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Private Equity and Debt Contract Enforcement: Evidence from Covenant Violations *

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Abstract

Using the Shared National Credit supervisory data, we find Private Equity (PE) sponsored firms violate loan covenants more often than comparable non-PE firms. However, upon covenant violation, PE-sponsored borrowers experience relatively smaller reductions in credit commitments, suggesting lenders are more lenient with these borrowers. This limited-punishment effect exists in both covenant-heavy and covenant-lite loans but is stronger for banks with relatively higher capital. Limited punishment is driven by repeated deals and sponsor reputation, as well as the higher bargaining power of sponsors in loan renegotiation. Our results indicate sponsors generate financial flexibility by dampening debt contract enforcement for distressed borrowers.

JEL Classification: G21, G23, G32

Keywords: Private Equity; Covenants; Loan Renegotiation; Syndicated Loans

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Introduction

A central question in financial economics is how debt contract enforcement affects firm financing (Smith Jr and Warner, 1979; Favara, Morellec, Schroth, and Valta, 2017). This question matters particularly for highly leveraged borrowers, such as those backed by private equity (PE) funds. In PE-sponsored leveraged buyout (LBO) deals, lenders typically exercise control rights over the borrower through various covenants.[1] Prior research has shown that a PE sponsor's reputational capital can lead to more generous covenant structures (Demiroglu and James, 2010; Ivashina and Kovner, 2011).[2] These studies have generally focused on covenants observed at loan origination or deal entry, and our understanding of (i) how often PE-sponsored firms violate covenants and (ii) the consequences of covenant violations is still limited. In particular, there is an important gap in our understanding of a lender's enforcement behavior towards PE-sponsored borrowers *after* a covenant is violated, which can have adverse consequences for net debt issuance (Roberts and Sufi, 2009a), real investment (Nini, Smith, and Sufi, 2009), and employment (Falato and Liang, 2016).

How does the presence of a PE sponsor shape the enforcement of debt contracts following a contractual breach? Relatedly, how important is ex-ante contract design for ex-post renegotiation and enforcement when a PE sponsor is present? Breach of covenants represents a natural setting to study enforcement of debt contracts because covenants appear in nearly all financial loan contracts, and enforceability is their defining feature (Becker and Ivashina, 2016). Prior research shows lenders punish borrowers by reducing credit availability upon violations. Using an administrative credit registry of syndicated loans, our key finding is that lenders display limited punishment towards PE-sponsored firms relative to comparable non-PE borrowers upon a covenant violation. Consequently, PE-backed borrowers retain greater access to credit (at favorable terms) even when they are in the early phases of distress. We provide evidence for two related mechanisms potentially explaining limited punishment towards PE-backed borrowers: (i) repeated deals with PE sponsors, which incentivizes lenders to preserve relationship rent, and (ii) relatively high bargaining power of PE sponsors vis-a-vis lenders in renegotiating loan contracts following violations.

[1] Covenants regulate corporate policies through triggers based on financial metrics (Chava and Roberts, 2008).

[2] Throughout the text, we use the following terms interchangeably: PE sponsor, financial sponsor, or simply sponsor. A loan is "sponsored" or "backed" by a PE fund when it provides the equity capital that finances a leveraged buyout, while a bank and other lenders provide the debt.

To examine this question, we construct a novel database of PE-sponsored loans that contains supervisory information on covenant types and covenant compliance. In particular, we combine confidential loan-level information from the Shared National Credit (SNC) program, which is jointly administered by the Federal Reserve, Federal Deposit Insurance Corporation (FDIC), and Office of the Comptroller of the Currency (OCC), with data from Preqin, which identifies PE-sponsored leveraged buyouts (LBO). The SNC data allows us to directly observe whether a loan covenant is in compliance or not, whether the loan is in compliance only after amendment, and whether the lender grants the borrower a covenant waiver at a given point in time. The SNC covenant sample offers several advantages over alternative datasets such as DealScan, including a larger sample and greater coverage of private firms (Chodorow-Reich and Falato, 2022), as well as detailed syndicate membership structure throughout the life of a given loan (Irani, Iyer, Meisenzahl, and Peydro, 2021). We follow the covenant compliance of over 2,200 PE-sponsored firms that borrowed from the syndicated loan market between 2012 and 2021, covering around USD 2 trillion in sponsored loans in the cross-section.

We begin by presenting several new facts about covenants in leveraged buyouts. First, following Christensen and Nikolaev (2012), we classify covenants into performance-based and non-performance-based and find over 50 percent of our PE sample observations have covenants directly linked to their current earnings (e.g., maximum leverage, interest coverage, debt service coverage, or fixed charge coverage ratio). Second, loans with performance-based covenants are held by concentrated syndicates (i.e., those with few non-bank institutional investors) consistent with recent findings on split control rights by Berlin, Nini, and Edison (2020). Third, we find that PE-backed firms tend to violate covenants more often than non-PE-backed firms. Their average annual rate of covenant violations is 18 percent when we look at all covenants and 21.9 percent when we examine performance-based covenants. For non-PE firms, this rate is 16.1 (all covenants) and 20.4 (performance-based) percent, respectively. We investigate these descriptive findings by estimating a loan-level linear probability model. We find that PE-backed borrowers have at least a 4 to 5 percent greater probability of violating a covenant relative to non-PE-backed firms but also receive more covenant waivers or resets.

Establishing a causal impact of PE presence on covenant enforcement presents challenging identification problems as both covenant violations and PE investments are endogenous. The

ideal empirical research design would allow for randomly matching PE sponsors, borrowers, and covenant violations. While such a setting is impossible, our research design attempts to address these challenges. In particular, we compare loans of the same type that have observably similar credit risk, originated at the same point in time, have similar covenants (i.e., those linked to current performance and those that are not), and are issued by the same bank to borrowers in the same industry-time. This allows us to narrow the only observable dimension that the borrowers differ along with whether or not a PE fund sponsors them. The identifying assumption is that absent PE involvement, both borrower types would have experienced the same outcome following covenant violations. Following Bernstein, Lerner, and Mezzanotti (2019) and Boucly, Sraer, and Thesmar (2011), in our robustness tests, we also re-estimate our benchmark specification using a matching procedure for the set of loans in our sample for which we can obtain firm-level data.

Unobservable factors correlated with covenant violations and enforcement behavior could still exist. To mitigate this concern, we use an instrumental variable research design and exploit personality or examination style across federal bank examiners, where the endogenous variable is an indicator of covenant violation status. The excluded instrument is the strictness of the bank's supervisor *at the time* of the buyout loan origination. Supervisors frequently meet with bank management to assess bank risk and take corrective actions (Hirtle, Kovner, and Plosser, 2020), but their assignment to different lenders is quasi-exogenous (Agarwal, Lucca, Seru, and Trebbi, 2014; Ivanov and Wang, 2022). Our intuition is that loans made under stricter supervisors have tighter covenants and thus have higher probabilities of covenant violation. Similar to Ivanov and Wang (2022), we exploit personality differences across supervisors, which affect supervisory strictness, hence covenant tightness, faced by lenders *within* each federal district. Crucially, a supervisor's history of strictness is confidential and unobserved by the PE sponsor and borrower.

Across all of our specifications, we find strong evidence of limited punishment towards PE-backed borrowers following covenant violations. Our baseline results show covenant violations lead to credit commitment reductions of around 11-12 percent for all firms. However, this credit reduction is only around 5.0 percent for PE-backed firms. At the extensive margin, the limited-punishment effect is even stronger. While we focus primarily on the credit amount, we also document limited punishment in terms of loan maturity (i.e., the reduction in loan maturity is lower for PE-sponsored borrowers) and interest rate spreads (the increase in loan spreads is lower

for PE-sponsored borrowers). Further, we examine loan performance and find that loans with a PE sponsor tend to be downgraded more often relative to non-PE, consistent with PE's higher covenant violation rate. However, when we compare PE-sponsored loans that violated covenants with non-PE loans that also violated covenants, we find little evidence that eventual downgrade and default rates are systematically different across borrower types.

Next, we consider whether differences in ex-ante contract design, specifically covenant design, between PE and non-PE loans affect ex-post renegotiation and enforcement. Becker and Ivashina (2016) show covenant-lite loans feature lower enforceability due to creditor coordination costs. To examine this possibility, we re-estimate our benchmark regressions separately for covenant-heavy loans and covenant-lite loans and - surprisingly - find that limited punishment towards PE-backed borrowers is present in both samples. This finding suggests that the creditor coordination cost hypothesis cannot fully explain our benchmark result since loans with traditional maintenance covenants typically feature relatively fewer non-bank institutions (Berlin et al., 2020). Exploring additional factors that shape enforcement and renegotiation, we find lenders that display limited punishment or leniency towards PE tend to have more regulatory capital, as measured by a bank's Tier 1 capital ratio immediately before a covenant violation.

We explore two (not mutually exclusive) channels that could potentially explain limited punishment toward PE. First, we connect our results to models of relationship rent stemming from repeated interactions between PE sponsors and creditors (Malenko and Malenko, 2015; Buccola, 2023). In particular, we posit that reputational capital can mitigate agency costs of lending (Diamond, 1991). Thus, lenders' willingness to enforce written contracts depends on the expected gains from repeated transactions. Following Demiroglu and James (2010), we construct measures of PE sponsor reputation and find that sponsors with a high reputation in credit markets - measured in terms of LBO deal history - obtain greater leniency from creditors upon covenant violations.

Second, we provide evidence for a bargaining power channel of PE sponsors in loan renegotiation upon violation. Survey evidence from Bernstein et al. (2019) shows PE sponsors help their portfolio companies renegotiate debt contracts with banks, while Liu (2021) demonstrates that PE has superior bargaining skills. We show that the limited punishment effect is present even when a syndicated loan's ownership structure is highly concentrated (i.e., features a few non-bank institu-

tional lenders like CLOs). Since a concentrated ownership structure preserves lenders' bargaining power and gives them high incentives to renegotiate the contract upon covenant violation (Giannetti and Meisenzahl, 2022), limited punishment towards PE-backed borrowers indicates sponsors raise the portfolio company's bargaining power (relative to non-PE) during loan renegotiations. To dig deeper, we also proxy for a given sponsor's bargaining power vis-a-vis a given lender by aggregating all outstanding loans from every LBO deal between a given sponsor and a given lead bank in the SNC data, and find banks with higher cumulative credit exposure to a given sponsor are more likely to display limited punishment upon covenant breach. As this measure captures a bank's historical reliance on a given sponsor for deal flow, we expect it to capture a sponsor's bargaining power.

