The Role of Financial Covenants

in Pricing Private Investments in Public Equity

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Abstract

Our study examines the pricing of private placements for issuing firms with outstanding loan covenants. Using Private Investments in Public Equity (PIPE) deals in 2001-2018, we find that issuing firms restricted by loan covenants offer a discount of 3.9% larger than those without covenants. The positive effect of financial covenants on discount is validated by channel tests regarding covenant violation history, different measures of covenant strictness, PIPE lead investor identity, and PIPE governance-related provisions. A greater likelihood of technical default and costly renegotiation in covenants potentially incentivizes borrowing firms to switch from the loan market to the PIPEs market. To minimize endogeneity concerns, we use a matched sample, Heckman selection model, and two-stage least squares instrumental variable analysis, and find consistent results. Our findings suggest that, rather than free riding on the monitoring efforts by loan creditors, PIPE investors are more concerned about the risk of transferring control rights to lenders, prompting them to demand for deeper discount at PIPE issuance.

JEL classification: G14; G23; G32

Keywords: Syndicated loans; Creditor Rights; Covenants; Private Placements; Private Investment in Public Equity (PIPE)

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1. Introduction

Private investments in public equity, commonly referred to as "PIPEs", are one of the major forms of financing for small and midsize public firms that have weak operating performance and limited access to traditional sources of capital (Brophy et al., 2009; Chen et al., 2010; Chaplinsky and Haushalter, 2010). However, in recent years, larger firms are joining this venue of capital raising. The median proceeds and market capitalization of issuers are $6.26 million and $48.45 million in 2001 and have been increased to $20.05 million and $253.37 million in 2021, respectively. PIPEs allow firms to raise capital quickly due to fewer regulatory filing and disclosure requirements with the SEC. Investors, mostly accredited institutions, can purchase common stocks or convertibles from PIPE issuers at discounted prices. Wruck (1989) and Wruck and Wu (2009) argue that PIPE issuers offer discount to compensate new private equity investors for their monitoring services. In this study, we are interested in understanding whether firms price their PIPE issuance differently if existing loan creditors already fulfill the monitoring roles through the imposition of financial covenants.

Loan creditors, especially commercial banks, have resources to effectively screen borrowers stemming from their sophisticated credit scoring models, the abilities of their loan officers, and the adequacy of lending policies (Fama, 1985). Should borrowers be in financial distress, lenders also have incentives to build the reputation of renegotiating loan debt instead of pursuing inefficient liquidation (Chemmanur & Fulghieri, 1994). Furthermore, lenders have strong monitoring expertise by imposing stipulations of contingent outcomes upon whether borrowers meet certain minimum or maximum level of financial ratios, known as financial covenants

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(Diamond, 1984; Smith & Warner, 1979).[1] The imposition of loan covenants could provide frequent certification of the issuing firm quality and reduce the duplication of monitoring by other arm's length investors. Based on the premise that PIPE investors can benefit from the saving in monitoring costs, one conjecture is that PIPE issuers with enforcing loan covenants are less likely to offer deep discounts. We refer to this argument as the *Monitoring Cost Saving Hypothesis.*

However, financial covenants can serve as a tripwire for lenders to exert explicit requirements on borrowers' operating performance and capital expenditures at the expense of shareholders (Nini et al., 2009; Chava and Roberts, 2008; Acharya et al., 2011; Nini et al., 2012). These covenants are maintenance-based, meaning that the borrower must be in compliance with the covenants on a regular basis. A drop in a firm's EBITDA, for example, typically leads to a covenant violation or technical default, which can be much more common than payment defaults (Nini et al., 2012).[2] While financial covenant violations rarely lead to liquidation or bankruptcy, they shift state-contingent control rights from shareholders to creditors. For example, failures to meet the required financial thresholds prevent borrowing firms from engaging in risky acquisitions, increasing leverage, or distributing dividends to shareholders. In other word, financial covenants allow creditors to play an active role in corporate governance even outside of states of payment default or bankruptcy (Denis and Wang, 2014). Accordingly, we refer to this argument as the *Control Right Hypothesis* which predicts that issuing firms with effective loan covenants are more

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[1] Although private debt contracts can include other qualitative loan covenants such as whether a loan is secured, or whether a loan contains a restriction on dividend payments, financial covenants are imposed as the most binding and commonly used restriction on a company's leverage, interest coverage, total fixed charges, net worth, and periodic operating cash flow such as earnings before interest, taxes, depreciation, and amortization (EBITDA). Covenant thresholds are usually set depending on the borrowing firm's risk, investment opportunities, private information in covenant variables and expectation on covenant violation (Demiroglu & James, 2010). We follow the literature and focus on the impact of financial covenants instead of qualitative covenants.

[2] Nini et al. (2012) find that between 10% and 20% of public firms were in violation of a covenant during any particular year during 1996 to 2008, and more than 40% of the firms were in violation at some point during their sample period.

likely to offer deep discounts to new PIPE investors who are concerned about the risk of transferring control rights to existing loan creditors.

To empirically test our hypotheses, we obtain a sample of PIPE transactions in the period of 2001-2018. Next, we obtain a broad range of loan characteristics data from DealScan to identify PIPE firms with outstanding loan covenants at the time of PIPE issuance. After controlling for relevant PIPE deal characteristics, firm characteristics, year, and industry fixed effects, our Ordinary Least Squares regression shows that PIPE investors purchasing shares from issuers with loan covenants receive a discount of 3.9% larger than those without loan covenants. Our results remain statistically and economically strong when we include additional variables characterizing follow-up PIPE deals, financial constraint, illiquidity, shareholder coordination, or probability of default. Overall, our findings support the *Control Right Hypothesis* and suggest that new PIPE investors are more concerned about the conflict of interest with incumbent loan creditors rather than the reduced cost of monitoring associated with loan debts.

We perform a battery of channel tests confirming the validity of the *Control Right Hypothesis*. First, if our hypothesis holds, we expect that the discount is more pronounced in the scenario where the tension between equity holders and debtholders is exacerbated. We investigate firms that have violated any financial covenants at any time during the four quarters prior to PIPE issuance. As covenant violations are considered an event that triggers the transfer of control rights from equity holders to debtholders, it is expected that new PIPE investors should demand deeper discounts if they anticipate that their control rights could be in jeopardy. We find that the PIPE discount is statistically and economically significant following a covenant violation. Second, we use a group of measures representing the strictness and intensity of the financial covenants in the loan contracts. We find that the PIPE discount increases with the number of covenants, the ex-ante

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probability of covenant violation (Demerjian and Owens, 2016), the covenant index (Bradley and Roberts, 2015), and covenant types (Christensen and Nikolaev, 2012), respectively.

Third, we examine how this effect varies for different investor identities in PIPEs. Existing literature documents that, unlike hedge fund investors, strategic investors (which include venture capitalists, private equity funds, and corporations) have stronger monitoring incentives and request more control rights (Dai, 2007; Bengtsson and Sensoy, 2011; Billet, Elkamhi, and Floros, 2015). Therefore, strategic investors should be particularly more concerned about the future risk of handing over control rights to loan creditors if firm conditions deteriorate. Consistent with the *Control Right Hypothesis,* our evidence shows that strategic investors require a deeper discount when investing in PIPE firms restricted by financial covenants. Lastly, along with a higher discount, PIPE investors financing a firm constrained by financial covenants are more likely to demand for governance-related provisions such as voting rights and board seats in the PIPE contract. When we measure the investor friendliness of the PIPE contract by netting the issuer rights from the investor rights (Bengtsson and Dai, 2014), we find that PIPE issuers bound by financial covenants offer relatively more investor rights than issuer rights to the new private equity holders. Overall, our channel tests validate the robustness of our results and support the argument that the PIPE discount is more significant when new equity investors face potential contest of control rights with the firm's debtholders.

Next, we focus on identification and examine common causes of endogeneity including selection bias, omitted variables, and measurement errors. It is possible that issuing firms with loan covenants self-select into offering larger PIPE discount. Specifically, their decision to raise additional capital with private equity instead of loan market might signal an increase in default risk, illiquidity, financial constraints, or discoordination among shareholders. Therefore, potential

deterioration in firm quality reflected by the failure to secure additional financing with existing lenders may incentivize new PIPE investors to ask for larger compensation when investing in firms with loan covenants.

We employ three identification methods to address the endogeneity concern. First, we use Mahalanobis distance matching to ensure that issuers with and without effective loan covenants are comparable on important firm characteristics. Second, we adopt Heckman selection model to examine the impact of loan covenants on the PIPE discount, controlling for important firm-level characteristics that make certain firms more accessible to the loan market. Third, we use defaults to lenders' loan portfolios to instrument for the imposition of covenant in a two-stage least square instrumental variable analysis. This supply-side determinant of loan contract strictness meets both relevance and exclusion conditions to be a valid instrument (Murfin, 2012). In all endogeneity tests, we find that the positive effect of financial covenants on PIPE discount remain statistically and economically strong.

In the last analysis, we are interested in understanding why firms with effective loan covenants are motivated to participate in PIPEs while they could otherwise raise additional capital through the private debt channel. Within a sample of firms with loan covenants, we use Mahalanobis distance matching to balance pre-event differences in PIPE firms and non-PIPE firms on size, profitability, and capital structure. We find that PIPE firms are more likely to violate covenants and engage in covenant renegotiations than matched non-PIPE firms, after controlling for variation in loan characteristics, firm characteristics, year, and industry fixed effects. Our results imply that costly covenant violations and renegotiations could incentivize firms to participate in PIPEs and offer deep discount to private equity investors as a strategy to balance the control rights with loan creditors.

