0.99	0.68	1.05
Default Spread (%)	0.86	0.78	0.34	0.95	0.86	0.84	0.76	0.87	0.80	0.33

Table 2: Baseline Regressions on Syndicate Structure: PE-backed Loans with Lead Share Information

This table reports the baseline OLS regression results using the lead bank share per facility (Panel A) and facility Herfindahl Index (Panel B) as dependent variables. The regressions in this table use only the 291 loans to PE-backed IPO companies in the lead share sample. All models control for year, industry, loan type, and deal package purpose fixed effects, but their coefficients are omitted from this table. See Appendix A1 for variable definitions. Ln(X) denotes the natural logarithm of variable X. The t-statistics in the parentheses below the coefficient estimates are calculated using robust standard errors corrected for heteroskedasticity and clustering at the borrowing company level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, in a two-tailed test.

	Panel A: Lead Bank Share				**Panel B: Herfindahl Index**			
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sponsor-bank Relationship ($)	-0.28***				-0.28***			
	(-3.41)				(-3.24)			
Strong Relationship Dummy ($)		-0.16***				-0.16***		
		(-3.39)				(-3.24)		
Sponsor-bank Relationship (#)			-0.30***				-0.29***	
			(-3.33)				(-3.19)	
Strong Relationship Dummy (#)				-0.17***				-0.17***
				(-3.82)				(-3.45)
Market-to-Book	0.03	0.03*	0.03	0.03	0.03	0.04*	0.03*	0.04*
	(1.55)	(1.75)	(1.61)	(1.61)	(1.62)	(1.81)	(1.68)	(1.69)
Ln(Market Cap. ($million))	-0.13***	-0.12***	-0.13***	-0.13***	-0.12***	-0.12***	-0.13***	-0.13***
	(-5.50)	(-5.49)	(-5.68)	(-5.59)	(-4.92)	(-4.91)	(-5.09)	(-5.00)
Dividend Payer Dummy	0.08	0.10	0.07	0.09	0.09	0.11	0.08	0.10
	(1.24)	(1.47)	(1.08)	(1.37)	(1.20)	(1.41)	(1.05)	(1.31)
Leverage	-0.21**	-0.20**	-0.20**	-0.19**	-0.23**	-0.22**	-0.22**	-0.21**
	(-2.48)	(-2.45)	(-2.39)	(-2.32)	(-2.59)	(-2.55)	(-2.50)	(-2.43)
Tangibility	0.07	0.07	0.07	0.08	0.07	0.07	0.08	0.08
	(0.60)	(0.62)	(0.65)	(0.72)	(0.58)	(0.60)	(0.63)	(0.70)
Ln(1+Borrower Age)	0.06**	0.05*	0.06**	0.06**	0.06**	0.05*	0.06**	0.06**
	(2.03)	(1.87)	(2.24)	(2.28)	(2.04)	(1.88)	(2.22)	(2.26)
Profitability	-0.05	-0.05	-0.05	-0.04	-0.06	-0.06	-0.06	-0.05
	(-0.50)	(-0.42)	(-0.47)	(-0.37)	(-0.56)	(-0.48)	(-0.53)	(-0.43)
Operating Loss Dummy	0.07	0.06	0.07	0.06	0.10	0.09	0.10	0.09
	(1.18)	(0.98)	(1.17)	(1.03)	(1.57)	(1.37)	(1.56)	(1.44)
Beta÷10	0.04	-0.05	0.10	0.04	-0.04	-0.14	0.01	-0.06
	(0.14)	(-0.17)	(0.33)	(0.11)	(-0.14)	(-0.45)	(0.04)	(-0.17)
Stock Return Volatility×10	0.16	0.15	0.14	0.13	0.19	0.18	0.17	0.16
	(1.01)	(0.97)	(0.89)	(0.84)	(1.12)	(1.08)	(1.00)	(0.95)
Term Spread (%)	-0.08	-0.08	-0.08*	-0.09*	-0.07	-0.07	-0.08	-0.08
	(-1.61)	(-1.63)	(-1.67)	(-1.74)	(-1.41)	(-1.44)	(-1.46)	(-1.51)
Default Spread (%)	-0.09	-0.07	-0.09	-0.08	-0.09	-0.08	-0.10	-0.08
	(-1.01)	(-0.89)	(-1.08)	(-0.92)	(-1.02)	(-0.90)	(-1.09)	(-0.94)
Constant	2.34***	2.19***	2.38***	2.22***	2.27***	2.12***	2.31***	2.15***
	(10.02)	(9.42)	(10.01)	(9.83)	(8.94)	(8.36)	(9.00)	(8.68)
Observations	291	291	291	291	291	291	291	291
Adj. R^2	0.59	0.59	0.59	0.60	0.58	0.58	0.58	0.58

Table 3: Baseline Regressions on Syndicate Structure: All Loans with Lead Share Information

This table reports the baseline OLS regression results on the lead bank share per facility (Panel A) and facility Herfindahl Index (Panel B). The regressions in this table use the 1,627 loans to both PE-backed and non-PE-backed IPO companies in the lead share sample. All models control for year, industry, loan type, and deal package purpose fixed effects, but their coefficients are omitted from this table. See Appendix A1 for variable definitions. Ln(X) denotes the natural logarithm of variable X. The t-statistics in the parentheses below the coefficient estimates are calculated using robust standard errors corrected for heteroskedasticity and clustering at the borrowing company level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, in a two-tailed test.