If sponsors increase bargaining power, we should also see favorable renegotiation outcomes outside of distress because loans are often renegotiated outside of covenant violation or default (Roberts and Sufi, 2009b; Denis and Wang, 2014). Indeed, we confirm that both borrower types frequently renegotiate loan commitments outside of covenant violation. Interestingly, we find such loan amendments outside of distress are associated with higher credit commitment in PE-backed firms relative to non-PE. Because we are able to absorb differences in borrower risk, our interpretation is that a sponsor's bargaining power generates higher debt flexibility.

Still, one cannot completely rule out endogeneity concerns related to the non-random selection of PE, even though we match PE and non-PE loans on supervisory risk rating. To alleviate this concern, we merge our SNC sample with the Federal Reserve's FR Y-14Q data on commercial loans, which provides rich information on firm-level financial variables. Our benchmark result remains unchanged when we match PE-backed loans to non-PE loans based on leverage, firm size, EBITDA, 1-year ahead probability of default, and industry in the pre-buyout year. Finally, we also find evidence that PE-backed borrowers inject equity more often than non-PE to cure covenant violations, but this effect is quantitatively smaller than the reputation and bargaining power channels. This suggests sponsors provide more operational support before resorting to equity injection as documented in a recent survey by Gompers, Kaplan, and Mukharlyamov (2022), when portfolio firms were in distress during Covid-19. Overall, our findings highlight how sponsors dampen the effect of state-contingent allocation of creditor control rights, allowing PE-backed firms to have more financial flexibility in distress and thus directly affecting the corporate debt policy of a large

share of borrowers in the syndicated loan market.

Our paper contributes to several strands of the literature. First, we take a step further in understanding the role of covenants in shaping the capital and debt structure of PE-sponsored firms. Our paper is closest to Demiroglu and James (2010), Ivashina and Kovner (2011) and Achleitner, Braun, Hinterramskogler, and Tappeiner (2012). These papers comprehensively examine the role of sponsor reputation in shaping covenant tightness observed at deal origination. More recently, Badoer, Emin, and James (2021) examine the relationship between PE sponsor reputation and the propensity to use covenant-lite loans. Different from these papers, we are the first to examine outcomes *after* origination throughout the life of a given loan, focusing on (i) the propensity of PE-backed firms to violate covenants, (ii) the adverse consequences of covenant violations and subsequent resolution, and (iii) if differences in ex-ante covenant design or in a syndicated loan's dynamic ownership structure between PE and non-PE affect ex-post debt contract enforcement.

Second, we contribute to the broader literature on how debt contract enforcement affects a distressed borrower's access to credit, using covenant violations as our setting. Several papers show adverse consequences of covenant violations, including Chava and Roberts (2008), Roberts and Sufi (2009b), Nini et al. (2009) Nini, Smith, and Sufi (2012), Denis and Wang (2014), Falato and Liang (2016), Berlin et al. (2020), Carey and Gordy (2021), Becher, Griffin, and Nini (2022), Chodorow-Reich and Falato (2022), and Bräuning, Ivashina, and Ozdagli (2022). Different from these papers, we are the first to show how the presence of a financial sponsor dampens the effects of covenant violations, thus generating financial flexibility in funding cash flow shortfalls. Since this channel directly affects access to credit, our paper also contributes to the related literature on firms' financial constraints (Kiyotaki and Moore, 1997; Lian and Ma, 2021).

Finally, we contribute to the large literature on the effects of private equity buyouts and offer new insights on loan performance. As suggested by Kaplan and Stromberg (2009) and recent theories (Malenko and Malenko, 2015; Gryglewicz and Mayer, 2022), PE owners affect firm outcomes through various channels. Several papers study whether and how PE owners affect firm outcomes and value creation.[3] Different from these papers, our data allows us to examine the effect of PE on loan downgrades, loan defaults, and loan amendments post-origination.

[3]See, for example, Boucly et al. (2011); Axelson, Jenkinson, Strömberg, and Weisbach (2013); Davis, Haltiwanger, Handley, Jarmin, Lerner, and Miranda (2014); Bernstein et al. (2019); Gornall, Gredil, Howell, Liu, and Sockin (2021); Johnston-Ross, Ma, and Puri (2021); Fracassi, Previtero, and Sheen (2022); Haque, Jang, and Mayer (2022).

1 Data and Stylized Facts

1.1 Data

We begin by describing our data sources and sample characteristics. We build a large loan-level sample that primarily relies on merging two key datasets containing information on (i) covenant violations and pertinent loan characteristics and (ii) identifying information on private equity-sponsored borrowers.

Data on Covenant Compliance: Our data on loan contracts and covenant compliance come from the Shared National Credit Program (SNC). Administered by the Federal Reserve System (FRS), Federal Deposit Insurance Corporation (FDIC), and the Office of the Comptroller of the Currency (OCC), the SNC Program covers all syndicated deals exceeding USD 20 million and held by three or more supervised institutions, which is the SNC inclusion criterion (Ivanov and Wang, 2022). This includes loan packages containing two or more facilities to the same company at the same origination date, with a total loan amount of over USD 20 million.[4] The lenders include domestic and foreign institutions, commercial banks, investment banks, insurance companies, investment companies such as CLOs, and mutual and hedge funds whenever the parent company is regulated. As of 2021, SNC commitments totaled USD 5.2 trillion.[5] The syndicated loan market includes both leveraged and non-leveraged loans, and our analysis relies on the entire sample. Recent academic studies using the SNC data to study covenant violations include Chodorow-Reich and Falato (2022) and Ivanov and Wang (2022).

The SNC is a loan-level panel dataset. The reporting frequency is annual before 2015, quarterly in 2015, and semi-annual from 2016 onward. Examiners collect information on covenant compliance for around one-third of the SNC universe of loans. The SNC covenant sample overweights noninvestment grade and criticized loans but is otherwise representative of the full SNC universe (Chodorow-Reich and Falato, 2022). As mentioned earlier, the SNC covenant sample offers several advantages for measuring covenant compliance over previous datasets constructed by starting from the DealScan database and hand-collecting information on subsequent loan outcomes from public filings. In particular, the SNC sample is much larger and contains a large and

[4] In 2018, the minimum commitment size was raised to USD 100 million.

[5] For further details, see the 2022 review of the SNC program.

representative share of nonpublic borrowers. This is particularly important because we are investigating PE-sponsored, typically not publicly traded firms. Moreover, it contains supervisory information on covenant compliance, including when a covenant breach results in a waiver and the lender's response to the violation.

We observe a number of standard loan-level variables such as loan commitments, utilization rate, maturity, loan type, loan purpose, covenant types, and regulatory classification of loan risk that we describe in detail below. The data also breaks out the loan syndicate membership, including non-bank lenders, on a quarterly basis (e.g., CLOs and hedge funds). The lead bank must report details on a given loan, even if they are no longer in the syndicate. For a smaller subset of our sample, we also observe loan spreads at a given point in time.

Crucially, we observe *Concordance Ratings*, which are (time-varying) credit risk ratings that Federal supervisors assign to a loan facility using information related to the borrower provided by the Agent Bank. These ratings are provided on a numerical scale, where lower numbers denote higher-quality loans. Specifically, a risk rating of 1 denotes an *Investment Grade Pass*, 2 denotes *Non-Investment Grade Pass*, 3 denotes *Lowest Rated Pass*, while ratings of 4, 5, 6 and 7 denote *Special Mention*, *Substandard*, *Doubtful*, and *Loss* respectively.[6]

SNC reports a flag for each loan in the covenant sample for whether the loan was in compliance at a given time. Moreover, if the loan remains compliant, we observe whether it would have been non-compliant but for a covenant waiver or reset granted by the lender. We follow Chodorow-Reich and Falato (2022) and classify a covenant as *breached* in either circumstance. However, our results are not sensitive to this particular definition, which we show in our robustness tests. Note that a waiver can come with conditions and does not necessarily mean that the violation gets resolved without adverse consequences to the borrower.

PE Buyout List and Matched Sample Information: To identify PE-sponsored LBOs, we combine the SNC data with information from Preqin.[7] Preqin is generally considered a representative data source of PE-sponsored leveraged buyouts and has been utilized extensively in the aca-

[6]For an example of how loan quality is mapped from the agent bank's internal rating to supervisory rating, **see this reporting form by the SNC office**.

[7]To match the SNC to our PE dataset, we apply a string matching algorithm following Cohen, Dice, Friedrichs, Gupta, Hayes, Kitschelt, Lee, Marsh, Mislang, Shaton, Sicilian, and Webster (2021) on portfolio company name and industry. We went to great lengths to ensure the accuracy of our data merge, which involved significant time commitments from several research assistants in manually checking our match.

demic literature (see, for example, Barber and Yasuda, 2017; Davis, Haltiwanger, Handley, Lipsius, Lerner, and Miranda, 2021; Shive and Forster, 2022). Preqin's buyout data contains identifying information on sponsored portfolio companies, industry, the name of the sponsor, and, crucially, deal closing dates, allowing us to distinguish between pre-(post-) PE-ownership samples. Our sample only uses the earliest chronological buyout date if a company is acquired twice or more by a PE fund (secondary or tertiary buyout). We supplement our Preqin list with data from SNC, which also collects identifying information on PE sponsors.

Our sample period ranges from 2012 to 2021. For most of our sample, loan commitments are observed twice a year, typically once in the first quarter of the calendar year and then again in August of the same year. After filtering out observations for which we do not see covenant compliance and other pertinent loan-contracting information, we begin with a baseline sample covering 43,670 loan-time observations belonging to 11,416 unique credit facilities. These facilities cover 5,660 unique borrowers, out of which 2,272 are PE-sponsored. Our sample contains 640 unique PE sponsors. Aggregating all (unique) loans to borrowers with a PE sponsor in the sample cross-section shows that sponsored loans account for around USD 2.2 trillion and USD 1.6 trillion in committed and utilized loan exposure respectively. The sample includes 6,967 covenant violations, a 15.9 percent violation rate in the cross-section, but with significant time-series variation as we show subsequently.