In a related study, Chakraborty and Gantchev (2013) explore the role of discoordination among existing equity holders in firms' financing choices. They argue that high equity discoordination and high public debt concentration increase the probability of issuing PIPEs over SEOs and the discounts offered in PIPEs. However, they do not examine the degree of restrictiveness in control rights embedded in a firm's private loans, and in particular violations of the previous loan agreements which give rise to creditors' elevated influence in corporate governance. New investors coming through PIPEs, especially strategic investors, may feel more concerned about this risk of transferring control rights to loan creditors if the firm fails to comply with any term in the loan covenant. We fill this gap and show that leading investor type reveals a crucial channel through which the incentive conflict between existing loan lenders and new equity investors in PIPEs manifests itself.

Our study contributes to the literature regarding the determinants of private placement discount. We extend the work of Wruck (1989) and provide strong evidence that PIPE issuers continue to offer deep discounts even when the monitoring function has been fulfilled by existing lenders. According to the prior literature, PIPE discounts are also associated with investors' information acquisition costs (Hertzel & Smith, 1993), managerial entrenchment (Barclay et al., 2007; Wu, 2004), illiquidity of the restricted private shares (Chaplinsky and Haushalter, 2010; Martos-Vila, 2011), and investor identity (Dai, 2007; Brophy et al., 2009; Billet, Elkamhi, and Floros, 2015). While these studies focus on different economic motivations for PIPE discounts from the perspectives of existing shareholders, we provide a novel explanation for the incentives to engage in PIPEs from the contest in control rights with incumbent loan lenders. To the best our knowledge, we are the first to propose how this incentives conflict between existing lenders and incoming blockholders could affect the pricing and terms in subsequent private equity offerings.

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Furthermore, we confirm the validity of the results and address the identification issue using a matched sample analysis, Heckman correction, and instrumental variable analysis.

Our study is also related to the literature on the implications of loan covenants. Given the bank specialness in information acquisition, monitoring, and renegotiation, announcements of new bank loans are favorably accompanied with an appreciation in borrowing firm's market equity (James, 1987; Lummer & McConnell, 1989). The enforcing features in loan contracts, especially financial covenants, improve firm governance (Myers, 1977; Christensen and Nikolaev, 2011) and efficiently allocate control rights to creditors as soon as firm performance deteriorates (Gârleanu & Zwiebel, 2009). However, the imposition of strict financial covenants could give borrowing firms little wiggle room to expand their investment opportunity set, adopt more aggressive borrowing, or increase dividend distribution (Chava and Roberts, 2008; Acharya et al., 2011, Nini et al., 2012). Our paper extends this literature and shows that the enforcement of loan covenants may be costly to firms issuing private equities in PIPEs. Instead of freeriding on the monitoring efforts provided by existing loan creditors, new PIPE investors are more concerned about lender intervention in corporate governance and hence require a higher compensation.

The rest of the paper is organized as follows. Section 2 reviews the related literature and develops the hypotheses. In Section 3, we describe sample construction and summary statistics. Section 4 presents the methodology and empirical findings. Section 5 concludes.

2. Literature Review and Hypothesis Development

Our research question is motivated by the existing seminal theories regarding the level of compensation (discount) to investors in private equity placements. Wruck (1989) and Wruck and Wu (2009) propose that private placements are purchased by active investors who are willing and

able to monitor the firm, and the discount is to compensate for their monitoring efforts. Hertzel and Smith (1993) suggest that since information about the value of the firm is difficult to acquire and assess, investors in private placements will expend more resources to determine firm value and thus will require larger discounts. In contrast, other studies, including Krishnamurthy, Spindt, Subramaniam, and Woidtke (2005) and Barclay, Holderness, and Sheehan (2007), show that firms engage in private equity placements to help consolidate management entrenchment and the discount is intended to compensate the private investors for being passive. They document the declining firm performance post-PIPE, which is inconsistent with the argument proposed by Hertzel and Smith (1993) that PIPEs provide certification benefits. While these studies do not reconcile on different theories explaining the choice and pricing of PIPEs, they only focus on the motivations of existing shareholders. Furthermore, they overlook the monitoring role of another important stakeholder– the debtholders. If the firm is governed by a set of financial covenants exerted by existing creditors, then the need and cost of monitoring from new outside blockholders may be reduced significantly (Diamond, 1984; Rajan & Winton, 1995).

Indeed, loan creditors have strong expertise in screening borrowers because they have access to the transaction history of borrowers using checking or saving account services (Fama, 1985). This information advantage allows lenders to perform better due diligence than public investors as they can efficiently distinguish high quality borrowers from low quality ones at low cost. In addition, bank lenders also have resources to monitor borrowers (Diamond, 1984) and support renegotiation instead of inefficient liquidation (Chemmanur & Fulghieri, 1994). Common monitoring devices include financial covenants, collateral requirements, or performance pricing (Rajan & Winton, 1995; Smith & Warner, 1979). In particular, financial covenants are highly restrictive because these covenants are maintenance-based, meaning that the borrower must be in

compliance with the covenant on a regular basis (Nini et al., 2012).[3] For example, one covenant may require the borrower to maintain a pre-specified level of performance, while another may prohibit it from issuing additional debt. The enforcement of financial covenants can effectively reduce the duplication of monitoring for PIPE investors. In other word, the new private equity holders could reasonably freeride on loan creditors' efforts and hence demand for a lower discount in the subsequent PIPE offerings. We refer to this argument as *Monitoring Cost Saving Hypothesis.*

H1a: PIPE issuers with enforcing loan covenants at the time of their issuance offer smaller discounts compared to the issuing firms without loan covenants.

Control rights are important considerations in designing incomplete long-term financial contracts between firms and capital providers (Aghion and Bolton, 1992; Dewatripont and Tirole, 1994). In the private debt market, the complicated covenants embedded in loan contracts restrict how borrowers can operate and carry themselves financially. Chava and Roberts (2008) show that capital investment declines sharply following a financial covenant violation, when creditors use the threat of terminating the loan to intervene in the borrowers' corporate governance. Acharya et al. (2011) find that stronger creditor rights induce risk-reducing investments. Such risk reduction can result in value loss due to forgoing profitable investments, or from undertaking value-decreasing diversifying mergers and acquisitions. Nini et al. (2012) provide evidence that covenant violation or technical default allows lenders to gain control rights and prompts creditor intervention in managerial decisions. Borrowing firms are further limited in taking acquisitions, increasing capital expenditures, or making distributions to shareholders.

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[3] Recent studies document the growth in covenant-lite loans (Wang and Xia, 2014; Becker and Ivashina, 2016; Berlin et al., 2020). Berlin et al. (2020) argue that, despite the evolution of covenant-lite loans, the revolving tranche in a loan package always retains traditional financial covenants, while the institutional tranche are designed with fewer or no covenants. This split-control right efficiently allows lead arrangers to monitor and renegotiate contracts while mitigating bargaining frictions with nonbank lenders in the syndicate.

In the PIPE market, Chaplinsky and Haushalter (2010) highlight that the use of contract terms contingent on an issuer's future performance increases with issuer risk. Furthermore, they argue that the terms which can transfer control to investors are mostly commonly used by issuers in weak financial conditions. Chakraborty and Gantchev (2013) claim that a financially distressed firm is likely to experience a shift of control rights from equity to debt, in which case any major change in firm policies requires negotiations between equity holders and debtholders. Therefore, the need to improve coordination among incumbent equity holders is critical to achieve greater alignment of their interests which may conflict with the firm's debtholders. In addition, Billet, Elkamhi, and Floros (2015) find that more control terms (such as board seats) offered to strategic investors in PIPE transactions induce positive market reactions.

Overall, these studies recognize the importance of control rights for both lenders (through the imposition of loan covenants) and shareholders (through the issuance of PIPEs). Both debt lenders and equity investors are incentivized to request control right provisions in the financial contracts which facilitate intervention in financing decisions, investment decisions, and corporate governance, especially when firm conditions deteriorate. Our alternative hypothesis therefore predicts that, in firms with binding covenants, PIPE investors are more likely to demand for greater discounts upon anticipating the intensified conflict of interest with debtholders. We propose the *Control Right Hypothesis* as follows:

H1b: PIPE issuers with enforcing loan covenants at the time of their issuance offer larger discounts compared to the issuing firms without loan covenants.

3. Data

3.1. Covenant Measures

We start with a sample of all private investments in public equity (PIPE) deals extracted from PrivateRaise in the period of 2001-2018. Next, we merge the PIPE sample with DealScan to identify PIPE firms whose loans are still outstanding at the time of PIPE issuance.[4] Specifically, we ensure that the PIPE issuance date falls within the period between the loan start date and the loan maturity date.[5] If a PIPE firm has an existing loan, we create our variable of interest, *Covenant* which equals 1 if the loan has at least one financial, accounting-based covenant and 0 otherwise.

For robustness of our results, we use five alternative covenant measures. First, we count the number of financial, accounting-based covenants in loan contract to generate *Number of Covenants*. Second, we follow Bradley and Roberts (2015) to construct a *Covenant Index,* which considers not only accounting-based covenants but also other qualitative restrictions. The index consists of adding 1 for the inclusion of each of the following conditions: security provision, dividend restriction, asset sweep, equity sweep, debt sweep, and more than two financial covenants. To normalize the measure, we take the natural logarithm of the covenant index. Third, we obtain the data from Demerjian and Owens (2016) for the ex-ante *Probability Of Covenant Violation*, which measures the distance between the expected covenant threshold on the contract and the actual covenant ratio at the time of loan origination. Last, we follow Christensen and Nikolaev (2012) to create indicator variables*, Capital Covenant* and *Performance Covenant*, that take 1 if capital covenants or performance covenants are included in the loan contract, respectively. Capital covenants include liquidity covenants (current ratio, quick ratio, and working capital covenants), net worth covenants (net worth covenants, tangible net worth covenants), debt-to-net worth covenant, debt-to-capitalization covenant, and debt-to-balance sheet covenants. Performance

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[4] We use Compustat's identifying variables (gkvey and CIK) and Micheal Roberts' DealScan-Compustat link table (Chava & Roberts, 2008) to match PIPE data with Dealscan data.
[5] If there are multiple active loans for a PIPE deal, we choose the most recently originated loan.

covenants include coverage covenants (interest coverage, fixed charge coverage, and debt service coverage covenants), cash flow/earnings-based covenants and debt to cash flow covenants.