	Panel A: Lead Bank Share			**Panel B: Herfindahl Index**		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
PE Sponsor Dummy	-0.10***			-0.11***		
	(-3.31)			(-3.23)		
Sponsor-bank Relationship ($)		-0.25***			-0.26***	
		(-2.80)			(-2.67)	
Strong Relationship Dummy ($)			-0.21***			-0.21***
			(-4.30)			(-4.07)
Weak Relationship Dummy ($)			-0.08**			-0.08**
			(-2.40)			(-2.37)
Market-to-Book	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(3.05)	(3.04)	(3.03)	(3.09)	(3.08)	(3.07)
Ln(Market Cap. ($million))	-0.11***	-0.11***	-0.11***	-0.11***	-0.11***	-0.11***
	(-13.40)	(-13.49)	(-13.24)	(-13.19)	(-13.28)	(-13.04)
Dividend Payer Dummy	0.04	0.05*	0.04	0.04	0.04	0.04
	(1.47)	(1.70)	(1.51)	(1.26)	(1.50)	(1.30)
Leverage	-0.21***	-0.23***	-0.21***	-0.22***	-0.24***	-0.22***
	(-5.38)	(-6.05)	(-5.43)	(-5.45)	(-6.12)	(-5.50)
Tangibility	-0.03	-0.04	-0.03	-0.02	-0.04	-0.02
	(-0.58)	(-0.84)	(-0.61)	(-0.42)	(-0.68)	(-0.45)
Ln(1+Borrower Age)	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(-0.90)	(-0.81)	(-0.93)	(-0.82)	(-0.73)	(-0.85)
Profitability	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
	(-1.06)	(-1.26)	(-1.13)	(-1.17)	(-1.38)	(-1.24)
Operating Loss Dummy	0.05**	0.05**	0.04*	0.05**	0.05**	0.05**
	(2.08)	(2.08)	(1.90)	(2.15)	(2.15)	(1.97)
Beta÷10	0.26**	0.27***	0.25**	0.27**	0.28***	0.27**
	(2.50)	(2.62)	(2.48)	(2.48)	(2.61)	(2.47)
Stock Return Volatility×10	0.09	0.10	0.09	0.10	0.11	0.10
	(1.47)	(1.62)	(1.53)	(1.49)	(1.64)	(1.55)
Term Spread (%)	0.01	0.01	0.01	0.02	0.02	0.02
	(0.61)	(0.52)	(0.66)	(0.89)	(0.79)	(0.93)
Default Spread (%)	-0.03	-0.02	-0.03	-0.04	-0.03	-0.04
	(-0.82)	(-0.58)	(-0.80)	(-1.00)	(-0.76)	(-0.98)
Constant	1.60***	1.65***	1.62***	1.60***	1.65***	1.62***
	(9.13)	(8.38)	(8.46)	(8.51)	(7.89)	(7.93)
No. of Observations	1,627	1,627	1,627	1,627	1,627	1,627
Adj. R^2	0.43	0.43	0.44	0.43	0.42	0.43

Table 4: Expanded Regressions on Syndicate Structure: PE-backed Loans with Lead Share Information

This table reports the OLS regression results on the lead bank share per facility (Panel A) and facility Herfindahl Index (Panel B) with additional control variables. The regressions in this table use only the 291 loans to PE-backed IPO companies in the lead share sample. All models also control for year, industry, loan type, and deal package purpose fixed effects, but their coefficients are omitted from this table. See Appendix A1 for variable definitions. Ln(X) denotes the natural logarithm of variable X. The t-statistics in the parentheses below the coefficient estimates are calculated using robust standard errors corrected for heteroskedasticity and clustering at the borrowing company level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, in a two-tailed test.