Other Data: We also rely on Call Reports to extract bank-level information. For our benchmark sample, we observe financial variables for participating banks, such as total assets, total equity, total risk-based capital, and total risk-weighted assets. We use these to construct our measures of lender capital ratio. Finally, for part of our analysis, we merge our loan-level sample with firms' balance sheet data from the Federal Reserve's FR Y-14Q Corporate Loan Schedule (H1). The FR Y-14 data consists of information on all loan facilities with over USD 1 million in the committed amount held by Bank Holding Companies (BHCs). These data are available from 2012 and represent supervisory data collected as part of the Federal Reserve's Stress Testing exercise.[8] Part A provides variable definitions for our sample.

[8]We choose to restrict the SNC sample from 2012 onward in order to overlap with FR-Y14Q, which starts in 2012.

1.2 Summary Statistics

Table 1 reports summary statistics for our loan-time sample by PE-sponsorship status. The sample is approximately evenly split between sponsored and non-sponsored loans, although the number of non-sponsored loan-time observations is somewhat higher. We observe that PE-sponsored loans are larger than non-PE loans. The mean concordance rating is higher for PE-sponsored loans relative to non-PE, indicating that these loans are riskier on average. Given the importance of concordance ratings in our formal analysis, we provide a further breakdown of our sample, split by rating and borrower type in the Online Appendix Table A2. Importantly, we observe differences between PE and non-PE loans: only 16 percent of PE-backed loans receive an "Investment-Grade Pass" rating while 22.5 percent of non-PE loans have this rating, consistent with prior studies documenting that sponsored loans are mostly leveraged loans. We also observe a greater share of PE loans classified as "Special Mention," "Doubtful," "Substandard," or "Loss" (19.1 vs. 16.5 percent). These patterns confirm that PE-backed loans are in general more risky, and are consistent with prior studies that document sponsors do not randomly target companies.

Next, we also observe loan spreads for a subset of our loans. Consistent with the distribution of loan ratings mentioned above, we see mean credit spreads are higher in PE relative to non-PE and comparable to those reported in Axelson et al. (2013). The final rows of Panel A and B in Table 1 show around 13.9 percent of our loan-time observations are flagged as having a covenant that was either waived or reset by the lender. This means the covenant would have been violated had the waiver or reset not been granted.

For the PE sample, we also compute a variable we call *Total PE Sponsor-Bank Exposure*. This measure aggregates all outstanding loans (utilized portions of commitments) from portfolio companies that are funded by the same PE sponsor (e.g., KKR) and Lead Bank pair at date t, capturing a given lender's total debt exposure to a given sponsor's portfolio companies. We use this measure in some of our tests discussed subsequently.

1.3 Key Facts: Covenant design and violation in PE-backed loans

We proceed by establishing four key facts in the data.

Fact 1. Over 50 % of PE-sponsored loans include a maximum leverage ratio and/or other

traditional performance-based covenants.

Considering that covenants in syndicated loans are often tied to a firm's current earnings, we choose to classify covenants into performance-based and non-performance-based following Christensen and Nikolaev (2012). Performance-based covenants include debt-to-EBITDA ratios (leverage ratio or senior leverage ratio covenant), interest coverage ratios, debt service coverage ratios, fixed charge coverage, and other variables with the general characteristic that the covenant must capture some measure of earnings before interest and taxes. Non-performance covenants in our sample include negative, affirmative, current ratio, or other balance-sheet-related capital covenants. Overall, we find more than 50 percent of the PE sample includes performance-based covenants that are directly linked to the borrower's earnings.[9]

The SNC database includes a description of each covenant type, which we report in Table 2. The most frequent loan covenant in the sample is the maximum leverage ratio covenant, which is present in at least 29 percent of the sample, consistent with Ivashina and Kovner (2011) who also find the same covenant is present in 29 percent of their data using the DealScan database. The second most frequent maintenance covenant is the interest coverage ratio. As Panel A in the table shows, around 55.8 percent of the PE sample includes at least one of the following covenants: leverage/senior leverage ratio, interest coverage, debt service coverage ratio, or fixed charge coverage ratio. We also find that negative covenants are quite common. They are present in at least 20 percent of all PE-sponsored loans.

When we examine non-PE loans in Panel B, we find that 62 percent of the loans have the four performance-based covenants mentioned above but feature relatively fewer negative or affirmative covenants. Since performance-based covenants subject borrowers to stricter monitoring, we view the higher number of performance-based covenants and fewer negative and affirmative covenants as evidence consistent with prior studies that document PE sponsors get more generous covenants relative to non-PE (Demiroglu and James, 2010; Becker and Ivashina, 2016).

Fact 2. Loans with performance-based covenants are held by concentrated syndicates.

Recent studies show lead banks often sell their loans to non-bank institutional investors (Blickle, Fleckenstein, Hillenbrand, and Saunders, 2020) and that there has been a sharp increase in deals

[9]The median number of covenants per SNC loan is 1, while the 75th percentile shows three covenants per loan in both PE-backed and non-PE-backed samples.

with split control rights (Berlin et al., 2020) in the syndicated loan market. As shown by Berlin et al. (2020), split control credit agreements delegate the exclusive right to monitor and renegotiate financial covenants to banks. We examine if most performance-based covenants (e.g., leverage ratio or interest coverage ratio) in the private equity sample are held within concentrated syndicates—i.e., syndicates with few non-bank institutional lenders like CLOs and loan funds—such that banks retain substantial renegotiation and bargaining power upon covenant violation.

For a given loan, we examine the relation between the number of non-bank institutional lenders in a syndicate and the likelihood of the loan having performance-based covenants. In the SNC's Loan Participant data, we can observe the names of each non-bank investor (e.g. XYZ CLO Ltd. or ABC Credit Fund) holding a given loan at a given time. Therefore, since we can observe the number of institutional lenders holding a given loan at a given time, we create buckets of the number of non-bank institutional investors and compute the share of loans with performance-based covenants in each bucket (see Figure 1). The chart is restricted to PE-backed loans only as prior studies argue that loans with PE sponsors are more likely to be covenant-lite (Badoer et al., 2021; Becker and Ivashina, 2016). We see that when the number of institutional lenders is ten or less, 60 percent of the loans have performance-based covenants. However, when loans have 20 or more non-bank investors, this share drops sharply to 38 percent. Further, the share drops to 33 percent when the number of non-bank investors rises to 50 or more. Consistent with split control rights, these patterns indicate banks generally retain the loan tranches with traditional performance-based covenants to renegotiate and bargain effectively when borrowers are in distress.

Table 1 shows PE-sponsored loans have a higher number of lenders in their syndicate structure. For example, the median number of Institutional/Non-Bank Lenders is 12 in the PE-sponsored loans sample and 10 in the non-PE, while the difference in means is much higher. However, we also see a significant share of the PE sample has relatively few non-bank investors. For example, the distributions of the number of lenders as well as the number of non-bank investors in Table 1 show that close to half of all PE-sponsored loans have ten or fewer non-bank lenders. Further, one-quarter of PE-sponsored loans have only six or fewer lenders at a given time.

Finally, we split our sample by loan type, which we classify as revolving credit facilities, term loans, and other loans. We find more than 90 percent of facilities are revolvers and term loans for

both types of firms, consistent with prior studies. PE-sponsored borrowers have more term loans consistent with Axelson et al. (2013). In addition, as Figure 2 shows, PE-sponsored firms exhibit a more even split of the two major types of loan facilities relative to non-PE. This is again consistent with split control rights in which covenant-lite term loans are typically paired with a revolving credit facility to preserve monitoring and renegotiation power with the subset of lenders that hold the revolver.

Fact 3. PE-backed borrowers have a higher covenant violation rate relative to non-PE-backed borrowers but receive more waivers.

Chodorow-Reich and Falato (2022) found nearly one-third of loans in the SNC sample violated covenants during the global financial crisis (GFC). Our analysis focuses on the post-GFC period and splits the sample by PE and non-PE firms. Figure 3 plots the share of covenant violations for firms backed by PE sponsors. We plot the trend for all covenants as well as performance-based covenants. Both types of loans exhibit similar trends, but performance-based covenants are violated more often since they are more sensitive to macroeconomic conditions. For example, both trends exhibited sharp spikes during the calendar years 2015 and 2016, potentially due to the oil price shock of 2014 or the Federal Reserve ending its quantitative easing program. This effect is stronger for performance-based covenants. Since then, we have seen a declining trend until the COVID-19 pandemic when the covenant violation rate rose to nearly 25 percent for performance-based covenants. This estimate is comparable with the survey evidence from Gompers et al. (2022), who found that 22.7 percent of PE-backed firms violated covenants during the pandemic. Computing a simple average over time shows that PE-sponsored loans exhibit an average (annual) violation rate of 18.0 percent for all covenants and 21.9 percent for performance-based covenants.

Figure 4 plots the same variables for non-PE-owned firms. The spike in violations in 2015–2016 was much less pronounced for non-PE. The decline in violations in 2020 is simply a lag effect, as a larger share of non-PE loans were examined in February 2020, before the onset of the pandemic. It thus displays a large jump in violations in 2021 due to reviews conducted in August 2020. Non-PE loans violate covenants 16.0 percent of the time for all covenants and 20.4 percent for performance-based covenants.

To examine these patterns more formally, we estimate a simple linear probability model where the dependent variable takes the value of 1 if a covenant is violated at a given point in time and

0 otherwise. We include several loan-level controls, including loan amount, utilization rate, maturity, indicators for loan type, loan purpose, and risk rating. In the next section, we outline our benchmark analysis and describe our loan-level controls and fixed effects in further detail (Section 2.1). Eq. (1) shows the equation we estimate in a general form. The dependant variable is (i) $\mathbb{1} \times (Violated)$, an indicator taking the value of 1 if any covenant in a loan j between bank-firm pair $[b, i]$ at time t is violated and 0 otherwise and (ii) $\mathbb{1} \times (Waiver)$, an indicator taking the value of 1 if a covenant is waived or reset, which means the borrower would have been in violation of a covenant had the lender not granted a waiver.[10] Our key variable of interest is an indicator of PE ownership.

$$\mathbf{1}(Y_{j,b,i,t}) = \alpha + \beta_1 PE_{i,t} + FEs + Controls + \epsilon_{j,b,i,t} \tag{1}$$

We report these results in Table 3. In columns (1)-(3), comparing PE and non-PE loans that are of the same type (i.e., revolvers or term loans) and risk profile, originated by the same bank to borrowers in the same industry-time, we find PE-backed loans have a higher probability of covenant violation. Our estimates suggest PE-backed firms have approximately 4 to 5 percent higher covenant violation rates. This could be attributable to the fact that the leverage ratio in PE-backed firms is relatively higher. Next, columns (4)-(6) examine if PE-backed loans are associated with greater covenant waivers or resets granted by the lender. As the coefficient estimates suggest, PE-backed loans are associated with around a 4 percent higher probability of receiving a covenant violation waiver or covenant reset from the lender, controlling for lender, borrower, and loan contract differences. These effects are meaningful, considering the unconditional probability of receiving a waiver in our full loan-time sample is 13.9 percent.[11]

Fact 4. Both PE and non-PE borrowers frequently renegotiate loan commitments outside of distress.