We examine covenant violation which is a direct event that triggers the transfer of control rights from equity holders to debtholders. We track firm covenant violation history on a quarterly basis and document renegotiation outcomes over the life of the loans. For covenant violation, we first use standard definitions developed by Demerjian and Owens (2016) to construct firm covenant ratios for each quarter. Then we create a dummy variable, *Covenant Violation,* which takes 1 if the covenant ratio is larger (smaller) than the maximum (minimum) threshold specified in the loan contract outstanding in that quarter. We also identify the covenant violation by types which are capital covenants and performance covenants. Regarding loan renegotiation outcomes, we follow Beyhaghi et al. (2019) to construct loan paths based on firm identity, loan type, and lead arranger. We create four variables *Renegotiation in Amount, Renegotiation in Maturity, Renegotiation in Spread,* and *Renegotiation in Covenants* indicating whether loan amount, maturity, spread, and covenants are revised between two consecutive renegotiation rounds.

3.2. PIPE Characteristics

We follow the existing literature on private placements in calculating the PIPE offer price discounts (Bengtsson and Dai, 2014; Chaplinsky and Haushalter, 2010; Floros and Sapp, 2012). *Discount* is calculated as the percentage difference between the offer price and the closing price one day before the closing date (one minus the offer price divided by the market price prior to the PIPE closing date).[6] To examine the control rights granted to PIPE investors, we create dummy

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[6] For PIPEs with fixed convertibles, it is the percentage difference between the conversion price and the closing price one day before the closing date. For PIPEs with floating rate convertibles (i.e., structured PIPEs), it is the difference between the specified floor price and the closing price one day before the closing date.

variables indicating specific governance-related investor rights: *Board Seats* and *Voting Rights*. Following literature on PIPE contracting, we further measure the investor friendliness of the PIPE contract by aggregating 17 distinct PIPE contract terms to construct an equally weighted *Investor Friendly Index* (Bayar et al., 2021; Bengtsson & Dai, 2014). The index is constructed by adding 1 for the inclusion of an investor right and deducting 1 for the inclusion of an issuer right.[7]

In addition, we control for deal level characteristics including *Deal Size/Market Cap*, *Common Stock*, *Intermediary*, *Warrants*, and *Pre-registered*. *Deal Size/Market Cap* is the gross proceeds scaled by the market capitalization of the firm on the PIPE closing date. *Common Stock* is a dummy variable which equals 1 if the security type in PIPE is common stock.[8] *Intermediary* is a dummy variable indicating whether the PIPE is conducted with a placement agent. *Warrants* takes value of 1 if the warrants are attached to the deal. *Pre-registered* indicates whether the security issued in PIPE is registered before the offering. We also create a dummy variable *Follow-up* to refer to PIPE transactions subsequent to the first issuance.

3.3. Additional Control Variables

We generate relevant firm characteristics using the data from Compustat. *Firm Size* is the natural logarithm of total book assets. *Leverage* is the long-term and short-term debts divided by firm's book assets. *ROA* is operating income divided by firm's book assets. *M/B Ratio* is market-to-book ratio, which is the sum of long-term debt and market value of equity, divided by book assets. *Cash Holdings* is defined as the firm's cash and equivalents scaled by firm's book assets. *Cash Burn Ratio* is calculated as the absolute value of the firm's EBITDA scaled by cash and

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[7] Out of the 17 PIPE contract terms, 13 are investor rights and 4 are issuer rights. See Bayar et al. (2021) for the list of investor rights and issuer rights.

[8] We retain equity-linked PIPEs only with security types of common stocks and convertibles (convertible debt and convertible preferred stock).

equivalents and takes value 0 if the firm's EBITDA is positive. *Sales/Assets* is sales divided by book assets.

In addition to the set of firm characteristics commonly used in the PIPE literature, we measure firm's financial constraint, illiquidity, shareholder coordination, and probability of default. We construct a *Size-Age Index* for financial constraint following Hadlock and Pierce (2010).[9] We compute a market-based liquidity measure, *Amihud Illiquidity*, following Amihud (2002).[10] Shareholder coordination is measured by *Shapley Value*, defined as the aggregate contribution that blockholders make to the winning coalition in voting, averaged over every possible sequence in which the grand coalition can be established.[11] We compute firms' probability of default using Merton's (1974) model.[12] All variables are measured in the year prior to the PIPE offering date. We also control for year and industry fixed effects (2-digit SIC). Our final sample after matching PIPE data with DealScan and Compustat consists of 10,093 unique PIPE deals issued by 3,313 unique firms. Detailed variable definitions are provided in Appendix I.

3.4. Summary Statistics

Panel A of Table 1 presents the summary statistics for deal characteristics of 10,093 unique PIPE deals in the period of 2001-2018. The average discount is 4% and the discount size ranges

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[9] The formula is Size-Age Index = -0.737*Size + 0.043*Size^2 - 0.040*Age, where Size is the natural log of inflation adjusted assets using 2010 dollars and Age is the number of years the firm appears on Compustat. See Hadlock and Pierece (2010) for more details.

[10] The formula is Amihud Illiquidity = $\frac{1}{T}\sum_{t=1}^{T}\frac{|r_t|}{V_t}$, in which T is the number of months, V is the dollar trading volume on month t, and r_t is the return on month t. See Amihud (2002) for more details.

[11] We use Thomson-Reuters Institutional Holdings (13F) Database to identify blockholders and their voting right. First, we simulate all possible coalitions between blockholders and small "oceanic" shareholders. Second, we find the probability that a blockholder's coalition has a majority vote (50.01%). The Shapley value is the total contribution of all the blockholders to the winning coalitions. See Zingales (1994) and Chakraborty and Gantchev (2013) for details.

[12] We use Merton's (1974) option pricing model and adopt an iterative procedure to find the firm's assets value and its volatility. The default probability is the probability that the firm's assets will be less than the book value of the firm's liabilities. See Vassalou and Xing (2004) and Duffie, Saita, and Wang (2007) for details.

from -4% (premium) to 18%. As shown in Figure 1, the premium offers are concentrated in year 2008 and the average PIPE discount has declined steadily since 2010. The deal amount represents 31% of the PIPE firm market capitalization. Among 10,093 observations in our sample, 63.6% of the deals are issued in the form of common equity, 53.3% are placed with an intermediary financial institution (placement agent), 50.5% are accompanied with warrants, and 14.1% are pre-registered. Follow-up PIPE deals account for 63.1% of our sample. Regarding PIPE governance features, we find that 9.9% require board seats and 10.6% require voting rights and the average Investor Friendly Index (*IFI*) is 18.24.

Panel B of Table 1 reports the summary statistics with respect to the PIPE firm's covenant measures. PIPE deals issued by firms restricted by at least one active loan covenant account for 9.2% of our sample. Figure 1 shows that the percentage of PIPE deals with covenants peaked at 22% in 2001 and has trended downward since then. This pattern is consistent with the rise in covenant-lite loans documented by Becker and Ivashina (2016) and Berlin et al., (2020).[13] When we break down the general covenant indicator into performance and capital covenants, performance covenants are outstanding in 6.7% of the PIPE deals, while capital covenants are enforced in 5.3% of the PIPE deals. The average number of covenants is 0.24 and the average covenant index is 0.352. The mean probability of covenant violation is 4.6%.

[Insert Figure 1 about here]

In Panel C of Table 1, we summarize important statistics characterizing PIPE firms' financial conditions. We find that the mean firm size is $319 million. Debt accounts for 48.1% of PIPE firms' capital structure. The PIPE firms in our sample have a median ROA of -31%. Since

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[13] Becker and Ivashina (2016) and Berlin et al. (2020) document a related development of so-called covenant-lite loans (loans without traditional financial covenants) first during the period of credit expansion in 2005-2007 and more recently as the pace of commercial lending quickened in recent years. These studies document that covenant-lite loans are more frequently written by nonbank lenders.

the ROA measure is highly skewed, it indicates that firms issuing PIPEs are generally unprofitable. The mean Market-to-Book ratio is 8.26, implying that the market sees the growth potential in PIPE firms. Cash represents 31.6% of firm assets. The average cash burn ratio is 12.1 and the average ratio of sales to assets is 0.54. Our statistics are consistent with Denis and McKeon (2021) who provide evidence that US publicly traded firms tend to have negative cash flows and stockpile cash through frequent equity issues that are mostly PIPEs. The mean Size-Age index is -2.080 while the mean value of Amihud illiquidity is 0.134. The average PIPE firm in our sample displays a Shapley value of 0.06, while its probability of default is 13.9%.

[Insert Table 1 about here]

3.5. Correlation Matrix

Table 2 displays the correlation between our variable of interest, *Covenant*, with different firm characteristics. We find that PIPE firms restricted by loan covenants are significantly larger and more profitable than those without covenants. Furthermore, they tend to use less debt, have lower growth potentials, carry less cash, and have lower cash burn ratio. Sales account for a larger proportion relative to assets in firms with enforcing loan covenants.