	Panel A: Lead Bank Share				Panel B: Herfindahl Index			
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sponsor-bank Relationship ($)	-0.28***		-0.26***		-0.28***		-0.28***	
	(-3.99)		(-3.99)		(-3.79)		(-3.97)	
Strong Relationship Dummy ($)		-0.15***		-0.14***		-0.16***		-0.14***
		(-4.17)		(-3.64)		(-4.02)		(-3.62)
Lead Lender Reputation			-0.10	-0.15			-0.04	-0.09
			(-0.67)	(-0.97)			(-0.25)	(-0.53)
New Lender Dummy			0.12***	0.11***			0.13***	0.13***
			(3.31)	(3.03)			(3.60)	(3.31)
PE Firm Reputation			-0.00	-0.00			-0.00	-0.00
			(-0.69)	(-0.61)			(-0.47)	(-0.39)
No. of Fin. Covenants	-0.03*	-0.03*	-0.02	-0.02	-0.04**	-0.04**	-0.03*	-0.03**
	(-1.86)	(-1.91)	(-1.53)	(-1.57)	(-2.25)	(-2.30)	(-1.96)	(-2.00)
No. of Non-Fin. Covenants	-0.02**	-0.02*	-0.02*	-0.02*	-0.02*	-0.02*	-0.02*	-0.02*
	(-1.98)	(-1.83)	(-1.97)	(-1.85)	(-1.86)	(-1.72)	(-1.86)	(-1.74)
Performance Pricing Dummy	-0.11**	-0.10**	-0.10**	-0.09**	-0.09*	-0.08*	-0.08*	-0.08*
	(-2.57)	(-2.43)	(-2.48)	(-2.32)	(-1.90)	(-1.78)	(-1.85)	(-1.71)
Secured Loan Dummy	0.08	0.07	0.10*	0.09	0.10*	0.10*	0.13**	0.12**
	(1.47)	(1.36)	(1.82)	(1.65)	(1.76)	(1.68)	(2.21)	(2.07)
Ln(Loan Amount ($million))	-0.07***	-0.08***	-0.07***	-0.07***	-0.08***	-0.08***	-0.07***	-0.07***
	(-3.56)	(-3.62)	(-3.47)	(-3.54)	(-3.52)	(-3.57)	(-3.38)	(-3.44)
Ln(Maturity)	-0.06	-0.07*	-0.06	-0.06*	-0.07*	-0.08*	-0.06	-0.07*
	(-1.65)	(-1.76)	(-1.55)	(-1.68)	(-1.72)	(-1.83)	(-1.64)	(-1.77)
Market-to-Book	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01
	(0.43)	(0.74)	(0.15)	(0.48)	(0.57)	(0.86)	(0.31)	(0.63)
Ln(Market Cap. ($million))	-0.06***	-0.06**	-0.05**	-0.05**	-0.06**	-0.06**	-0.05**	-0.05**
	(-2.65)	(-2.60)	(-2.28)	(-2.24)	(-2.38)	(-2.33)	(-2.05)	(-2.02)
Dividend Payer Dummy	0.08	0.09	0.07	0.08	0.08	0.09	0.07	0.08
	(1.22)	(1.40)	(1.01)	(1.19)	(1.12)	(1.29)	(0.95)	(1.12)
Leverage	-0.14**	-0.14**	-0.11*	-0.11*	-0.16**	-0.16**	-0.14**	-0.14**
	(-2.30)	(-2.20)	(-1.94)	(-1.83)	(-2.53)	(-2.43)	(-2.26)	(-2.15)
Tangibility	0.11	0.11	0.13	0.13	0.10	0.11	0.13	0.13
	(1.10)	(1.17)	(1.29)	(1.34)	(1.01)	(1.06)	(1.19)	(1.23)
Ln(1+Borrower Age)	0.05*	0.04*	0.04*	0.04	0.05*	0.04*	0.04*	0.04*
	(1.94)	(1.78)	(1.80)	(1.63)	(1.94)	(1.79)	(1.85)	(1.68)
Profitability	0.00	0.01	0.05	0.06	-0.00	0.01	0.04	0.05
	(0.01)	(0.15)	(0.60)	(0.77)	(-0.01)	(0.12)	(0.49)	(0.66)
Operating Loss Dummy	0.05	0.04	0.03	0.03	0.08	0.07	0.06	0.05
	(0.99)	(0.78)	(0.72)	(0.59)	(1.49)	(1.29)	(1.21)	(1.07)
Beta÷10	0.02	-0.06	0.08	-0.01	-0.07	-0.15	0.00	-0.09
	(0.09)	(-0.25)	(0.32)	(-0.06)	(-0.25)	(-0.58)	(0.02)	(-0.37)
Stock Return Volatility×10	0.06	0.06	0.14	0.13	0.09	0.08	0.17	0.16
	(0.51)	(0.46)	(1.25)	(1.11)	(0.67)	(0.63)	(1.44)	(1.31)
Term Spread (%)	-0.06	-0.07	-0.07*	-0.08*	-0.06	-0.06	-0.07	-0.07
	(-1.37)	(-1.42)	(-1.71)	(-1.74)	(-1.18)	(-1.24)	(-1.45)	(-1.48)
Default Spread (%)	-0.07	-0.06	-0.08	-0.07	-0.07	-0.06	-0.08	-0.07
	(-0.93)	(-0.78)	(-1.24)	(-1.04)	(-0.82)	(-0.68)	(-1.14)	(-0.94)
Constant	2.50***	2.38***	2.35***	2.26***	2.43***	2.31***	2.25***	2.16***
	(9.84)	(8.98)	(9.86)	(9.11)	(8.64)	(7.96)	(8.43)	(7.84)
No. of Observations	291	291	291	291	291	291	291	291
Adj. R^2	0.70	0.70	0.72	0.72	0.69	0.69	0.71	0.70