Next, we construct a variable *Amendment Outside Distress*, which takes the value of 1 if a given loan's dollar commitment is changed in period t relative to period $t-1$ conditional on the loan remaining covenant-compliant (i.e., outside of distress). Table 1 shows loans are frequently rene-

[10] As already mentioned, in our formal analysis, we use both cases (i.e., flagged violations and waivers reported in the SNC database) as covenant violations to separate the event of breaching a covenant from the subsequent resolution.

[11] A waiver can come with conditions, and a borrower may still face adverse consequences.

gotiated. Conditional on borrowers remaining outside of covenant breach, for both PE and non-PE borrowers, we observe loan commitments alone are renegotiated around 33 percent of the time. When we collapse all unique loans to count the share of loans that go through at least one amendment to loan commitment outside of covenant violation, we find PE loans are renegotiated 52 percent of the time, and non-PE loans are renegotiated 46 percent of the time. We want to emphasize that this is still a lower bound in terms of *total amendments* because some loans experience changes to other loan terms, such as spreads. Overall, this pattern is consistent with prior studies that document loans are often renegotiated outside of distress (Roberts and Sufi, 2009b; Denis and Wang, 2014; Roberts, 2015).

2 Empirical Strategy

2.1 Benchmark Analysis

We discuss our benchmark analysis in this section and establish the following key results: (i) PE-backed borrowers experience a smaller reduction in credit commitment upon covenant violation relative to comparable non-PE borrowers, (ii) this *limited-punishment* effect is present in both covenant-heavy and covenant-lite loans, (iii) *limited-punishment* is stronger among banks that have more capital, and (iv) even outside of distress, PE-backed firms are able to renegotiate more favorable loan outcomes relative to comparable non-PE-backed firms.

Our goal is to examine if ex-post enforcement behavior following covenant violations varies systematically due to PE-ownership status. The key empirical challenge is that PE ownership and covenant violations are non-random and likely determined in response to borrower-specific credit risk. Moreover, macroeconomic and bank-specific factors may simultaneously drive covenant violations and loan outcomes. Our baseline analysis compares the effect of violations on outcomes between observably similar loans with similar credit risk issued by the *same* bank, such that the loans differ only by PE-sponsorship status. Unless otherwise stated, all regressions are estimated at the *loan-time* level, where time is at the year-quarter level. We begin with the following baseline specification:

$$Y_{j,b,i,t} = \beta_1 PE_{i,t} + \beta_2 Violate_{j,t} + \beta_3 PE_{i,t} \times Violate_{j,t} + Z_{j,b,i,t} + X_{j,b,i,t} + \eta_{b,t} + \theta_{z,t} + \epsilon_{j,b,i,t} \quad (2)$$

The dependant variable is alternatively (i) $Log\ (Commitments)$, the natural logarithm of credit commitment in loan facility j issued by bank b to firm i in time t, and (ii) an indicator variable $\mathbb{1}\ (Credit\ Reduced)$ that takes the value of 1 if total committed credits between a given bank-firm pair are reduced in a given time-period t relative to $t-1$. Our preferred measure is (i) because our hypothesis is that the PE-sponsorship effect potentially matters more at the intensive margin upon a contractual breach. In additional tests discussed subsequently, we also examine the effect of PE-backing on loan interest rate spreads and loan maturity upon covenant violation.

$Violate_{j,t}$ takes the value of 1 if any covenant is breached in a given loan in the current or any of the previous four quarters relative to the date that a given credit commitment is observed. This definition is consistent with prior studies, which show the effects of covenant violation on debt issuance can persist long after the actual violation (Roberts and Sufi, 2009a). Our key variable of interest is $PE \times Violate_{j,t}$, which captures the marginal effect of PE-ownership on loan outcomes conditional on a covenant violation. We estimate Equation (2) over the sample period 2012–2021. Following Gustafson, Ivanov, and Meisenzahl (2021), also based on SNC data, standard errors are clustered at the bank-time level.[12]

We consider a carefully selected array of fixed effects to absorb confounding borrower and lender risk factors. In particular we include bank-time $(\eta_{b,t})$ and sector-time $(\theta_{z,t})$ fixed effects. Unless otherwise stated, all time fixed effects are at the year-quarter level of the SNC report date. The vector $Z_{j,b,i,t}$ includes indicators for loan purpose, loan type (credit line, term loans, and other), loan origination year-quarter, covenant type (i.e., performance-based vs. non-performance-based covenants), and, perhaps most importantly, loan concordance rating which captures time-varying borrower risk.[13] Concordance ratings capture credit risk based on a careful appraisal of hard information (e.g., leverage ratio, EBITDA, etc.) and soft information related to a borrower's repayment capacity. $X_{j,b,i,t}$ includes a loan's time-to-maturity and utilization rate. Our main regressions do not include interest rate spread as an explanatory variable because doing so reduces our sample by more than 50%. Instead, we report robustness tests using interest rate spread in section 4. As mentioned above, $(\eta_{b,t})$ allows us to examine observably similar loans issued by the

[12] We also verified our results are unchanged with standard errors double-clustered at the bank and industry $\times$Year-Quarter level, following Ivanov and Wang (2022).

[13] For loans with multiple covenants, we classify it as performance-based if it has at least one performance-based covenant.

same bank to borrowers within the same industry-time that differ only by PE status. Thus, we can rule out confounding effects from bank-specific channels. Since PE status varies over time, we also use firm fixed effects in some of our specifications. Finally, in one specification, we also add bank×borrower fixed effects to further control for unobserved time-invariant factors that are specific to a bank-firm relationship, such as banks' private or soft information on borrowers' creditworthiness and banks' portfolio specialization in particular types of borrowers (Chodorow-Reich, 2014). Finally, in our robustness tests reported in subsection 4.3, we show that our main result is robust to matching PE loans to non-PE loans based on firm-level variables within the same 2-digit industry (leverage, size, probability of default, and EBITDA).

Table 4 reports our benchmark results where the dependent variable is (i) $Log\ (Commitments)$ at the *loan-level* in Panel A, and (ii) $\mathbb{1}\ (Credit\ Reduced)$ in Panel B. Examining the estimates in column (1) in Panel A, we see that β_2 is negative, indicating that violation of a covenant reduces credit commitment, consistent with prior studies. In terms of economic significance, covenant violations reduce commitments by 11.6 percent.[14] Importantly, β_3 is positive and significant. The estimate indicates the reduction in credit commitment upon violation is only 4.53 percent if a firm has a PE sponsor. Taken together, we can infer that the mitigating effect of PE ownership on lenders' enforcement actions is quite strong. We find similar results when we look at columns (2) to (6) with variations in fixed effects. We want to emphasize that the inclusion of Concordance Ratings means our identifying variation comes from *within* Investment-Grade loans and *within* Non-Investment-Grade loans (Non-Investment-Grade loans are primarily Leveraged loans).

Panel B reports the results where the outcome is $\mathbb{1}\ (Credit\ Reduced)$, an extensive margin measure. As we estimate the probability of credit reduction, our hypothesis is that $\beta_2 > 0$ and $\beta_3 < 0$. Consistent with our hypothesis, we find that covenant violations raise the probability of credit reductions. The quantitative effect is quite large — ranging from 6.7 percent to 8.7 percent, depending on the set of controls. But the significant and positive sign on β_3 again indicates a limited-punishment effect.

In our robustness tests, we show that these results hold when the control group is constructed using a matching methodology primarily following Bernstein et al. (2019) or Boucly et al. (2011) and controlling for time-varying firm-level variables for the set of loans for which we can merge

[14] $(e^{(-0.124)} - 1) \times 100 = -11.66$.

our sample with the Federal Reserve's FR Y-14Q data. We discuss these results in subsection 4.3.

2.2 Instrumental Variable

Despite our rich set of controls, we cannot completely rule out non-random matching of borrower characteristics and covenant violations. We address this concern by employing an instrumental variable research design, largely following Ivanov and Wang (2022) and Chodorow-Reich and Falato (2022). The excluded instrument is the strictness of the lender's supervisor at the time of loan origination.[15] Bank supervisors frequently meet with bank management to discuss both specific issues related to bank activities and more general perspectives such as industry outlook and analyze internal reports with the goal of reducing failure risk relative to what banks themselves might choose (Hirtle et al., 2020). Our relevance condition is that loans made under stricter supervisors have tighter covenants and, therefore, have a greater propensity for covenant violation.

Our exclusion restriction is based on two sources of quasi-exogenous variation in supervisory strictness at loan origination, which we argue only affects credit commitments through covenant tightness. First, federal supervisors have been shown to be stricter than state supervisors, and there exists a pre-determined periodic rotation between them (Agarwal et al., 2014; Chodorow-Reich and Falato, 2022). Second, within each regulatory-district $\times$ supervisor-type combination, supervisors with varying levels of leniency are quasi-exogenously assigned to banks (Ivanov and Wang, 2022).

Moreover, we explicitly control for other loan characteristics that could be affected by strict supervisors (e.g., loan risk and utilization rates). By controlling for supervisor strictness during the life of the loan, the instrument is valid because of the variation at loan origination. Because we can compare observably identical PE and non-PE loans within each federal district similar to Ivanov and Wang (2022), we circumvent the issue of banks sorting into different regulatory settings. Taken together, the variation in supervisory strictness at origination stemming from a pre-determined rotation policy and supervisors' personality traits is unlikely to be correlated with unobserved borrower characteristics.

Using the SNC data, we identify a strict supervisor at loan origination if the examiner-in-

[15] Bank supervision has expanded substantially following the global financial crisis of 2007–2008. For example, post-crisis reforms have led to additional supervisory programs through bank stress testing, more stringent regulatory monitoring of risky lending, and other macro-prudential reforms (Ivanov and Wang, 2022).

charge during the loan origination year-quarter is classified as *Strict*. We use examiners' history of assigning "Fail" or "Pass" ratings to different loan facilities to define a given examiner as *Strict*. Specifically, an examiner is classified as *Strict* if their total number of assigned *Fail* ratings to different loans is greater than the sample median. Figure 6 plots the distribution of an examiner's propensity to *fail* a loan at a given point in time. We note most examiners tend to fail around 10-15 percent of the loan facilities they are assigned to. We then re-estimate our benchmark regression using examiner strictness at loan origination as an instrument for a covenant violation.