[Insert Table 2 about here]

4. Methodology and Empirical Interpretation

4.1. Baseline Analysis

In this section, we use the Ordinary Least Squares regression to estimate the impact of having loan covenants on PIPE discount in the following equation:

$$Discount_{i,t} = \alpha + \beta \cdot Covenant_i + \Gamma_1 \cdot X'_{i,t} + \Omega_1 \cdot Y'_{i,t-1} + FEs \ (1)$$

The dependent variable is the discount of PIPE i issued in year t. The variable of interest is *Covenant,* which indicates whether the firm is restricted by loan covenants preceding the issuance of PIPE i. $X'_{i,t}$ is the set of PIPE characteristics including *Deal Size/Market Cap, Common Stock, Intermediary, Warrants,* and *Pre-registered.* $Y'_{i,t-1}$ is the set of firm characteristics, measured in one year prior to the PIPE issuance date. Firm characteristics include *Firm Size, Leverage, ROA, M/B Ratio Cash Holdings, Cash Burn Ratio, Sales/Assets*. We also control for year fixed effects and industry fixed effects. The analysis is conducted at the deal level. All continuous variables are winsorized at the 1% and 99% levels. Standard errors are clustered by PIPE firm.

Table 3 reports our regression estimates. Our baseline analysis in Column (1) of Panel A shows that the coefficient on *Covenant* is positive and statistically significant at the 1% level. All else equal, firms with enforcing loan covenants offer a PIPE discount of 3.9% larger than those without loan covenants. Since our variable of interest is highly correlated with firm characteristics, we conduct the Variance Inflation Factor (VIF) test to examine whether our analysis is subject to multicollinearity problem. In Panel B, we find that our average VIF is less than 10, indicating that our results are not driven by the correlation between loan covenants and firm characteristics.

In addition to the standard set of controls commonly used in prior PIPE literature, we also include additional variables that may drive PIPE discount. In Column (2) of Panel A, we add *Follow-up* which specifies whether the PIPE deal is a follow-up transaction. In Columns (3) – (6), we include additional measures characterizing financial constraint (*Size-Age Index*), illiquidity (*Amihud Illiquidity*), shareholder coordination (*Shapley Value*), and probability of default (*Merton Probability of Default*). In all specifications, we find that the impact of loan covenants on PIPE discount remains statistically and economically strong. Holding other variables constant, our

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results imply that loan covenants are associated with 3.5% to 4.9% larger discount in PIPE offerings.

Overall, our results rule out the *Monitoring Cost Saving Hypothesis* and provide supporting evidence for the *Control Right Hypothesis.* By demanding for deeper discount at issuance, PIPE investors are more concerned about the potential conflict of interest with existing debtholders than the monitoring benefits from outstanding loan covenants.

[Insert Table 3 about here]

4.2. Channel Tests

4.2.1. Covenant Violation

In this section, we evaluate the robustness of the *Control Right Hypothesis* by analyzing discount in PIPE offerings following issuers' covenant violations. Covenant violation or technical default is an ideal event for lenders to actively engage in PIPE firms' corporate governance. The threat of shortening maturity or accelerating loan payments restricts PIPE firms from accepting excessively risky projects, borrowing aggressively, or making unnecessary cash distributions to investors (Nini et al, 2012). Therefore, if the issuer has a realized covenant violation before a PIPE issuance, we expect that new PIPE investors demand for deeper discount to compensate for the higher risk of transferring control rights to lenders. We follow Demerjian and Owen (2016) and construct the quarterly levels of major covenant ratios. Next, we compare the quarterly level with the covenant thresholds specified in active loan contracts to identify whether a firm violates a covenant in each of the four quarters or any time during the four quarters prior to the PIPE issuance date. Then, we repeat the analyses Eq. (1) while replacing the variable of interest with indicators for the past covenant violations.

Table 4 reports our regression results. The coefficients on all measures of covenant violations are positive and statistically significant at 1% level. All else equal, PIPE firms with a history of violating covenants on average offer a larger discount of 4.2% to 5.1% to PIPE investors. Consistent with the *Control Right Hypothesis,* our results suggest that a track record of violating covenants intensifies the conflict of interest between the debtholders and equity holders, prompting new private equity investors to demand for deeper discount at PIPE issuance.

[Insert Table 4 about here]

4.2.2.   Alternative Measures of Loan Covenant

In this section, we examine the impact of different covenant measures on PIPE discount. To supplement our main variable of interest that indicates whether covenants are imposed in loan contracts, we count the number of covenants, measure the ex-ante probability of covenant violation, identify covenant types, and consider qualitative covenants in addition to financial covenants. If our hypothesis holds, we expect that PIPE investors should demand for deeper discount, depending on the extent to which loan contract is tightened. We repeat the baseline analysis in Eq. (1) using the alternative measures of loan covenant as the variable of interest.

Table 5 presents the results. In Column (1), we find that the coefficient on *Number of Covenants* is positive and statistically significant at the 5% level. Holding other variables constant, one additional financial covenant results in an increase of 0.9% in PIPE discount. Column (2) shows that PIPE discount increases with an addition of qualitative covenant in the Covenant Index and the result is statistically significant at the 10% level. Our result also indicates that ex-ante probability of covenant and covenant index are positively associated with PIPE discount at the 10% level. When comparing the economic impact of different covenant types, we find that PIPE firms

are more concerned about performance covenants than capital covenants as the discount for the former is 3.9% higher while that for latter is only 2.6% higher compared to PIPEs with no covenants. Overall, our findings lend additional support to the *Control Right Hypothesis*. Upon anticipating the increased likelihood of transferring control rights to lenders in tighter loan contracts, new PIPE investors hence have greater incentives to demand for larger PIPE discount.

[Insert Table 5 about here]

4.2.3. PIPE Investor Types

Prior literature documents a strong association between PIPE discount and investor identity. Dai (2007) provides evidence that strategic investors such as venture capital funds are more likely to gain substantial ownership and maintain a long-term relationship with the firm after PIPE issuance. In contrast, hedge funds rarely join the board of directors and tend to liquidate their positions shortly after the PIPEs. Brophy et al. (2006) find that hedge funds, as investors of last resort, prefer to invest in firms with poor fundamentals and pronounced information asymmetries, allowing them to negotiate for substantial discounts. In addition, Billet, Elkamhi, and Floros (2015) argue that more control rights (such as board seats) offered to strategic investors in PIPEs are accompanied by positive market reactions. In this section, we examine the interaction effect between loan covenants and lead investor types on PIPE discount. If the *Control Right Hypothesis* holds, we expect that strategic investors are more likely to demand for larger discount if they are aware that the potential of transferring control rights to lenders is higher in PIPE firms with loan covenants. On the other hand, hedge funds which are less interested in PIPE firm management are more likely to demand for lower discount from PIPE firms with loan covenants. We conduct the

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analysis in Eq. (1) while including additional interaction terms between loan covenants and dummy variables indicating whether the lead PIPE investors are strategic investors or hedge funds.

Table 6 presents the results. Consistent with the prior literature, we find that the coefficients on *Strategic PIPEs* and *Hedge Fund PIPEs* are negative and positive, respectively, suggesting that strategic investors in general demand for smaller discount while hedge funds command for larger discount. However, if the PIPE firms are restricted by loan covenants, the discount required by strategic investors increases substantially. The coefficient in the interaction between *Covenant* and *Strategic PIPEs* is 0.072 and statistically significant at the 5% level. The results continue to support the *Control Right Hypothesis* and implies that PIPE issuers tend to offer large discount to strategic investors who tend to take large stakes in the firm and more likely face an increased conflict with existing loan creditors.

[Insert Table 6 about here]

4.2.4. PIPE Governance Provisions

In this section, we analyze the impact of loan covenants on the inclusion of governance-related control rights written in PIPE contracts. If private equity investors are concerned about the risk of transferring control rights to existing lenders, they will not only require deeper discount but also demand for more contractual rights that facilitates their intervention in PIPE firms' decision making. To test this conjecture, we replace the dependent variable in Eq. (1) with dummy variables indicating the inclusion of *Board Seats* and *Voting Rights* using Probit as the regression model. We also test the overall friendliness to PIPE investors using *Investor Friendly Index (IFI)* and use the Ordered Logit model to estimate the regression coefficients.

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Table 7 reports the regression results. Consistent with our prediction, we find that PIPE firms with loan covenants are 14.2% more likely to offer *Board Seats* and 41.9% more likely to offer *Voting Rights* to PIPE investors. The variable of interest *Covenant* is positively and significantly related with *IFI* at the 1% level, implying that investors tend to demand for more control rights in PIPE contracts when the firms are restricted by financial covenants.

[Insert Table 7 about here]

4.3. Endogeneity Tests

If firms with loan covenants have prior access to the loan market, their decision to raise additional capital through PIPE may not be well-perceived. It is possible that existing loan creditors have private information about a deterioration in firm quality and refuse to offer additional financing. PIPE issuers with loan covenants might select themselves into the sample of risky and financially constrained firms, prompting PIPE investors to demand for higher discount. Also, firms' decision to tap into private equity market may signal the discoordination among incumbent equity-holders, giving new PIPE investors greater incentives to price the deal with deeper discount. In a nutshell, it is possible that selection bias and unobserved differences between firms with and without covenants may drive our results.[14] In this section, we perform additional analyses to address these endogeneity issues.

4.3.1. Matched Sample Analysis

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[14] Although we control for the variables that might affect a firm's valuation in PIPEs including financial constraint, equity coordination, illiquidity, and probability of default preceding the PIPE in Section 4.1 to rule out alternative explanations, it is possible that these variables do not fully capture the decline in firm quality, which may endogenously drive our results.