Table 5: Expanded Regressions on Syndicate Structure: All Loans with Lead Share Information

This table reports the OLS regression results on the lead bank share per facility (Panel A) and facility Herfindahl Index (Panel B) with additional control variables. The regressions in this table use the 1,627 loans to both PE-backed and non-PE-backed IPO companies in the lead share sample. All models control for year, industry, loan type, and deal package purpose fixed effects, but their coefficients are omitted from this table. See Appendix A1 for variable definitions. Ln(X) denotes the natural logarithm of variable X. The t-statistics in the parentheses below the coefficient estimates are calculated using robust standard errors corrected for heteroskedasticity and clustering at the borrowing company level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, in a two-tailed test.

Panel A: Lead Bank Share

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
PE Sponsor Dummy	-0.06**			-0.03		
	(-2.35)			(-0.87)		
Sponsor-bank Relationship ($)		-0.19**			-0.14	
		(-2.35)			(-1.54)	
Strong Relationship Dummy ($)			-0.16***			-0.13**
			(-3.85)			(-2.44)
Weak Relationship Dummy ($)			-0.04			-0.02
			(-1.38)			(-0.51)
Lead Lender Reputation				-0.08	-0.07	-0.06
				(-1.20)	(-0.97)	(-0.86)
New Lender Dummy				0.08***	0.08***	0.08***
				(4.69)	(4.73)	(4.69)
PE Firm Reputation				-0.00	-0.00	-0.00
				(-0.55)	(-1.23)	(-0.39)
No. of Fin. Covenants	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***
	(-2.96)	(-3.06)	(-3.04)	(-2.74)	(-2.78)	(-2.83)
No. of Non-Fin. Covenants	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***
	(-4.65)	(-4.74)	(-4.60)	(-4.80)	(-4.79)	(-4.72)
Performance Pricing Dummy	-0.11***	-0.11***	-0.11***	-0.09***	-0.09***	-0.09***
	(-5.68)	(-5.69)	(-5.68)	(-4.88)	(-4.91)	(-4.93)
Secured Loan Dummy	0.05*	0.05*	0.05**	0.04*	0.05*	0.05**
	(1.92)	(1.92)	(2.07)	(1.83)	(1.90)	(2.00)
Ln(Loan Amount ($million))	-0.08***	-0.08***	-0.08***	-0.08***	-0.08***	-0.08***
	(-10.37)	(-10.35)	(-10.31)	(-10.00)	(-9.98)	(-10.02)
Ln(Maturity)	-0.06***	-0.06***	-0.06***	-0.06***	-0.06***	-0.06***
	(-4.88)	(-4.87)	(-4.87)	(-5.01)	(-5.00)	(-5.02)
Market-to-Book	0.00	0.00	0.00	0.00	0.00	0.00
	(0.97)	(0.92)	(0.93)	(0.86)	(0.82)	(0.83)
Ln(Market Cap. ($million))	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***
	(-5.62)	(-5.57)	(-5.47)	(-5.63)	(-5.57)	(-5.51)
Dividend Payer Dummy	0.05*	0.05*	0.05*	0.05**	0.05**	0.05**
	(1.81)	(1.94)	(1.87)	(2.01)	(2.01)	(2.06)
Leverage	-0.08***	-0.09***	-0.08***	-0.08***	-0.08***	-0.08***
	(-2.77)	(-3.15)	(-2.76)	(-2.86)	(-3.06)	(-2.85)
Tangibility	0.04	0.03	0.03	0.04	0.04	0.04
	(0.84)	(0.68)	(0.81)	(1.01)	(1.02)	(0.96)
Ln(1+Borrower Age)	0.01	0.01	0.01	0.00	0.00	0.00
	(0.48)	(0.55)	(0.45)	(0.40)	(0.43)	(0.37)
Profitability	0.02	0.02	0.02	0.03	0.03	0.03
	(1.24)	(1.18)	(1.22)	(1.49)	(1.46)	(1.44)
Operating Loss Dummy	0.04**	0.04**	0.04*	0.03*	0.03	0.03
	(2.08)	(2.03)	(1.85)	(1.67)	(1.59)	(1.46)
Beta÷10	0.15*	0.16*	0.15*	0.16*	0.16*	0.15*
	(1.74)	(1.82)	(1.71)	(1.81)	(1.86)	(1.80)
Stock Return Volatility×10	0.01	0.02	0.02	0.03	0.03	0.03
	(0.32)	(0.42)	(0.38)	(0.70)	(0.77)	(0.74)
Term Spread (%)	0.02	0.02	0.02	0.02	0.02	0.02
	(0.90)	(0.88)	(0.94)	(0.79)	(0.80)	(0.84)
Default Spread (%)	-0.05	-0.05	-0.05	-0.06	-0.06	-0.05
	(-1.31)	(-1.20)	(-1.29)	(-1.48)	(-1.49)	(-1.45)
Constant	1.62***	1.66***	1.64***	1.58***	1.60***	1.59***
	(9.17)	(8.49)	(8.49)	(8.74)	(8.33)	(8.15)
No. of Observations	1,627	1,627	1,627	1,627	1,627	1,627
Adj. R^2	0.58	0.58	0.59	0.59	0.60	0.60