We find that the first-stage relationship of strictness at loan origination on covenant violation is quite strong. Having a strict supervisor at origination increases the likelihood of a violation by 6.9 percentage points.[16]

Table 5 reports the main results from our IV estimation. We alternate between district and district $\times$ year fixed effects to ensure that our identifying variation does not come from a small subset of observations that may not hold in the aggregate.[17] We begin with $\mathbb{1}$ (*Credit Reduced*) as the main outcome of interest. Similar to our benchmark regressions, violations lead to a higher probability of reduction of loan commitment. However, the effect is entirely offset if the borrower is PE-owned. In fact, summing up the coefficients on *Violate* and $PE \times Violate$ in columns (1) and (2) shows lenders raise commitments to PE borrowers. This could be a result of renegotiation between PE investors and lenders and updated information related to expected performance. The $PE \times Violate$ estimates are also significant when we examine the volume of loan commitments.

To further examine the limited punishment effect, we include an additional outcome variable in columns (5) and (6): the natural logarithm of loan maturity expressed in the number of quarters. We find that creditors substantially lower loan maturity, consistent with findings related to the acceleration of loan repayment upon covenant violation. However, the positive interaction on $PE \times Violate$ suggests this effect is substantially mitigated by the presence of PE sponsors. We also re-estimate a version of this analysis without district or district $\times$ year fixed effects to exploit a larger sample and find similar results. These findings are reported in Table A3.

[16] Recall that in the unconditional covenant exam sample, the probability of violation is around 20 percent at a given point in time. Thus, our first-stage relationship is economically meaningful.

[17] We follow Ivanov and Wang (2022) and choose to use District $\times$ Year FE instead of District $\times$ Report Date FE.

2.3 Covenant Heterogeneity and Enforcement Behavior

How does ex-ante covenant design affect ex-post enforcement upon violation? One potential explanation of our baseline result is that it is driven by creditor coordination costs or high bargaining frictions due to the rise of covenant-lite loans. Becker and Ivashina (2016) show that a significant amount of recent corporate loan issuance has been "cov-lite." They argue that weaker covenant enforcement makes these loans riskier because they lack traditional maintenance covenants such as the leverage ratio covenant. On the other hand, Berlin et al. (2020) argue that covenant-lite loans are closely associated with 'split control rights', which still allow lenders to discipline borrowers in a manner similar to traditional maintenance covenants. The reason is that deals with split control rights usually market the covenant-lite tranche to institutional investors, while a relatively small set of banks - including the lead bank - holds on to the covenant-heavy tranche. Thus, lenders in a specific tranche with traditional maintenance covenants retain high bargaining power in loan renegotiation following a violation.

To test if our results are driven only by high bargaining frictions generated by covenant-lite loans, we split our sample into "Covenant-Heavy" and "Covenant-Lite" loans. We define a covenant-heavy loan as one that has at least one of the following traditional financial maintenance covenants: (i) leverage ratio or senior leverage ratio, (ii) interest coverage ratio, (iii) debt service coverage ratio, and (iv) fixed charge coverage ratio. We classify all other loans as "covenant-lite" (i.e., loans that do not have any of the four maintenance covenants mentioned). This classification effectively captures performance and non-performance covenants outlined earlier in section 1. We then separately estimate Eq. (2) for covenant-heavy and covenant-lite loans.

We report these results in Table 6. Our specification is similar to the benchmark regression and controls for the supervisory risk rating, which allows us to compare outcomes *within* investment-grade-rated loans and non-investment-grade-rated loans. Columns (1) and (2) report results on the covenant-heavy sample. We again document that PE sponsorship almost entirely offsets the effects of covenant violations. Importantly, our results are robust to a host of controls and fixed effects, including firm fixed effects. Recall from Figure 1 that syndicates holding loans with performance covenants are relatively more concentrated. This is consistent with split control rights, which grant monitoring and negotiation to a small subset of lenders. We find similar results when

we examine the estimates using the covenant-lite sample. While the results from the covenant-lite sample could be related to creditor coordination costs, we cannot draw the same conclusion in the covenant-heavy sample due to split control rights. Overall, our interpretation is that the limited-punishment channel cannot be fully explained by the rise of covenant-lite loans.

As an alternate exercise, we run the following triple interaction specification:

$$Y_{j,b,i,t} = \beta_1 PE_{i,t} + \beta_2 Violate_{j,t} + \beta_3 PE_{i,t} \times Violate_{j,t} \times Covlite_j + Z_{j,b,i,t} + X_{j,b,i,t} + \eta_{b,t} + \theta_{z,t} + \epsilon_{j,b,i,t} \tag{3}$$

In Eq. (3), we test if our results are stronger for covenant-lite loans. We include all lower order terms, such as $PE \times Violate$, but omit them from display for brevity. Table A4 reports the results of this test and shows that the triple interaction is insignificantly different from 0 in all of the specifications.[18]

2.4 Banks' Equity Capital and Enforcement Behavior

Next, we examine if differences in a bank's capital constraints shape the patterns documented by our baseline analysis as major lenders in the corporate loan market face increased regulatory scrutiny since the 2008 financial crisis (Irani et al., 2021). For example, Chernenko, Erel, and Prilmeier (2022) show that two-thirds of nonbank lending following GFC can be attributed to bank regulations that constrain banks' ability to lend to unprofitable and highly leveraged borrowers. This section asks if limited punishment towards highly leveraged PE-sponsored firms is positively related to a given bank's capital ratio because a higher ex-ante capital ratio allows greater space to take on additional risk. An alternative — and not mutually exclusive — reason is that banks with higher capital ratios may be more skilled at adjusting their credit exposure to a given borrower upon accrual of new information.

We merge our sample with data from FR Y-9C, which contains information on bank-level variables. We measure bank capital as the ratio of bank equity to assets (Tier 1 capital) in the year *preceding* the year a loan covenant is reviewed by SNC examiners, leading to 28,550 unique loan-time observations. Figure 5 shows that the equity-to-assets ratio is concentrated around 9 to 13

[18] We also verify that our benchmark result goes through when we split the sample by revolving credit facilities and term loans: i.e., we document limited-punishment effect within revolving credit facilities and within term loans. This result is available upon request.

percent. We document that banks in our sample have a median equity-to-assets ratio of 11 percent. We assign a bank to have *High Equity Capital* if it has an equity-to-assets ratio above the sample median of 11 percent and define a *Low Equity Capital* bank symmetrically. We want to emphasize that our sample does not cover the 2008 financial crisis and that higher regulatory restrictions since then have led nearly all banks in our sample to be well above their minimum capital requirements. Furthermore, a bank may have to carry more regulatory capital if it is identified as a global systemically important bank or GSIB (see, Favara, Ivanov, and Rezende, 2021). Thus, a "Low Equity Capital" lender is a strictly relative definition for this particular exercise and should not necessarily be interpreted as a signal of bank health.

We split our sample and estimate our benchmark regression from Eq. (2) for each type of bank. Columns (1) to (3) of Table 7 focus on high-capital banks and show qualitatively similar results to our baseline. The estimate in column (1) implies that high-capital lenders reduce commitments for all borrowers but less so for PE-backed borrowers following a covenant violation. Column (4) presents the first specification for lenders with relatively lower capital and shows a sharply diverging pattern. In particular, while we find these lenders do reduce commitments to all borrowers following violations, the insignificant coefficient on the interaction term $PE \times Violate$ suggests that, unlike high-capital lenders, low-capital lenders whose regulatory constraints are more likely to bind, do not show any leniency towards PE-backed borrowers. The interaction term becomes weakly significant at the 10 percent level when we include origination year-quarter fixed effects (final column). In our robustness tests in section 4, we also use an alternative threshold for classifying lenders having high or low capital and document similar patterns.

2.5 Renegotiation and Contractual Flexibility Outside of Distress

One question related to our limited-punishment benchmark results is how loan renegotiation outside of distress affects debt enforcement during distress. Credit agreements are frequently renegotiated outside of distress or default (Roberts and Sufi, 2009b; Roberts, 2015). For example, loans that are frequently renegotiated favorably outside of distress might also experience limited punishment after a covenant violation.

In subsection 1.3, we confirm that all firms, regardless of PE-sponsorship status, frequently

renegotiate loan commitments outside of distress. Now, we investigate the role of renegotiation outside of distress more formally and estimate the following specification:

$$\begin{aligned} Y_{j,b,i,t} =& \beta_1 PE_{i,t} + \beta_2 Violate_{j,b,i,t} + \beta_3 PE_{j,t} \times Violate_{j,b,i,t} + \\ & \beta_4 PE_{i,t} \times Amendment\ Outside\ Distress_{j,t} + \beta_5 Amendment\ Outside\ Distress_{j,t} + \\ & Z_{j,t} + X_{j,b,i} + \eta_{b,t} + \theta_{z,t} + \epsilon_{j,b,i,t} \end{aligned} \tag{4}$$

In Eq. (4), the variable *Amendment Outside Distress* and the interaction term with *PE* capture the effect of renegotiation and the marginal effect of PE sponsorship on the loan amount. We report these results in Table A5. The individual term *Amendment Outside Distress* displays mixed results: it is positive and significant in only two of our specifications but is insignificant in columns (2) to (5).

Interestingly, we observe the coefficient on the interaction term, i.e., β_4, is consistently positive, large, and significant, implying renegotiations involving a PE sponsor lead to more favorable outcomes than renegotiations without a sponsor. Since we are comparing loans of similar risk, one cannot simply interpret the positive coefficient to be driven by the better performance of PE-sponsored firms. One interpretation is that PE sponsors increase the borrower's bargaining power during loan renegotiations, consistent with evidence from Liu (2021). Consequently, PE-backed borrowers have more financial flexibility outside of distress. We provide further evidence consistent with higher bargaining power in Section 3.2. The estimates on $PE \times Violate$ are still positive while that on *Violate* is negative, suggesting our benchmark results are not necessarily driven by renegotiations outside distress.