First, we use multivariable Mahalanobis distance matching with replacement to construct the matched sample.[15] We require that firms with loan covenants (treatment group) are comparable to firms without covenants (control group) in important firm characteristics such as size, capital structure, profitability, and market-to-book ratio.

Table 8 presents the results. Panel A displays the univariate comparison between the treatment and control groups before and after matching. We find that, after matching, the differences in assets, capital structure, profitability, and growth between firms with and without covenants are no longer statistically significant. In Panel B, we repeat the baseline analysis in Eq. (1) using a matched sample generated by Mahalanobis Distance Matching. In Column (1), our matching criteria includes *Firm Size, Leverage, ROA,* and *M/B Ratio*. In Columns (2)-(5), we match firms based on additional control variables including *Size-Age Index, Amihud Illiquidity, Shapley Value,* and *Merton Probability of Default*. The positive impact of loan access and covenant on PIPE discount remains robust in all specifications. The economic significance increases substantially compared with the baseline analysis. After correcting for the fundamental differences among PIPE issuers, we continue to find supporting evidence that PIPE investors demand for deeper discount when investing in firms constrained by loan covenants than those without covenants. The additional discount ranges from 4% to 6%.

[Insert Table 8 about here]

4.3.2. Heckman Selection Analysis

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[15] King and Nielsen (2019) argue that Mahalanobis matching is more efficient than propensity score matching. Although both matching schemes find a subset of control observations similar to treated observations for a balanced sample, the distance-paired observations have close values on all the covariates, whereas the propensity score-paired observations may be close on the propensity score but not on any of the covariates themselves.

Next, we use Heckman selection model to estimate the impact of loan covenants on PIPE discount after controlling for the unobservable characteristics of certain firms that have better access to the syndicate loan market. Table 9 presents the results. Our first-stage results show that loan access is significantly dependent on firm size, leverage, profitability, cash holdings, sales to assets, financial constraint, equity holder coordination, and illiquidity. After correcting for the selection bias, our second stage documents a strong and positive relation between loan covenants and PIPE discount. The coefficients on *Covenant* are statistically robust at the 1% level in all second-stage specifications. Regarding the economic magnitude, PIPE issuers with loan covenants offers a larger discount of 5.4% to 7.7% than those without covenants, holding other variables constant.

[Insert Table 9 about here]

4.3.3. Instrumental Variable Analysis

In this section, we address the endogeneity concern using a two-stage instrumental variable analysis. Our instrument is the number of loan defaults in the portfolios held by lead lenders in one year prior to providing loans to PIPE firms.[16] Murfin (2012) provides strong evidence that banks tend to design stricter contracts after suffering payment defaults to their own loan portfolios, even when defaulting borrowers are in different industries and geographic regions from the current borrower. Hence, this instrument meets relevance condition. On the other hand, defaults in lenders' loan portfolio should not have a direct impact on the discount PIPE investors request in the PIPEs several years following the loan initiation. Therefore, we believe that our instrument variable meets the exclusion condition.

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[16] See Murphin (2012) for additional details on how to construct defaults on lender portfolio.

Table 10 presents the results of two-stage least squares regressions. Column (1) shows the estimates for the first stage regressions in which the dependent variable is the dummy indicating whether a PIPE firm is bound by financial covenants and the instrument is *Defaults in Lender's Portfolio*. In Column (2), we demean the default counts by subtracting the lead lenders' average default count in the sample and create *Demeaned Defaults in Lender's Portfolio*. Columns (3) and (4) report the estimates for the second-stage regressions corresponding to the first-stage regressions in Columns (1) and (2), respectively. The first-stage results indicate that larger number of defaults suffered by lead arranger is significantly related with the likelihood that financial covenants are embedded in loan contracts. The first-stage F-statistics are larger than 10, suggesting that our instruments are unlikely to be weak. Our results remain statistically consistent when we regress the instrumented *Covenant* on PIPE discount in the second stage. The impact of covenant on PIPE discount is economically pronounced. After accounting for the unobservable variation that drives both our dependent variable and the variable of interest, we find that firms restricted by covenants are subject to a larger discount of approximately 16% at PIPE issuance.

[Insert Table 10 about here]

4.4. Why do PIPE Firms with Loan Covenants Switch from Loan Markets to PIPEs?

In this section, we are interested in understanding firms' motivation to participate in PIPEs while they have prior access to the loan market. Chakraborty and Gantchev (2013) argue that firms with weak equity coordination and concentrated public debts are exposed to heightened conflict of interest between investors and therefore more likely to issue private equity placement than public equity offering. In this section, we argue that violating covenants and engaging in costly renegotiations in covenants are ideal events that exacerbate the shareholders' discoordination with

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loan creditors, which consequentially motivates firms to seek alternative financing. [17] To empirically test this conjecture, we start from a large sample of firms with effective loan covenants and identify those that issue PIPEs while their loans are still outstanding. Next, we match these PIPE firms with non-PIPE firms that are comparable in size, profitability, and capital structure using Mahalanobis distance matching. We track the quarterly violation records and loan renegotiation results of both PIPE firms and non-PIPE firms over the life of the loan and perform the following Probit regression analyses:

$$\Pr(PIPE_i) = \phi\big(\alpha + \beta_2 \cdot Covenant\ Violation_{i,t} + \Gamma_2 \cdot X_i' + \Omega_2 \cdot Y_{i,t}' + FEs\big) \quad (2)$$

$$\Pr(PIPE_i) = \phi\big(\alpha + \beta_3 \cdot Loan\ Renegotiation_{i,r} + \Gamma_3 \cdot X_i' + \Omega_3 \cdot Y_{i,r}' + FEs\big) \quad (3)$$

In both equations, the dependent variable is an indicator variable that equals 1 if firm i is a PIPE firm and 0 otherwise. *Covenant Violation*$_{i,t}$ is dummy variable indicating whether firm i violates a covenant in quarter t. We also generate two additional dummies indicating whether firm i have a violation specifically in performance covenant or capital covenant. *Loan Renegotiation*$_{i,r}$ refers to four indicator variables that equal 1 if firm i renegotiates loan amount, maturity, spread, or covenants in renegotiation round r. X_i' is a set of loan characteristics including loan amount, maturity, and spread at the time of loan origination for firm i. $Y_{i,t}'$ includes all the firm control variables that we use in Eq. (1), measured in quarter t. $Y_{i,r}'$ are firm characteristics measured in the quarter that renegotiation round r occurs. Similar to Eq. (1), we also control for year fixed effects and industry fixed effects. The analysis is conducted at firm-quarter level in Eq. (2) and at firm-renegotiation round level in Eq. (3). Standard errors are clustered at firm level.

　　Tables 11 and 12 present the regression results of Equations (2) and (3), respectively. Column (1) of Table 11 shows that the coefficient on *Covenant Violation* is positive and

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[17] We thank the anonymous referee for suggesting this test.

statistically different from 0, suggesting that firms which frequently violate covenants are more likely to tap the PIPE market than their comparable peers in the matched sample. The results remain qualitatively similar when we break down the covenant into performance and capital types.

[Insert Table 11 about here]

In Table 12, we find that there is no significance difference between PIPE firms and non-PIPE firms in terms of renegotiating amount, maturity, or spreads. However, PIPE firms are more likely to renegotiate covenants than matched non-PIPE firms. These renegotiations are not costless as borrowing firms are required to pay amendment fees conditional on the size and the complexity of the transaction, not to mention the time and effort expended by both borrowers and lenders to reach a mutual agreement (Roberts and Sufi, 2009). Overall, our findings imply that technical default and costly renegotiation in covenants could motivate firms to switch from existing loan market to PIPE market and make them more willing to offer higher compensation for PIPE investors.

[Insert Table 12 about here]

5. Conclusion

In this paper, we examine the implications of outstanding financial covenants on the pricing of private investments in public equity (PIPEs). We propose the *Monitoring Cost Saving Hypothesis* and the *Control Right Hypothesis* as two competing hypotheses to explain the effect of restrictive covenants on the discounts in PIPEs. Based on the *Monitoring Cost Saving Hypothesis*, PIPE firms with loan covenants benefit from the improved monitoring ability provided by existing loan creditors. This hypothesis predicts that PIPE investors can reduce the duplication in monitoring effort and therefore demand for a smaller discount in PIPE issuance. On the other

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hand, the *Control Right Hypothesis* suggests that the imposition of strict financial covenants allows loan creditors to aggressively intervene in firm governance at the expense of shareholders, which potentially deepens the conflict of interest between debtholders and shareholders. PIPE investors who are concerned about the risk of transferring control rights to lenders therefore require deeper discounts.

We find that PIPE firms with effective loan covenants offer, on average, a 3.9% higher discount than those without covenants, after controlling for relevant deal and firm variables in the multivariate analyses. The discount is more pronounced when PIPE firms have a track record of violating covenants, when covenants are stricter, or when strategic equity investors participate in the PIPE transactions. We also find evidence that PIPE investors are more likely to impose investor-right terms such as board seats and voting rights, implying efforts to secure control rights against loan creditors. Our results support the *Control Right Hypothesis* and suggest that PIPE investors are more concerned about the conflict of interest with existing private debtholders, rather than the cost savings in monitoring efforts provided by existing loan creditors.

To minimize endogeneity concerns, we use Mahalanobis distance matching, the Heckman selection model, and the two-stage least squares instrumental variables analysis with a valid external instrument. Our findings remain robust and consistent in all tests. In addition, we find that PIPE firms are more likely to violate covenants and participate in covenant renegotiation than comparable non-PIPE firms. Our results lend additional support to the *Control Right Hypothesis* and imply that costly covenant violations and renegotiations may lead firms to issue PIPEs and incur higher cost of financing in subsequent private equity offerings.