Panel B: Herfindahl Index

VARIABLES	(7)	(8)	(9)	(10)	(11)	(12)
PE Sponsor Dummy	-0.06**			-0.03		
	(-2.22)			(-0.86)		
Sponsor-Bank Relation ($)		-0.19**			-0.14	
		(-2.14)			(-1.40)	
Strong Relationship Dummy ($)			-0.17***			-0.14**
			(-3.54)			(-2.31)
Weak Relationship Dummy ($)			-0.04			-0.02
			(-1.31)			(-0.51)
Lead Lender Reputation				-0.07	-0.05	-0.04
				(-0.95)	(-0.73)	(-0.62)
New Lender Dummy				0.09***	0.09***	0.09***
				(5.21)	(5.25)	(5.20)
PE Firm Reputation				-0.00	-0.00	-0.00
				(-0.44)	(-1.09)	(-0.27)
No. of Financial Covenants	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***
	(-3.30)	(-3.38)	(-3.36)	(-3.07)	(-3.10)	(-3.15)
No. of Non-Financial Covenants	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***
	(-4.78)	(-4.87)	(-4.72)	(-4.93)	(-4.93)	(-4.85)
Performance Pricing Dummy	-0.11***	-0.12***	-0.11***	-0.10***	-0.10***	-0.10***
	(-5.58)	(-5.60)	(-5.58)	(-4.78)	(-4.80)	(-4.83)
Secured Loan Dummy	0.05**	0.05**	0.06**	0.05**	0.05**	0.06**
	(2.09)	(2.09)	(2.24)	(2.04)	(2.09)	(2.20)
Ln(Loan Amount ($million))	-0.09***	-0.09***	-0.09***	-0.08***	-0.08***	-0.08***
	(-10.63)	(-10.60)	(-10.57)	(-10.33)	(-10.31)	(-10.35)
Ln(Maturity)	-0.06***	-0.06***	-0.06***	-0.07***	-0.07***	-0.07***
	(-4.98)	(-4.97)	(-4.97)	(-5.13)	(-5.12)	(-5.14)
Market-to-Book	0.00	0.00	0.00	0.00	0.00	0.00
	(0.91)	(0.85)	(0.86)	(0.80)	(0.76)	(0.78)
Ln(Market Cap. ($million))	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***
	(-5.25)	(-5.21)	(-5.11)	(-5.30)	(-5.25)	(-5.19)
Dividend Payer Dummy	0.05	0.05*	0.05*	0.05*	0.05*	0.05*
	(1.60)	(1.71)	(1.65)	(1.81)	(1.81)	(1.86)
Leverage	-0.08***	-0.09***	-0.08***	-0.08***	-0.08***	-0.08***
	(-2.73)	(-3.11)	(-2.72)	(-2.84)	(-3.05)	(-2.83)
Tangibility	0.05	0.04	0.05	0.06	0.06	0.05
	(1.10)	(0.95)	(1.08)	(1.28)	(1.30)	(1.24)
Ln(1+Borrower Age)	0.01	0.01	0.01	0.01	0.01	0.01
	(0.61)	(0.68)	(0.58)	(0.52)	(0.55)	(0.49)
Profitability	0.02	0.02	0.02	0.03	0.03	0.03
	(1.22)	(1.16)	(1.19)	(1.46)	(1.43)	(1.41)
Operating Loss Dummy	0.04**	0.04**	0.04*	0.03*	0.03	0.03
	(2.15)	(2.11)	(1.94)	(1.71)	(1.63)	(1.50)
Beta÷10	0.16*	0.17*	0.16*	0.16*	0.17*	0.16*
	(1.72)	(1.79)	(1.68)	(1.82)	(1.87)	(1.81)
Stock Return Volatility×10	0.02	0.02	0.02	0.03	0.04	0.04
	(0.32)	(0.41)	(0.37)	(0.72)	(0.79)	(0.77)
Term Spread (%)	0.02	0.02	0.03	0.02	0.02	0.02
	(1.19)	(1.17)	(1.23)	(1.09)	(1.10)	(1.14)
Default Spread (%)	-0.06	-0.06	-0.06	-0.07*	-0.07*	-0.06
	(-1.48)	(-1.37)	(-1.46)	(-1.66)	(-1.67)	(-1.63)
Constant	1.62***	1.66***	1.64***	1.57***	1.59***	1.58***
	(8.51)	(7.96)	(7.92)	(8.03)	(7.71)	(7.52)
No. of Observations	1,627	1,627	1,627	1,627	1,627	1,627
Adj. R^2	0.59	0.59	0.59	0.60	0.60	0.60