3 Mechanism

3.1 Mechanism 1: Sponsor Reputation and Relationship Rent

Malenko and Malenko (2015) and Buccola (2023) argue a sponsor evaluating how it wants its portfolio companies to deal with financial distress is not facing a one-shot game, but is a repeat player. Therefore, a lender might display limited punishment if a high-reputation sponsor backs a firm since the sponsor has incentives to preserve favorable loan terms in future buyout deals and

is experienced in resolving distress (Bernstein et al., 2019; Johnston-Ross et al., 2021) or provide operational support (Gompers et al., 2022; Block, Jang, Kaplan, and Schulze, 2023). For a lender, expected gains from repeated LBOs also include various fee-based income, such as underwriting fees or commitment fees which we discuss in section 4. Thus, to the extent that the expected gains from preserving relationship rent with reputed sponsors surpass the cost of enforcing written contracts, lenders are likely to be more lenient in enforcing contracts following covenant breaches.

We test our hypothesis by constructing two measures of sponsor reputation. First, we construct reputation as a function of the market share of the deal volume held by a PE sponsor in the U.S. syndicated loan market, consistent with Demiroglu and James (2010). We rank our sponsors in terms of the total number of deals executed in the SNC sample. We then classify the top 50 sponsors (out of over 600 PE sponsors) as *High Reputation* sponsors. Cumulatively, these 50 sponsors hold around 63 percent of the market share in terms of deal volume in our sample. As a simple validation exercise, we confirm that more than 70 percent of the top 50 sponsors that appear in our sample have also appeared in the top 50 PE sponsor list in the Private Equity International (PEI) global 300 Private Equity Firm Ranking in 2019 and 2020. Therefore, our measure captures both a fund's activity in the syndicated loan market as well as the amount of equity capital sponsors raised as an indicator of future activity. For confidentiality reasons, we are prevented from disclosing the names of unique sponsors backing SNC loans.

Second, for robustness, we construct a continuous measure of reputation as the natural logarithm of one plus the total number of deals executed by a PE sponsor, i.e. $Log\ (1 + no.of\ deals)$, similar to Badoer et al. (2021). To the extent that reputational capital is increasing in the number of deals, we expect to see greater lender leniency for sponsors with a greater number of deals.

We re-estimate our benchmark specification where we replace $PE \times Violate$ with $Reputation \times Violate$. All other controls, including PE and $Violate$, are as discussed before. We estimate this regression on both of our benchmark outcomes of interest, *Log (Commitments)*, and $\mathbb{1} \times (Credit\ Reduced)$.

Table 8 reports our results where the interaction is between *High Reputation* indicator and *Violate*. We expect the interaction effect to be positive and negate the negative effect of covenant violations on credit commitments. Columns (1) and (2) show a strong positive effect on our interaction effect of interest. While violations lead to significant reductions in committed credit, we observe lenders are much more lenient when a borrower is backed by a high-reputation private

equity sponsor. We observe qualitatively similar patterns when we look at $\mathbb{1}(Credit\ Reduced)$ in columns (3) and (4). Note that our $PE_{i,t}$ indicator absorbs standard PE effects, allowing us to disentangle the effect of reputation on lender enforcement. We observe similar patterns using the second reputation measure, discussed in subsection 4.6.

Finally, for completeness and robustness purposes, we also estimate a triple interaction specification with $PE \times High\ Reputation \times Violate$ as the key variable of interest, outlined in Eq. (5). These regressions include all lower-order interactions that are not absorbed by fixed effects, which we do not display for brevity.

$$\begin{aligned} Y_{j,b,i,t} =& \beta_1 PE_{i,t} + \beta_2 Violate_{j,b,i,t} + \beta_3 PE_{i,t} \times Reputation_{j,t} \times Violate_{j,b,i,t} + \\ & Z_{j,t} + Other\ interactions + X_{j,b,i} + \eta_{b,t} + \theta_{z,t} + \epsilon_{j,b,i,t} \end{aligned} \tag{5}$$

We report these results in Table A6 of the Online Appendix. We find qualitatively similar results. The point estimates themselves suggest when we look at high-reputation sponsors, lenders do not display any punishment at all in the sense that the entire negative effect of violation is negated (the unreported interaction between PE and $Violate$ is insignificant in this specification).

3.2 Mechanism 2: Loan Renegotiation and Bargaining Power

In this section, we propose a related mechanism behind our results: we examine if limited punishment could also be explained by the higher bargaining power of PE sponsors during loan renegotiations. For example, Liu (2021) finds evidence of superior bargaining power of PE-owned hospitals vis-a-vis insurers, while Bernstein et al. (2019) provide survey evidence that sponsors directly help with loan renegotiation with bankers and lawyers when portfolio firms are in distress.

We show evidence of superior bargaining power in two ways. First, we exploit the fact that a covenant violation immediately gives the lender more bargaining power by design. Moreover, this bargaining power is likely to be preserved when a given syndicate is highly concentrated (i.e., it has relatively few lenders, especially non-bank lenders such as CLOs and hedge funds). Giannetti and Meisenzahl (2022) define concentrated syndicates in a similar way. If our benchmark results go through when the syndicate is concentrated, it implies PE sponsors dampened creditor enforcement even when lenders have high bargaining power. Since we can control for loan

characteristics, our interpretation is that sponsors raise the portfolio company's bargaining power (relative to distressed non-PE borrowers) when renegotiating with concentrated syndicates.

For the purposes of this particular analysis, recall from Table 1 that our sample contains an adequate number of loans with a relatively small number of institutional lenders (likely due to split control rights). [19] We define a new time-varying variable *Concentrated*, which takes the value of 1 if the total number of institutional lenders in a given syndicate at a given point in time is less than or equal to the median number of institutional lenders in the full sample (i.e., 11). We also verify that our results are nearly identical when we use the 25th percentile of the total number of institutional lenders (which is 6 in our sample). We estimate the following triple-differences specification.

$$\begin{aligned} Y_{j,b,i,t} =& \beta_1 PE_{i,t} + \beta_2 Violate_{j,b,i,t} + \beta_3 Concentrated_{j,t} \times Violate_{j,b,i,t} + \\ & \beta_4 PE_{i,t} \times Concentrated_{j,t} \times Violate_{j,b,i,t} + \beta_5 Concentrated + \\ & Z_{j,t} + Other\ interactions + X_{j,b,i} + \eta_{b,t} + \theta_{z,t} + \epsilon_{j,b,i,t} \end{aligned} \tag{6}$$

We report these results in Panel A of Table 9. First, focusing on columns (1) and (2), we see that $Violate \times Concentrated$ is negative, implying that, upon covenant violation, concentrated syndicates reduce commitments more than dispersed syndicates. However, the positive sign on $PE \times Concentrated \times Violate$ in columns (1) and (2) implies that PE-sponsorship status dampens the credit commitment reduction. We interpret these findings as successful renegotiation of loan contracts by sponsors (relative to non-PE borrowers), indicating higher bargaining power of PE-sponsored firms relative to non-PE borrowers. We note, however, that the extensive margin effect, as captured by $\mathbb{1}\ (Credit\ Reduced)$, is insignificant, implying the bargaining power effect of PE on credit reduction is more pronounced at the intensive margin.

Second, a given lender could be heavily reliant on a given sponsor for deal flow, which would raise the sponsor's bargaining power during loan renegotiation. We proxy a sponsor's bargaining power vis-a-vis lenders by aggregating the dollar value of all outstanding LBO loans between a given lender (lead bank) and a given sponsor's portfolio companies at time t. Our expectation is that the higher a given bank's exposure to a given sponsor's LBO activity (capturing the lender's

[19] Berlin et al. (2020) show the number of lenders in loans with split control rights is much less than those without it.

historical reliance on a given sponsor for deal flow), the higher the sponsor's bargaining power vis-a-vis the bank. Specifically, we use a variable introduced earlier: *Total PE sponsor-bank exposure*. This measure captures a bank's total utilized loan commitments by all portfolio companies backed by a given PE sponsor. Based on this measure, we then define an indicator variable $High\ Exposure$ that takes the value of one if the sponsor-lead bank exposure at time t is equal to or greater than the sample median and 0 otherwise. As reported in Table 1, the median total sponsor-bank exposure amount is USD 2.25B. Thus, $High\ Exposure$ takes a value of 1 if the lender's total LBO exposure for all companies backed by a specific PE sponsor (e.g., KKR) is greater than or equal to USD 2.25B. Since the main variable of interest is only available for PE-backed loans by definition, our test is restricted to the PE sample only. We estimate a variant of our benchmark regression for only the PE-sample, where the key variables of interest are $Violate$ and the interaction $High\ Exposure \times Violate$.

Panel B of Table 9 reports these results. For both of our outcome variables, we see covenant violations lead to reductions in credit commitment as before. However, this effect is significantly dampened if a given lender was heavily reliant on a given sponsor for continued deal flow. This result is again consistent with a sponsor's bargaing power dampening creditor enforcement.

3.3 Loan Performance Post-Violation: Downgrades and Defaults

An important question related to both the sponsor's reputation and high bargaining power mechanisms is whether PE-backed loans fail more often relative to non-PE loans that also violate covenants. In this section, we examine loan performance conditional on covenant violation. We estimate Eq. (2) with loan performance as the dependent variable. We measure loan performance using (i) loan downgrades and (ii) realized defaults. We want to emphasize that we do not argue PE-sponsored loans outperform non-PE loans unconditionally, but rather that realized downgrades and defaults are not meaningfully higher in PE relative to non-PE, *conditional on covenant violations*.

Loan Downgrades: We measure loan performance at both the extensive and the intensive margin. First, we construct an indicator that takes the value of 1 if a loan is classified as Special Mention, Substandard, Doubtful, or Loss, and 0 otherwise. Second, we compute the natural log-

arithm of 1 plus the total dollar amount of the credit's committed exposure where the final exam rating is Special Mention, Substandard, Doubtful, or Loss.

We report our first set of tests in Table 10, focusing on columns (1) to (3). Not surprisingly, the coefficient on *Violate* is positive since covenant violations and the probability of loan downgrades are positively correlated. We also see that *PE* is positively related to the probability of being downgraded. This supports the view that PE-sponsored loans are riskier, as documented earlier through higher covenant violation rates. Interestingly, when we examine the interaction effect, we find it is not statistically significant across any of our specifications. One explanation is that PE sponsors enhance operational support (Gompers et al., 2022) and distress resolution-related activities (Hotchkiss, Smith, and Strömberg, 2021) when a firm is in distress in order to preserve reputation and bargaining power with lenders. We find a qualitatively similar result when we look at the intensive margin using the dollar volume of loans that have been classified as doubtful, special mention, substandard, or loss.