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Appendix I: Variable Description

Variables	Description	Sources
PIPE Deal Characteristics		
Discount	One minus the purchase conversion price divided by the market price prior to the PIPE closing (following Krishnamurthy (2005) and Hertzel and Smith (1993)).	PrivateRaise, CRSP
Deal Size/Market Cap	The PIPE deal size scaled by the market capitalization of the firm on the PIPE closing date.	PrivateRaise, CRSP
Common Stock	Indicator for security type choice. It is a dummy variable equal to 1 if the security type is "common stock" and 0 if the security type is "convertible debt" or "convertible preferred stock".	PrivateRaise
Intermediary	A dummy variable that takes 1 if the PIPE is conducted with a placement agent.	PrivateRaise
Warrants	A dummy variable that takes 1 if the PIPE contract includes warrants.	PrivateRaise
Board Seats	A dummy variable that takes 1 if the PIPE contract includes board seat terms.	PrivateRaise
Pre-Registered	A dummy variable that takes 1 if the PIPE is pre-registered before offering.	PrivateRaise
Follow-up	A dummy variable that takes 1 if the PIPE deal is a follow up transaction.	PrivateRaise
Strategic PIPEs	A dummy variable that takes 1 if strategic investors participate in the PIPE issuance.	PrivateRaise
HF PIPEs	A dummy variable that takes 1 if hedge funds participate in the PIPE issuance.	PrivateRaise
Voting Right	A dummy variable that takes 1 if the PIPE contract includes voting right.	PrivateRaise
Shareholder Approval	A dummy variable that takes 1 if the PIPE contract requires shareholder approval.	PrivateRaise
IFI	An equally weighted Investor Friendly Index based on 17 distinct PIPE contract terms.	PrivateRaise
Covenant Measures and Loan Characteristics		
Covenant	An indicator variable that equals 1 if the loan package has at least one financial covenant of any type.	DealScan
Performance Covenant	An indicator variable that equals 1 if the loan package has at least one performance covenant, where performance covenants include Min. EBITDA, Min. Debt Service Coverage, Min. Interest Coverage, Min. Cash Interest Coverage, Min. Fixed Charge Coverage, Max. Debt to EBITDA, and Max. Senior Debt to EBITDA.	DealScan, Demerjian and Owens (2016)
Capital Covenant	An indicator variable that equals 1 if the loan package has at least one performance covenant, where capital covenants include Min. Quick	DealScan, Demerjian and Owens (2016)

	Ratio, Min. Current Ratio, Max. Debt-to-Equity, Max. Debt-to-Tangible Net Worth, Max. Leverage, Max. Senior Leverage, Min. Net Worth, and Min. Tangible Net Worth.	
Covenant Index	Natural log of an index that addes 1 for the inclusion of the following conditions: security provision, dividend restriction, asset sweep, debt sweep, and more than two financial covenants.	Bradley and Roberts (2015), DealScan
Number of Covenants	Number of covenants included on a given loan package.	DealScan
Probability of Covenant Violation	The aggregate probability of covenant violation of a loan package based on the ex-ante distance between the covenant threshold and the actual covenant ratio at the time of loan origination.	Demerjian and Owens (2016)
Covenant Violation	An indicator variable that takes 1 if the firm violates any loan covenant in a quarter.	DealScan, Compustat, Demerjian and Owens (2016)
Performance Covenant Violation	An indicator variable that takes 1 if the firm violates any performance covenant in a quarter.	DealScan, Compustat, Demerjian and Owens (2016)
Capital Covenant Violation	An indicator variable that takes 1 if the firm violates any capital covenant in a quarter.	DealScan, Compustat, Demerjian and Owens (2016)
Active Loan	An indicator variable that equals 1 if the firm has at least one outstanding loan in its capital structure before PIPE issuance.	DealScan
Lender Default	The number of outstanding DealScan loan packages in which the lead arranger participated and for which the borrower's rating was changed to Default by the S&P ratings database during the period of interest.	DealScan, Compustat, Murphin (2012)
Demeaned Lender Default	Lender default after subtracting off the lead arranger's average default count in the sample.	DealScan, Compustat, Murphin (2012)
Renegotiation in Amount	An indicator variable that equals 1 if the firm has a renegotiation in loan amount.	DealScan, Beyhaghi et al. (2019)
Renegotiation in Maturity	An indicator variable that equals 1 if the firm has a renegotiation in loan maturity.	DealScan, Beyhaghi et al. (2019)
Renegotiation in Spread	An indicator variable that equals 1 if the firm has a renegotiation in loan spread.	DealScan, Beyhaghi et al. (2019)
Renegotiation in Covenant	An indicator variable that equals 1 if the firm has a renegotiation in loan covenant.	DealScan, Beyhaghi et al. (2019)

Firm Characteristics

Firm Size	The natural logarithm of the firm's total (book) assets.	Compustat
Leverage	The firm's long-term and short-term debts scaled by total assets.	Compustat
ROA	The firm's operating income before depreciation scaled by total assets.	Compustat
M/B Ratio	The firm's market value divided by total assets, calculated as sum of long-term debt and market value of equity divided by book assets.	Compustat
Cash Holdings	The firm's cash and equivalents scaled by total assets.	Compustat
Cash Burn Ratio	The absolute value of the firm's EBITDA scaled by cash and equivalents. Takes value 0 if the firm's EBITA is positive.	
Sales/Assets	The firm's revenues scaled by total assets.	Compustat
Size-Age Index	Financial constraint measure computed using the following formula: SA = -0.737*Size + 0.043*Size^2- 0.040*Age, where Size is the natural log of inflation adjusted assets using 2010 dollars and Age is the number of years the firm appears on Compustat	Compustat, Hadlock and Pierce (2010)
Amihud Illiquidity	The firm stock's illiquidity computed using the following formula: Amihud Illiquidity $= \frac{1}{T}\sum_{t=1}^{T}\frac{\|r_t\|}{V_t}$, in which T is the number of months, V is the dollar trading volume on month t, and r_t is the return on month t.	CRSP, Amihud (2002)
Shapley Value	The firm's shareholder coordination defined as the aggregate value of blockholder's contribution to the voting coalition, averaged over every possible sequence in which the grand collation can be build up from the empty coalition.	Thomson Reuters Institutional Holdings, Chakraborty and Gantchev (2013)
Merton Probability of Default	The probably of default based on the expected difference between the asset value of the firm relative to the default barrier.	Compustat, CRSP, Merton (1974), Vassalou and Xing (2004)

Table 1: Summary Statistics

This table presents the summary statistics for the sample of 10,093 PIPE deals issued in the period of 2001-2018. All continuous variables are winsorized at the 1% and 99% levels. Descriptions of each variable are provided in Appendix I.

	N	Mean	SD	25th	Median	75th
Panel A: PIPE Deal Characteristics						
Discount	10093	0.040	0.310	-0.040	0.060	0.180
Deal Size/Market Cap	10093	0.310	0.840	0.060	0.120	0.229
Common Stock	10093	0.636	0.481	0.000	1.000	1.000
Intermediary	10093	0.533	0.499	0.000	1.000	1.000
Warrants	10093	0.505	0.500	0.000	1.000	1.000
Pre-registered	10093	0.141	0.348	0.000	0.000	0.000
Follow-up	10093	0.631	0.483	0.000	1.000	1.000
Board Seats	10093	0.099	0.299	0.000	0.000	0.000
Voting Right	10093	0.106	0.308	0.000	0.000	0.000
IFI	10093	18.242	1.426	17.000	18.000	19.000
Panel B: Covenant Measures						
Covenant	10093	0.092	0.289	0.000	0.000	0.000
Performance Covenant	10093	0.067	0.249	0.000	0.000	0.000
Capital Covenant	10093	0.053	0.224	0.000	0.000	0.000
Number of Covenants	10093	0.239	0.849	0.000	0.000	0.000
Covenant Index	10093	0.352	1.073	0.000	0.000	0.000
Probability of Covenant Violation	10093	0.046	0.198	0.000	0.000	0.000
Panel C: Firm Characteristics						
Firm Size (in millions)	10093	318.939	1252.527	7.377	24.486	87.680
Leverage	10093	0.481	1.233	0.000	0.131	0.448
ROA	10093	-0.949	2.246	-0.892	-0.310	-0.032
M/B Ratio	10093	8.258	22.830	1.105	2.344	5.555
Cash Holdings	10093	0.316	0.297	0.060	0.205	0.533
Cash Burn Ratio	10093	12.105	49.131	0.190	1.080	3.936
Sales/Assets	10093	0.538	0.780	0.006	0.208	0.768
Size-Age Index	6338	-2.080	1.052	-2.744	-2.218	-1.558
Amihud Illiquidity	4848	0.134	0.589	0.002	0.007	0.024
Shapley Value	4355	0.062	0.112	0.000	0.000	0.087
Merton Probability of Default	4265	0.139	0.240	0.000	0.008	0.171

Table 2: Correlation Matrix

This table presents the degree to which *Covenant,* a dummy variable indicating whether a PIPE issuer has an outstanding covenant, correlates with firm characteristics ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Descriptions of each variable are provided in Appendix I.