Table 6: Sponsor-Bank Relationship and Syndicate Size

This table reports the Poisson regression results on syndicate size. The dependent variable is the number of participant lenders per facility, excluding lead banks. The regressions in Panel A use only the 824 loans to PE-backed IPO companies in the full sample. The regressions in Panel B use the 2,920 loans to both PE-backed and non-PE-backed IPO companies in the full sample. Note that some loans in the full sample, compared to the lead share sample in the early tables, do not have lead share information. All models control for year, industry, loan type, and deal package purpose fixed effects, but for brevity, their coefficients and t-statistics are not reported below. See Appendix A1 for variable definitions. Ln(X) denotes the natural logarithm of variable X. The t-statistics in the parentheses below the coefficient estimates are calculated using robust standard errors corrected for heteroskedasticity and clustering at the borrowing company level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, in a two-tailed test. To give an economic interpretation to a slope coefficient in a Poisson regression, the slope coefficient must be multiplied by the mean of the dependent variable. The mean value of the number of participant lenders per facility for the sample used in each model is reported at the bottom of the table.

	Panel A: PE-Backed loans		Panel B: All Loans	
VARIABLES	(1)	(2)	(3)	(4)
Strong Relationship Dummy ($)	0.26***	0.30***	0.39***	0.44***
	(2.65)	(3.26)	(3.46)	(3.47)
Weak Relationship Dummy ($)			0.20**	0.22**
			(2.50)	(2.58)
Lender Reputation		-0.73**		0.28
		(-2.09)		(1.16)
New Lender Dummy		-0.14		-0.13**
		(-1.64)		(-2.38)
PE Reputation		-0.01		-0.02
		(-0.87)		(-1.58)
Ln(1+No. of Fin. Covenants)		0.13***		0.09***
		(3.04)		(3.67)
Ln(1+No. of Non-Fin. Covenants)		0.01		0.05***
		(0.67)		(3.41)
Performance Pricing Dummy		0.38***		0.27***
		(4.08)		(3.61)
Secured Loan Dummy		0.06		0.10
		(0.49)		(1.26)
Ln (Loan Amount)		0.20***		0.42***
		(4.81)		(10.91)
Ln (Maturity)		0.24**		0.34***
		(2.36)		(4.83)
Market-to-Book	-0.20***	-0.19***	-0.24***	-0.13***
	(-4.35)	(-3.90)	(-6.13)	(-3.78)
Ln (Market Cap.)	0.43***	0.33***	0.47***	0.20***
	(8.53)	(6.44)	(12.58)	(4.89)
Dividend Payer Dummy	-0.21*	-0.23**	-0.21**	-0.16**
	(-1.90)	(-2.10)	(-2.20)	(-1.97)
Leverage	0.66***	0.71***	0.85***	0.47***
	(3.64)	(3.99)	(7.26)	(4.16)
Tangibility	-0.10	-0.20	0.08	-0.10
	(-0.40)	(-0.94)	(0.46)	(-0.67)
Ln (1+Borrower Age)	-0.08	-0.06	-0.05	-0.02
	(-1.27)	(-1.41)	(-1.17)	(-0.69)
Profitability	0.80	1.19*	1.02**	0.50
	(1.29)	(1.81)	(2.48)	(1.47)
Operating Loss Dummy	-0.01	0.08	0.13	0.03
	(-0.11)	(0.70)	(1.43)	(0.32)
Beta	1.22*	0.90	0.96*	0.89*
	(1.82)	(1.29)	(1.83)	(1.67)
Stock Return Volatility	-0.68	-0.73	-1.15***	-0.67**
	(-1.27)	(-1.40)	(-3.05)	(-2.03)
Term Spread (%)	0.15	0.13	0.04	0.13
	(1.02)	(1.21)	(0.38)	(1.54)
Default Spread (%)	0.28	0.34	0.10	0.26*
	(1.04)	(1.53)	(0.56)	(1.65)
Constant	-2.47*	-4.11***	-3.20***	-5.53***
	(-1.74)	(-3.14)	(-3.48)	(-5.74)
Mean of the Dependent Variable	8.46	8.46	5.56	5.56
Pseudo R^2	0.37	0.44	0.41	0.51
No. of Observations	824	824	2,920	2,920