Loan Defaults: Finally, we also examine default rates. Following Giannetti and Meisenzahl (2022), we use the information on the number of days that any payment (interest or principle) for a given loan is past due. Specifically, we define an indicator variable $Default$ that takes the value of 1 if a loan is past due for 60 days or more and 0 otherwise. We then estimate our benchmark specification to examine if the default rate is different following covenant breach for PE-sponsored loans.

We report results on the default rate in Table 11. Similar to the previous result, columns (1) and (2) show that covenant violations are positively related to the realized default rate. However, $PE \times Violate$ is negatively correlated with the default rate, indicating that PE-specific mechanisms may reduce the likelihood of defaults upon covenant violation. Again, these findings are consistent with PE sponsors either resolving distress more efficiently as argued in Bernstein et al. (2019) and Hotchkiss et al. (2021), or through operational expertise in distress (Gompers et al., 2022). We want to emphasize that we do not claim that PE-sponsored loans are unconditionally associated with lower default probability. Rather, conditional on covenant violations, which can be broadly interpreted as early phases of distress, PE-sponsored loans are less likely to eventually default compared to comparable non-PE loans that also violate covenants.

4 Additional Results and Robustness

4.1 Equity Infusion

A mechanism related to both sponsor reputation and higher bargaining power is the ability to inject equity in distress. For example, higher reputed sponsors likely have higher *ability* to inject equity given that they obtain more capital from limited partners. Prior research has shown sponsors are likely to inject equity to help their portfolio companies overcome liquidity problems (Bernstein et al., 2019; Hotchkiss et al., 2021). To identify evidence of equity injection, we again read through the SNC loan covenant schedule. Bank examiners provide detailed descriptions of a borrower's actions to ensure covenant compliance and crucially, what corrective actions were taken to cure a covenant violation. In these descriptions, examiners explicitly mention if the borrower received an equity injection to cure the violation (or undertook other corrective actions, such as cost-cutting). An example of a typical description is outlined below, with identifying information removed for confidentiality purposes.

> *A covenant default occurred on [Date]. The default occurred because the leverage ratio of X exceeded the covenant limit. [Lender] issued a default letter [Date]. Company X injected [Dollar value] in equity to cure the default and took [Other Actions]. The combination of these actions produced an adjusted EBITDA of [Dollar value], effectively curing the default.*

We then use a simple text-search algorithm to identify instances of equity injection using words such as "Injected" or "Infused" and their variants. After manually verifying the accuracy of our algorithm, we create an indicator variable $\mathbb{1}(Capital\ Injection)$ that takes the value of 1 if a loan is identified to have received an equity injection at a given point in time and 0 otherwise. In our full baseline sample, we identify around 1,700 loan-time observations with an equity injection at a given time, which is around 4 percent of the sample. Recall from Figure 3 and Figure 4 that the average rate of violation in the full covenant sample is around 20 percent. The relatively lower frequency of equity infusions implies it is unlikely to be the only mechanism in explaining enforcement behavior.

We investigate these descriptive findings through a formal test to assess whether PE-sponsored firms are associated with more instances of equity injections upon violation. We re-estimate Eq.

(2) with $\mathbb{1}(Capital\ Injection)$ as an outcome variable to do so. Our key variables of interest are again *Violate* and $PE \times Violate$. These results are reported in Panel A of Table 12. First, across most of our specifications, we see that *Violate* is positively related to equity injections. However, the quantitative effect is relatively low. Specification (2) also shows that PE-backed firms are more likely to inject equity. However, this estimate is also quantitatively small and is not robust across other specifications. Our interpretation is that while equity injection is indeed a mechanism firm, especially a PE-backed one, undertakes to cure covenant violations, it is not the dominant mechanism at play. Consistent with this view, Gompers et al. (2022) showed PE managers provided more operational support (e.g., providing strategic guidance, reducing costs, or connecting companies with potential customers, suppliers, or strategic partners) compared to equity injection, when firms were in distress during the COVID-19 pandemic. We acknowledge, however, that one limitation of our measure of equity injection, $\mathbb{1}(Capital\ Injection)$, is that it cannot capture the intensive margin effect, which could also be systematically different for PE.

4.2 Other Outcomes: Loan Spread and Maturity

Do PE-backed firms pay higher spreads or face shorter loan maturities as a trade-off for retaining higher access to credit? We now estimate our benchmark equation on loan spreads and maturity. Table 13 reports these results. Data on loan spreads is available for a smaller set of loans in the SNC, leading to a much smaller estimation sample in columns (1) to (4). Spreads are defined in basis points over LIBOR. We generally find that covenant violations lead to higher loan spreads: the effect is quite large ranging from 34 to as much as 50 basis points depending on our controls. For example, in column (2), when we include sector-time, origination-time, and various loan controls, the estimate on *Violate* is significant at the 1 percent level and stands at 38.32. However, consistent with limited punishment towards PE, we see $PE \times Violate$ is -28.94, implying that the spread increase is much less for PE-sponsored loans. While columns (1) and (2) show evidence of limited punishment, we do not find the same results when we include further fixed effects such as bank-time or firm fixed effects. Overall, we do not see any specification where $PE \times Violate$ is positive and significant.

Recall from subsection 2.2, that we detected limited-punishment in loan maturity reduction

using our instrumental variable analysis. We now also run regressions similar to our benchmark regression (i.e., without an instrument) on loan maturity. We report these in columns (5) to (8) of Table 13. Across all specifications, *Violate* is negatively related to loan maturity, suggesting lenders generally reduce loan maturity upon covenant violation. In columns (5) and (7) we see that the effect is mitigated by PE-backing since the interaction terms are positive. However, we find that this result is not robust to the inclusion of firm fixed effects or origination year-quarter fixed effects. While we cannot conclusively draw the conclusion that PE leads to limited punishment in terms of loan maturity from this result, we again fail to detect evidence that lenders are substantially shortening maturities for PE-backed loans upon covenant violation (which would have required $PE \times Violate$ to be significant and negative).

Our overall interpretation is that there is no significant evidence that lenders are extracting surplus through harsher contractual terms in exchange for a lower reduction in credit commitment, and there is suggestive evidence that limited punishment towards PE also exists when we look at spreads or maturity.

4.3 Matched-Sample Analysis using firm-level variables

One concern is that our loan-level sample does not explicitly control for time-varying firm-level risk factors (e.g., debt ratio) on which lenders could condition their decisions, even though we include supervisory risk ratings. To mitigate this concern, we now match our SNC sample to the Federal Reserve's FR Y14-Q data on commercial loans which contains detailed firm-level balance sheet information and has been used extensively in prior studies (e.g. Brown, Gustafson, and Ivanov (2021); Chodorow-Reich, Darmouni, Luck, and Plosser (2022)). The FR Y-14Q data consists of information on all loan facilities with over USD 1 million in the committed amount held by Bank Holding Companies (BHCs) in the U.S. and began in 2012 to support the Dodd-Frank Act Stress Tests (DFAST). The key advantage of the FR Y-14Q is the extensive coverage of private firms that borrow from U.S. banks, along with information on their balance sheets and accounting statements. For example, Caglio, Darst, and Kalemli-Özcan (2021) find more than 90 percent of firms in the Y-14 data are private.

Given the differences in firm naming conventions and banks that are required to report infor-

mation to the Y-14 relative to SNC, we are able to merge around 50 percent of our baseline sample of PE and non-PE firms. Using this merged sample, we now construct the control group (consisting of non-PE-backed firms) to match PE-backed firms on observable characteristics. Specifically, for all PE-backed firms in our data, we select at most five non-PE-backed firms in the FR Y-14Q sample in the *pre-buyout year* that (i) belong to the same two-digit NAICS code and have (ii) EBITDA, (iii) book assets, (iv) leverage ratio (debt/assets), and (v) 1-year ahead probability of default within a 20 percent bracket around corresponding value for the PE-backed firm. The matching variables and general methodology broadly follow Bernstein et al. (2019), Boucly et al. (2011) and Haque et al. (2022). The only difference is that we also match the 1-year ahead probability of default as estimated by the reporting bank, which we believe is particularly relevant to our research question. Crucially, default probability estimates capture market information that is otherwise unavailable for private firms. We also include firm-level control variables.

Table A7 reports summary statistics for the full merged SNC-Y14Q sample in Panel A. As the table shows, PE-backed firms have higher debt on their books and a higher probability of default. Importantly, the debt ratio of 52 percent in PE is consistent with prior studies such as Brown (2021) or Gornall et al. (2021). Both firm types are similar in terms of size and EBITDA. Panel B restricts the summary stats (means) to the sample of observations where PE and non-PE are matched as described above.

Table 14 Panel A re-estimates our benchmark regressions at the loan level where now the non-PE loans are matched according to the methodology described above. Further, instead of supervisory risk-rating, all regressions now include the following firm-level controls: *Debt/Asset* ratio, *EBITDA/Assets* ratio, *Log (Total Assets)* and an indicator variable, $\mathbb{1} * (Public)$, which controls for whether a firm is publicly-traded in a given year. We observe that our key result on limited-punishment is robust to the matched control group as can be seen in columns (1) to (3). One caveat is that our sample size decreases significantly due to the merge with FR-Y14 and the matching exercise. To alleviate concerns related to a smaller sample size, we re-estimate our benchmark regressions with the same firm-level controls as above, but *without any matching* in Panel B. We obtain a much larger sample without matching. We again see our benchmark result is unchanged in columns (1) and (2) where the outcome is *Log(Commitments)*. For $\mathbb{1} \times (Credit\ Reduced)$ the result is significant in our most stringent specification in column (4) but is insignificant in column (3) in

Panel B. Overall, these results highlight the robustness of our findings to a matching methodology that is based on prior studies.

4.4 Alternative Definition of a Covenant Breach

Our benchmark definition of covenant violations includes both violations reported by the lender and waivers. In this section, we depart from this definition and exclude covenant waivers or resets as a type of covenant violation, and re-estimate our benchmark results in Table 4. This leads to a much lower number of violations. However, we find that our results remain unchanged using both of our main outcome variables (i.e., *Log(Commitments)* and $\mathbb{1} \times (Credit\ Reduced)$). We report these results in Table A8.