	Covenant	Ln(Firm Size)	Leverage	ROA	M/B Ratio	Cash Holdings	Cash Burn Ratio	Sales/Assets
Covenant	1							
Ln(Firm Size)	0.303***	1						
Leverage	-0.0302***	-0.291***	1					
ROA	0.129***	0.541***	-0.542***	1				
M/B Ratio	-0.0901***	-0.404***	0.276***	-0.500***	1			
Cash Holdings	-0.205***	-0.281***	-0.0706***	-0.139***	0.163***	1		
Cash Burn Ratio	-0.0598***	-0.274***	0.325***	-0.467***	0.174***	-0.184***	1	
Sales/Assets	0.205***	-0.0656***	0.0836***	0.0384***	-0.0426***	-0.242***	0.0194*	1

Table 3: The Impact of Loan Covenants on PIPE Discount
This table presents estimates of Ordinary Least Squares regressions to examine the incremental effect of loan covenants on PIPE discount for the sample of 10,093 PIPE deals issued in the period of 2001-2018. Panel A displays the regression results. The dependent variable is PIPE discount. The variable of interest, *Covenant,* is an indicator variable that takes 1 if the loan originated by the PIPE firm has at least one financial covenant of any type and 0 otherwise. Column (1) presents the result of baseline analysis based on Eq. (1). Columns (2)-(6) include additional controls for follow-up transaction (*Follow-up*), financial constraint (*Size-Age Index*), illiquidity (*Amihud Illiquidity*), shareholder coordination (*Shapley Value*), and default risk (*Merton Probability of Default*). Panel B shows the Variance Inflation Factors (VIF) for the regression in Column (1) of Panel A. The analysis is performed at the PIPE deal level. All specifications include year fixed effects and industry fixed effects (2-digit SIC). Standard errors are clustered at firm level and reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Descriptions of other variables are provided in Appendix I.

Panel A: Multivariate Regression

	(1) Discount	(2) Discount	(3) Discount	(4) Discount	(5) Discount	(6) Discount
Covenant	0.039***	0.037***	0.035***	0.047***	0.047***	0.049***
	(0.013)	(0.013)	(0.014)	(0.014)	(0.016)	(0.014)
Deal Size/Market Cap	-0.000	-0.000	-0.002	0.006	-0.028	0.007
	(0.007)	(0.007)	(0.008)	(0.013)	(0.019)	(0.014)
Common Stock	0.102***	0.101***	0.101***	0.119***	0.121***	0.114***
	(0.009)	(0.009)	(0.011)	(0.011)	(0.012)	(0.011)
Intermediary	0.058***	0.058***	0.058***	0.053***	0.049***	0.054***
	(0.007)	(0.007)	(0.009)	(0.009)	(0.010)	(0.010)
Warrants	0.023***	0.024***	0.023**	0.012	0.029***	0.013
	(0.008)	(0.008)	(0.009)	(0.010)	(0.011)	(0.010)
Pre-registered	0.035***	0.035***	0.027***	0.040***	0.058***	0.042***
	(0.008)	(0.008)	(0.009)	(0.010)	(0.009)	(0.010)
Ln(Firm Size)	-0.028***	-0.028***	-0.024***	-0.021***	-0.021***	-0.021***
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.003)
Leverage	0.001	0.001	0.006	-0.017*	0.005	-0.014
	(0.005)	(0.005)	(0.006)	(0.010)	(0.008)	(0.010)
ROA	0.003	0.003	0.005	-0.006	-0.006	-0.004
	(0.003)	(0.003)	(0.005)	(0.006)	(0.004)	(0.007)
M/B Ratio	0.001***	0.001***	0.001***	0.001**	0.001***	0.001*
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)
Cash Holdings	-0.066***	-0.066***	-0.060***	-0.043**	-0.093***	-0.045*
	(0.016)	(0.016)	(0.018)	(0.021)	(0.025)	(0.023)
Cash Burn Ratio	0.000	0.000	0.000*	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sales/Assets	-0.013*	-0.013**	-0.008	-0.015	-0.014	-0.015
	(0.007)	(0.007)	(0.007)	(0.011)	(0.009)	(0.010)
Follow-up		-0.009				
		(0.007)				
Size-Age Index			0.011			
			(0.011)			
Amihud Illiquidity				-7.956		
				(6.796)		
Shapley Value					0.026	
					(0.037)	
Merton Probability of Default						0.019
						(0.026)
Observations	10093	10093	6338	4848	4355	4265
Adjusted R-squared	0.100	0.100	0.102	0.112	0.117	0.099
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Variance Inflation Factors

Variable	VIF	Squared Root VIF
Covenant	1.18	1.09
Deal Size/Market Cap	1.08	1.04
Common Stock	1.11	1.05
Intermediary	1.14	1.07
Warrants	1.18	1.09
Pre-Register	1.13	1.06
Firm Size	2	1.41
Leverage	1.5	1.23
ROA	2.37	1.54
M/B Ratio	1.41	1.19
Cash Holdings	1.4	1.18
Mean VIF	1.37	

Table 4: The Impact of Covenant Violation History on PIPE Discount

This table presents estimates of Ordinary Least Squares regressions to examine the incremental effect of covenant violation history on PIPE discount. The dependent variable is PIPE discount. *Covenant Violation$_{t-1}$, Covenant Violation$_{t-2}$, Covenant Violation$_{t-3}$,* and *Covenant Violation$_{t-4}$* are indicator variables that take 1 if the firm violates a financial covenant in one, two, three, or four quarters prior to PIPE issuance, respectively. *Covenant Violation$_{(t-4,t-1)}$* is an indicator variable that takes 1 if the firm violates a financial covenant any time in the past four quarters prior to PIPE issuance. The analysis is performed at the PIPE deal level. All specifications include PIPE deal characteristics, firm characteristics, year fixed effects and industry fixed effects (2-digit SIC). Standard errors are clustered at firm level and reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Descriptions of other variables are provided in Appendix I.

	(1) Discount	(2) Discount	(3) Discount	(4) Discount	(5) Discount
Covenant Violation $_{t-1}$	0.042**				
	(0.020)				
Covenant Violation $_{t-2}$		0.043**			
		(0.020)			
Covenant Violation $_{t-3}$			0.042**		
			(0.021)		
Covenant Violation $_{t-4}$				0.051**	
				(0.022)	
Covenant Violation $_{t-4,t-1}$					0.044**
					(0.018)
Observations	7748	7748	7748	7748	7748
Adjusted R-squared	0.102	0.102	0.102	0.102	0.102
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes

Table 5: The Impact of Covenant Strictness and Covenant Type on PIPE Discount

This table presents estimates of Ordinary Least Squares regressions to examine the incremental effect of covenant strictness on PIPE discount. The dependent variable is PIPE discount. *Covenant Index* is natural log of an index that adds 1 for the inclusion of the following conditions: security provision, dividend restriction, asset sweep, debt sweep, and more than two financial covenants (Bradley and Roberts, 2015). *Number of Covenant* is number of covenants included on a given loan package. *Probability of Covenant Violation* measures the aggregate ex-ante probability that a borrower will violate financial covenants (Demierjian and Owens, 2016). *Performance Covenant* is an indicator variable that equals 1 if the loan package has at least one performance covenant, where performance covenants include Min. EBITDA, Min. Debt Service Coverage, Min. Interest Coverage, Min. Cash Interest Coverage, Min. Fixed Charge Coverage, Max. Debt to EBITDA, and Max. Senior Debt to EBITDA. *Capital Covenant* is an indicator variable that equals 1 if the loan package has at least one performance covenant, where capital covenants include Min. Quick Ratio, Min. Current Ratio, Max. Debt-to-Equity, Max. Debt-to-Tangible Net Worth, Max. Leverage, Max. Senior Leverage, Min. Net Worth, and Min. Tangible Net Worth. The analysis is performed at the PIPE deal level. All specifications include PIPE deal characteristics, firm characteristics, year fixed effects and industry fixed effects (2-digit SIC). Standard errors are clustered at firm level and reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Descriptions of other variables are provided in Appendix I.

	(1) Discount	(2) Discount	(3) Discount	(4) Discount	(5) Discount
Number of Covenants	0.009**				
	(0.004)				
Covenant Index		0.006*			
		(0.003)			
Probability of Covenant Violation			0.035*		
			(0.020)		
Performance Covenant				0.039***	
				(0.015)	
Capital Covenant					0.026*
					(0.015)
Observations	10093	10093	10093	10093	10093
Adjusted R-squared	0.099	0.099	0.099	0.100	0.099
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes

Table 6: Interaction Effect between Loan Covenants and Investor Types on PIPE Discount
This table presents estimates of Ordinary Least Squares regression to examine the incremental effect of loan covenants on PIPE discount, conditional on the participation of strategic investors and hedge funds in PIPE issuance. The dependent variable is PIPE discount. The variable of interest, *Covenant,* is an indicator variable that takes 1 if the loan originated by the PIPE firm has at least one financial covenant of any type and 0 otherwise. *Strategic PIPEs* is an indicator variable that takes 1 if strategic investors participate in a PIPE issuance and 0 otherwise. *HF PIPEs* is an indicator that takes 1 if hedge funds participate in a PIPE issuance. The analysis is performed at the PIPE deal level. All specifications include PIPE deal characteristics, firm characteristics, year fixed effects and industry fixed effects (2-digit SIC). Standard errors are clustered at firm level and reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Descriptions of other variables are provided in Appendix I.