Table 7: Sponsor-Bank Relationship and Foreign Lender Participation

This table reports the logit regression results on the probability of having a foreign participant lender in the syndicate. The regressions in Panel A use only the loans to PE-backed IPO companies in the full sample. Only 815 out of 824 observations are used in Panel A, because nine observations and two industry dummy variables are dropped by Stata because of the perfect predictions of the outcome. The regressions in Panel B use the loans to both PE-backed and non-PE-backed IPO companies in the full sample. Year, industry, loan type, and deal package purpose dummy variables are included in the estimations, but for brevity, their coefficients, economic effects, and z-statistics are not reported below. See Appendix A1 for variable definitions. The z-statistics are calculated using robust standard errors corrected for heteroskedasticity and clustering at the borrowing company level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, in a two-tailed test. The economic effect, Econ. Eff. (%), for an independent variable, reported in percentage for each model, is calculated as follows: For each observation, we vary the variable from one standard deviation below to one standard deviation above its actual value if it is a non-binary variable or vary it from zero to one if it is a dummy variable, and use the coefficients from the logit regression to calculate the change in the predicted probability, holding all other variables fixed. We then average the change in the predicted probability over all observations in the sample to get the economic effect.

Panel A: PE-backed Loans

	(1)			(2)		
	Coeff.	Econ. Eff. (%)	z-Stat.	Coeff.	Econ. Eff. (%)	z-Stat.
Strong Relationship Dummy ($)	0.56*	9.43	1.87	0.79**	11.32	2.48
Lender Reputation				-1.85	-6.31	-1.26
New Lender Dummy				0.31	4.34	1.04
PE Reputation				-0.01	-1.64	-0.33
Ln(1+No. of Fin. Covenants)				0.19*	7.87	1.84
Ln(1+No. of Non-Fin. Covenants)				0.23***	15.18	3.18
Performance Pricing Dummy				0.74***	10.74	2.68
Secured Loan Dummy				0.32	4.54	0.65
Ln (Loan Amount)				0.53***	18.43	4.59
Ln (Maturity)				1.07***	16.36	3.74
Market-to-Book	-0.76***	-28.51	-5.47	-0.76***	-24.45	-5.10
Ln (Market Cap.)	1.07***	43.97	6.52	1.01***	35.78	5.03
Dividend Payer Dummy	-0.31	-5.28	-0.86	-0.31	-4.37	-0.73
Leverage	1.16**	13.20	2.32	1.15**	11.13	2.13
Tangibility	-0.14	-1.18	-0.21	-0.40	-2.81	-0.56
Ln (1+Borrower Age)	0.23	7.50	1.40	0.29	7.94	1.61
Profitability	1.50	10.41	0.76	2.51	14.68	1.17
Operating Loss Dummy	-0.21	-3.47	-0.51	-0.14	-2.01	-0.33
Beta	0.82	1.75	0.38	0.25	0.45	0.11
Stock Return Volatility	1.18	8.33	0.98	2.64**	15.65	2.06
Term Spread (%)	0.37	14.37	1.20	0.27	8.90	0.77
Default Spread (%)	0.54	6.01	0.74	0.76	7.14	1.03
Constant	-10.37***	N/A	-4.59	-18.85***	N/A	-6.35
No. of Observations		815			815	
Pseudo R^2		0.27			0.37	

Panel B. All Loans

	(3)			(4)		
	Coeff.	Econ. Eff. (%)	z-Stat.	Coeff.	Econ. Eff. (%)	z-Stat.
Strong Relationship Dummy ($)	0.78***	11.55	2.81	0.80**	9.89	1.98
Weak Relationship Dummy ($)	0.44**	6.29	2.30	0.41	4.92	1.41
Lender Reputation				0.69	2.02	1.02
New Lender Dummy				0.01	0.08	0.05
PE Reputation				-0.01	-0.68	-0.21
Ln(1+No. of Fin. Covenants)				0.20***	7.44	3.67
Ln(1+No. of Non-Fin. Covenants)				0.15***	8.82	4.16
Performance Pricing Dummy				0.45***	5.44	2.75
Secured Loan Dummy				0.30	3.55	1.35
Ln (Loan Amount)				0.71***	27.46	8.51
Ln (Maturity)				0.68***	11.81	4.37
Market-to-Book	-0.40***	-23.41	-4.43	-0.24**	-12.11	-2.51
Ln (Market Cap.)	1.01***	44.69	11.75	0.67***	25.99	6.58
Dividend Payer Dummy	0.04	0.63	0.22	0.02	0.25	0.10
Leverage	1.27***	11.35	4.30	0.78**	5.95	2.27
Tangibility	0.51	3.45	1.59	0.22	1.27	0.66
Ln (1+Borrower Age)	0.10	2.74	1.27	0.10	2.31	1.18
Profitability	1.22	11.01	2.03	0.69	5.36	1.23
Operating Loss Dummy	0.13	1.88	0.68	0.08	0.97	0.40
Beta	-0.10	-0.23	-0.10	0.07	0.13	0.06
Stock Return Volatility	-0.62	-4.37	-0.75	0.46	2.76	0.61
Term Spread (%)	0.00	-0.13	-0.02	0.06	1.63	0.34
Default Spread (%)	0.11	1.03	0.26	0.37	2.95	0.88
Constant	-10.19***	N/A	-5.80	-15.75***	N/A	-8.36
No. of Observations		2,920			2,920	
Pseudo R^2		0.35			0.44	

Table 8: Robustness Checks and Additional Tests

For the regressions in Panels A, B, and C, the dependent variable is the lead bank share at the facility level. In Panel A, we report both the baseline and the expanded OLS regression results using the sample of 291 PE-backed loans only. The baseline (expanded) model specifications are the same as those in Table 2 (Table 3) but include an additional control variable, *Lead Bank-IPO Underwriter Overlapping Dummy*, which equals one if the lead bank of the current loan is also the lead underwriter (or one of the lead underwriters) of the borrowing company's IPO and zero otherwise. Panel B reports the lead bank fixed effects regressions. Panel C reports the Tobit regression results. Panel D reports the OLS regression results for the lead bank share at the package level. The regressions in models (1) and (2) of Panels B-D use only the loans to PE-backed IPO companies in the lead share sample. The regressions in models (3) and (4) of Panels B-D use the loans to both PE-backed and non-PE-backed IPO companies in the lead share sample. All other firm-level, loan-level controls and year, industry, loan type, and deal package purpose dummy variables are included in the estimations in the same way as in Tables 2 and 3 (baseline models) or Tables 4 and 5 (expanded models), but for brevity, their coefficients and t- or z-statistics are not reported below. See Appendix A1 for variable definitions. The t- and z-statistics in the parentheses below the coefficient estimates are calculated using robust standard errors corrected for heteroskedasticity and clustering at the borrowing company level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, in a two-tailed test.

Panel A: Lead Bank and IPO Underwriter Overlapping (PE-Backed Loans Only)

	Baseline Models		Expanded Models	
VARIABLES	(1)	(2)	(3)	(4)
Sponsor-Bank Relationship ($)	-0.28***		-0.27***	
	(-3.33)		(-3.94)	
Strong Relationship Dummy ($)		-0.16***		-0.14***
		(-3.28)		(-3.80)
Lead Bank-IPO Underwriter	-0.00	0.01	0.10	0.11
Overlapping Dummy	(-0.02)	(0.09)	(1.34)	(1.51)
Observations	291	291	291	291
Adj. R^2	0.59	0.59	0.72	0.72

Panel B: Lead Bank Fixed Effects

	PE-Backed Loans		All Loans	
VARIABLES	(1) Baseline	(2) Expanded	(3) Baseline	(4) Expanded
Strong Relationship Dummy ($)	-0.19***	-0.13**	-0.19***	-0.12***
	(-3.05)	(-2.07)	(-3.71)	(-2.64)
Weak Relationship Dummy ($)			-0.10***	-0.04
			(-3.10)	(-1.12)
Observations	285	285	1,605	1,605
Adj. R^2	0.87	0.88	0.56	0.67

Panel C: Tobit Regressions

	PE-Backed Loans		All Loans	
VARIABLES	(1) Baseline	(2) Expanded	(3) Baseline	(4) Expanded
Strong Relationship Dummy ($)	-0.20***	-0.19***	-0.22***	-0.09
	(-3.57)	(-3.76)	(-2.62)	(-1.03)
Weak Relationship Dummy ($)			-0.13**	-0.01
			(-2.28)	(-0.23)
Observations	291	291	1,627	1,627
Pseudo. R^2	0.67	0.85	0.34	0.54

Panel D: Package Level Results

	PE-Backed Packages		All Packages	
VARIABLES	(1) Baseline	(2) Expanded	(3) Baseline	(4) Expanded
Strong Relationship Dummy ($)	-0.16***	-0.11*	-0.22***	-0.08
	(-2.73)	(-1.91)	(-3.98)	(-1.36)
Weak Relationship Dummy ($)			-0.08**	0.02
			(-2.21)	(0.61)
Observations	187	187	1,188	1,188
Adj. R^2	0.46	0.58	0.39	0.57