	(1)	(2)
	Discount	Discount
Covenant	0.018	0.075***
	(0.015)	(0.019)
Covenant * Strategic PIPEs	0.072**	
	(0.030)	
Strategic PIPEs	-0.048***	
	(0.013)	
Covenant * HF PIPEs		-0.083***
		(0.023)
HF PIPEs		0.050***
		(0.010)
Observations	6860	6860
Adjusted R-squared	0.118	0.120
Year FE	Yes	Yes
Industry FE	Yes	Yes
Other Controls	Yes	Yes

Table 7: The Impact of Loan Covenants on PIPE Governance-related Features
This table presents estimates of Probit and Order Logit regressions to examine the incremental effect of financial covenants on PIPE governance-related features including Voting Right, Board Seats, Shareholder Approval, and Investor Friendly Index (IFI). The variable of interest, *Covenant,* is an indicator variable that takes 1 if the loan originated by the PIPE firm has at least one financial covenant of any type and 0 otherwise. The analysis is performed at the PIPE deal level. All specifications include PIPE deal characteristics, firm characteristics, year fixed effects and industry fixed effects (2-digit SIC). Standard errors are clustered at firm level and reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Descriptions of other variables are provided in Appendix I.

	(1) Board Seats	(2) Voting Right	(3) IFI
Model	Probit	Probit	Ordered Logit
Covenant	0.142**	0.419***	0.246***
	(0.073)	(0.097)	(0.091)
Observations	10093	10093	10093
Pseudo R-squared	0.168	0.418	0.116
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes

Table 8: Match Sample Analysis

This table performs the Mahalanobis distance matching analysis on a sample of PIPE deals matched by important firm-level characteristics including size, leverage, profitability, market-to-book ratio, size-age index, illiquidity, Shapley Value, and probability of default. In addition, the PIPE deals are required to be in the same year and industry (2-digit SIC). Panel A displays the univariate comparison between firm with covenants (treatment group) and firms without covenants. Panel B presents the estimates of multivariate regressions on the matched sample. The dependent variable is PIPE discount. The variable of interest, *Covenant,* is an indicator variable that takes 1 if the loan originated by the PIPE firm has at least one financial covenant of any type and 0 otherwise. The analysis is performed at the PIPE deal level. All specifications include PIPE deal characteristics, firm characteristics, year fixed effects and industry fixed effects (2-digit SIC). Standard errors are clustered at firm level and reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Descriptions of other variables are provided in Appendix I.

Panel A:	Before Matching			After Matching		
	Covenant = 0	Covenant = 1	Dif.	Covenant = 0	Covenant = 1	Dif.
	N = 9,168	N = 925		N = 925	N = 925	
Firm Size	477.777	998.763	520.986***	1115.124	1113.483	-1.641
Leverage	0.363	0.368	0.005	0.365	0.364	-0.001
ROA	-0.514	-0.002	0.512***	-0.052	-0.037	0.014
M/B Ratio	3.838	1.528	-2.310***	1.757	1.785	0.028

Panel B:	Mahalanobis Distance Matching				
	(1)	(2)	(3)	(4)	(5)
	Discount	Discount	Discount	Discount	Discount
Matching Criteria	Firm Characteristics (Firm Size, Leverage, ROA, M/B Ratio)	Firm Characteristics + Size-Age Index	Firm Characteristics + Amihud Illiquidity	Firm Characteristics + Shapley Index	Firm Characteristics + Merton Probability of Default
Covenant	0.040**	0.052***	0.060***	0.048**	0.048**
	(0.016)	(0.020)	(0.020)	(0.024)	(0.022)
Observations	1850	1346	1146	838	990
Adjusted R-squared	0.093	0.079	0.100	0.133	0.067
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes

Table 9: Heckman Selection Model
This table presents estimates of Heckman selection model to examine the incremental effect of financial covenants on PIPE discount while correcting for the selection bias on firm access to loan market. In the first stage, the dependent variable is *Active Loan,* is an indicator variable that takes 1 if the firm has at least one outstanding loan by PIPE issuance and 0 otherwise. The independent variables are financial constraint, shareholder coordination, illiquidity, default risk, and all the firm-level characteristics used in Eq. (1). In the second stage, the dependent variable is PIPE discount. The variable of interest is *Covenant,* is an indicator variable that takes 1 if the loan originated by the PIPE firm has at least one financial covenant of any type and 0 otherwise. The second stage also controls for all the deal and firm level characteristics used in Table 3. The analysis is performed at the PIPE deal level. All specifications include PIPE deal characteristics, firm characteristics, year fixed effects and industry fixed effects (2-digit SIC). Standard errors are clustered at firm level and reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Descriptions of other variables are provided in Appendix I.

Second Stage	(1)	(2)	(3)	(4)	(5)
	Discount	Discount	Discount	Discount	Discount
Covenant	0.070***	0.073***	0.077***	0.054***	0.061***
	(0.016)	(0.018)	(0.019)	(0.017)	(0.017)
First Stage	Access to Loan	Access to Loan	Access to Loan	Access to Loan	Access to Loan
Ln (Firm Size)	0.414***	0.256***	0.377***	0.350***	0.342***
	(0.012)	(0.025)	(0.017)	(0.016)	(0.017)
Leverage	0.176***	0.164***	0.333***	0.336***	0.333***
	(0.023)	(0.028)	(0.036)	(0.042)	(0.043)
ROA	0.054**	0.043	0.202***	0.247***	0.277***
	(0.027)	(0.031)	(0.050)	(0.052)	(0.058)
M/B Ratio	0.000	0.004	0.008**	0.018***	0.022***
	(0.002)	(0.002)	(0.004)	(0.004)	(0.005)
Cash Holdings	-0.395***	-0.415***	-0.594***	-0.490***	-0.520***
	(0.083)	(0.096)	(0.119)	(0.103)	(0.111)
Cash Burn Ratio	-0.001*	-0.001	0.000	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Sales/Assets	0.523***	0.523***	0.557***	0.591***	0.601***
	(0.023)	(0.028)	(0.033)	(0.034)	(0.037)
Size-Age Index		-0.439***			
		(0.061)			
Shapley Value			1.331***		
			(0.217)		
Amihud Illiquidity				-88.473**	
				(39.503)	
Merton Probability of Default					0.053
					(0.101)
Mills Lambda	0.146*	0.048	0.077	0.109	0.096
	(0.082)	(0.055)	(0.058)	(0.085)	(0.095)
Observations	10093	6338	4355	4848	4265
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes

Table 10: Instrumental Variable Analysis

This table presents estimates of two-stage least square instrumental regressions. Columns (1) and (2) present the results of the first stage regressions in which the instrumental variable is *Lender Default*, which measures the number of defaults to lead arrangers' portfolio in 36 months prior to loan origination. *Demean Lender Default* subtracts the average number of lender default for the whole sample period. The endogenous variable is *Covenant*, is an indicator variable that takes 1 if the loan originated by the PIPE firm has at least one financial covenant of any type and 0 otherwise. Columns (3) and (4) present the second stage results in which the variable of interest is *Instrumented Covenant* estimated by Columns (1) and (2), respectively. The dependent variable is *Discount*. The analysis is performed at the PIPE deal level. All specifications include PIPE deal characteristics, firm characteristics, year fixed effects and industry fixed effects (2-digit SIC). Standard errors are clustered at firm level and reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Descriptions of other variables are provided in Appendix I.

	(1)	(2)	(3)	(4)
	Covenant	Covenant	Discount	Discount
	First Stage		Second Stage	
Lender Default	0.014***			
	(0.002)			
Demeaned Lender Default		0.014***		
		(0.003)		
Instrumented Covenant			0.160**	0.161*
			(0.067)	(0.087)
Observations	10093	10093	10093	10093
First stage F-statistics			52.984	31.910
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes

Table 11: Covenant Violation and PIPE Issuance Decision
This table presents estimates of Probit regressions to examine the difference in covenant violation between PIPE firms and non-PIPE firms with outstanding loan covenants. Dependent variable is *PIPE* which takes 1 if a firm issues PIPE and 0 other wise. *Covenant Violation, Performance Covenant Violation,* and *Capital Covenant Violation* are indicator variables that takes 1 if a firm violates any covenant, performance covenant, or capital covenant in a particular quarter, respectively. The analysis is performed at the firm-quarter level. All specifications include loan characteristics at origination, firm characteristics, year fixed effects and industry fixed effects (2-digit SIC). Standard errors are clustered at firm level and reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Descriptions of other variables are provided in Appendix I.

	(1) PIPE	(2) PIPE	(3) PIPE
Covenant Violation	0.370***		
	(0.141)		
Performance Covenant Violation		0.322**	
		(0.140)	
Capital Covenant Violation			0.343*
			(0.208)
Observations	1737	1737	1737
Pseudo R-squared	0.275	0.274	0.273
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes

Table 12: Loan Renegotiation and PIPE Issuance Decision
This table presents estimates of Probit regressions to examine the difference in loan renegotiation between PIPE firms and non-PIPE firms with outstanding loan covenants. Dependent variable is *PIPE* which takes 1 if a firm issues PIPE and 0 other wise. *Renegotiation in Amount, Renegotiation in Maturity, Renegotiation in Spread,* and *Renegotiation in Covenant* are indicator variables that takes 1 if a firm renegotiates their loan amount, maturity, spread, or covenants in a renegotiation round, respectively. The analysis is performed at the firm-renegotiation round level. All specifications include loan characteristics at origination, firm characteristics, year fixed effects and industry fixed effects (2-digit SIC). Standard errors are clustered at firm level and reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Descriptions of other variables are provided in Appendix I.

	(1) PIPE	(2) PIPE	(3) PIPE	(4) PIPE
Renegotiation in Amount	-0.011 (0.069)			
Renegotiation in Maturity		-0.108 (0.078)		
Renegotiation in Spread			-0.077 (0.080)	
Renegotiation in Covenant				0.174*** (0.067)
Observations	1911	1911	1911	1911
Pseudo R-squared	0.154	0.155	0.155	0.157
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes

Figure 1: Percentage of PIPE Firms with Covenants and Average PIPE Discount in 2001-2018