4.5 High Equity Capital Banks: Alternative Threshold

In Table A9 of the Online Appendix, we repeat our exercise in section 4.3 with alternate thresholds classifying a bank as having high or low capital. Specifically, *High Equity Capital* bank is now defined as being in the top quartile of the sample distribution instead of the median. We find our results are nearly unchanged. [20]

4.6 Alternative Measure of Reputation

We repeat our tests on reputation using a continuous measure of reputation as outlined in the previous section. Table A10 reports the results where the interaction is between *Violate* and the natural logarithm of one plus the number of deals. Since this measure includes funds with relatively fewer deals, we expect the lender-leniency effect to be smaller but significant nonetheless. Consistent with our hypothesis, the interaction term is positive when the outcome is *Log(Commitments)* in columns (1) and (2) and negative for $\mathbb{1} \times (Credit\ Reduced)$ in columns (3) and (4). While the estimate on *Violate* is quite similar in magnitude compared to those in Table 8, we see that the interaction effect, while highly significant and positive, is smaller in magnitude in Table 8. The effect is particularly pronounced when we look at $\mathbb{1} \times (Credit\ Reduced)$. Compared to Table 8, where

[20] We also use the total risk-based capital ratio as an alternate measure of lender capital to check the robustness of our results in Table 7. This is defined as the sum of Tier 1 and Tier 2 capital (plus Tier 3 capital where applicable) over total risk-weighted assets. We find similar results using the sample median to classify lenders with high- or low-risk-based capital. These results are available upon request.

we observed that the entire covenant violation effect is mitigated by high-reputation sponsors, we see the limited-punishment effect is much smaller since this measure captures sponsors that are below the top 50 or 100 ranked funds in our sample.

4.7 Fee-based Income

The repeated-deals argument stems from the idea that high-reputation sponsors are more skilled in resolving distress (Hotchkiss et al., 2021; Block, Jang, Kaplan, and Schulze, 2022) and generating value (Gompers et al., 2022). Additionally, lenders might expect repeated deals to generate a higher volume of fee-based income with the same sponsor in future LBOs as it is well-known that banks earn various types of fees during the loan syndication process (Blickle et al., 2020; Bruche, Malherbe, and Meisenzahl, 2020). Following this argument, if sponsored loans are associated with higher fee-based income at the *intensive margin*, lenders are even more likely to display limited punishment in expectation of higher future income.

We obtain data from DealScan and provide suggestive evidence that this is indeed the case: PE-sponsored loans are associated with higher upfront fees (which include underwriting fees) and commitment fees. Figure A1 in the Online Appendix plots commitment fees and upfront fees for PE and non-PE loans between the period of 2012 and 2021, measured in basis points. We observe both fee types are higher for sponsored loans, and the effect is particularly pronounced for commitment fees. We also estimate a simple regression that confirms a positive correlation between PE-sponsorship and fee-based income using DealScan data *only*, as reported in the Online Appendix Table A11. This positive correlation is potentially related to PE deals being more complex relative to non-PE deals, thus requiring higher fee rates. Higher fees in turn are consistent with limited-punishment or greater continuation lending when sponsored-borrowers are in distress.

5 Conclusion

This paper examines how PE sponsors shape the enforcement of debt contracts in the syndicated loan market, using covenant violations as an empirical setting. By combining supervisory data from the Shared National Credit Program with LBO information from Preqin, we build a novel

loan-level dataset of PE-sponsored borrowers, their covenants, covenant compliance, and post-violation outcomes. We find that PE-backed borrowers violate covenants more often than non-PE-backed borrowers. Yet, lenders do not reduce the stock of available credit to PE-backed borrowers as much as they do when non-PE firms violate covenants. This limited-punishment effect is present in both covenant-heavy and covenant-lite loans but is stronger for well-capitalized banks. We also find similar patterns when we look at other loan terms such as maturity and interest rate spread, although our results are strongest for loan commitments. We show that our result is driven by two related mechanisms: (i) a repeated-deals mechanism as lenders and sponsors frequently interact in credit markets, which incentivizes lenders to preserve relationship rent, and (ii) the high bargaining power of PE sponsors in renegotiating loan contracts, particularly when a given lender is heavily reliant on a sponsor for deal flow. Our results are consistent with recent discussions by Buccola (2023) who argue that equity sponsors rather than senior lenders have practical control over the way that distressed companies respond to their financial problems. Further, we provide novel descriptive facts about loan contracts in buyouts, such as amendments outside of distress and differences in non-bank participation in PE-sponsored vs non-PE loans.

Our detailed loan-level database allows us to overcome standard endogeneity concerns related to covenant violations. In particular, our baseline research design compares credit outcomes following covenant violations for reasonably comparable loans with similar credit risk issued by the same bank to borrowers in the same sector who differ only by PE-sponsorship status. We also exploit bank examiner personality traits in an instrumental variable setting, where the excluded instrument is the strictness of the bank supervisor at the time of loan origination. Finally, to further mitigate endogeneity concerns, we deploy a matching methodology following prior studies and show that our results hold when we match PE to non-PE loans based on debt, assets, EBITDA, and default probability.

Overall, we uncover a novel mechanism that affects lenders' enforcement behavior following a contractual breach. Our findings suggest sponsors dampen the effect of state-contingent allocation of creditor control rights, allowing PE-backed firms more financial flexibility in distress and therefore directly affecting the corporate debt policy of a large share of borrowers in the syndicated loan market.

References

Achleitner, A.-K., R. Braun, B. Hinterramskogler, and F. Tappeiner (2012). Structure and determinants of financial covenants in leveraged buyouts. *Review of Finance 16*(3), 647–684.

Agarwal, S., D. Lucca, A. Seru, and F. Trebbi (2014). Inconsistent regulators: Evidence from banking. *The Quarterly Journal of Economics 129*(2), 889–938.

Axelson, U., T. Jenkinson, P. Strömberg, and M. S. Weisbach (2013). Borrow cheap, buy high? The determinants of leverage and pricing in buyouts. *The Journal of Finance 68*(6), 2223–2267.

Badoer, D. C., M. Emin, and C. M. James (2021). Contracting costs and reputational contracts. *Available at SSRN 3536458*.

Barber, B. M. and A. Yasuda (2017). Interim fund performance and fundraising in private equity. *Journal of Financial Economics 124*(1), 172–194.

Becher, D. A., T. P. Griffin, and G. Nini (2022). Creditor control of corporate acquisitions. *The Review of Financial Studies 35*(4), 1897–1932.

Becker, B. and V. Ivashina (2016). Covenant-light contracts and creditor coordination. *Riksbank Research Paper Series* (149), 17–1.

Berlin, M., G. Nini, and G. Y. Edison (2020). Concentration of control rights in leveraged loan syndicates. *Journal of Financial Economics 137*(1), 249–271.

Bernstein, S., J. Lerner, and F. Mezzanotti (2019). Private equity and financial fragility during the crisis. *The Review of Financial Studies 32*(4), 1309–1373.

Blickle, K., Q. Fleckenstein, S. Hillenbrand, and A. Saunders (2020). The myth of the lead arranger's share. *FRB of New York Staff Report* (922).

Block, J., Y. S. Jang, S. N. Kaplan, and A. Schulze (2023). A survey of private debt funds. Technical report, National Bureau of Economic Research.

Block, J. H., Y. S. Jang, S. N. Kaplan, and A. Schulze (2022). A survey of private debt funds. *Available at SSRN*.

Boucly, Q., D. Sraer, and D. Thesmar (2011). Growth LBOs. *Journal of Financial Economics 102*(2), 432–453.

Bräuning, F., V. Ivashina, and A. Ozdagli (2022). High-yield debt covenants and their real effects. National Bureau of Economic Research.

Brown, G. (2021). Debt and leverage in private equity: A survey of existing results and new findings. *Institute for Private Capital, Working Paper, Retrieved from the University of North Carolina at Chapel Hill, Institute for Private Capital*.

Brown, J. R., M. T. Gustafson, and I. T. Ivanov (2021). Weathering cash flow shocks. *The Journal of Finance 76*(4), 1731–1772.

Bruche, M., F. Malherbe, and R. R. Meisenzahl (2020). Pipeline risk in leveraged loan syndication. *The Review of Financial Studies 33*(12), 5660–5705.

Buccola, V. S. (2023). Sponsor control: A new paradigm for corporate reorganization. *U. Chi. L. Rev. 90*, 1.

Caglio, C. R., R. M. Darst, and Kalemli-Özcan (2021). Risk-taking and monetary policy transmission: Evidence from loans to SMEs and large firms. National Bureau of Economic Research.

Carey, M. and M. B. Gordy (2021). The bank as grim reaper: Debt composition and bankruptcy thresholds. *Journal of Financial Economics 142*(3), 1092–1108.

Chava, S. and M. R. Roberts (2008). How does financing impact investment? The role of debt covenants. *The Journal of Finance 63*(5), 2085–2121.

Chernenko, S., I. Erel, and R. Prilmeier (2022). Why do firms borrow directly from nonbanks? *The Review of Financial Studies 35*(11), 4902–4947.

Chodorow-Reich, G. (2014). The employment effects of credit market disruptions: Firm-level evidence from the 2008–9 financial crisis. *The Quarterly Journal of Economics 129*(1), 1–59.

Chodorow-Reich, G., O. Darmouni, S. Luck, and M. Plosser (2022). Bank liquidity provision across the firm size distribution. *Journal of Financial Economics 144*(3), 908–932.

Chodorow-Reich, G. and A. Falato (2022). The loan covenant channel: How bank health transmits to the real economy. *The Journal of Finance 77*(1), 85–128.

Christensen, H. B. and V. V. Nikolaev (2012). Capital versus performance covenants in debt contracts. *Journal of Accounting Research 50*(1), 75–116.

Cohen, G. J., J. Dice, M. Friedrichs, K. Gupta, W. Hayes, I. Kitschelt, S. J. Lee, W. B. Marsh, N. Mislang, M. Shaton, M. Sicilian, and C. Webster (2021). The US syndicated loan market: Matching data. *Journal of Financial Research 44*(4), 695–723.

Davis, S. J., J. Haltiwanger, K. Handley, R. Jarmin, J. Lerner, and J. Miranda (2014). Private equity, jobs, and productivity. *American Economic Review 104*(12), 3956–3990.

Davis, S. J., J. Haltiwanger, K. Handley, B. Lipsius, J. Lerner, and J. Miranda (2021). The economic effects of private equity buyouts. *Available at SSRN 3465723*.

Demiroglu, C. and C. M. James (2010). The role of private equity group reputation in LBO financing. *Journal of Financial Economics 96*(2), 306–330.

Denis, D. J. and J. Wang (2014). Debt covenant renegotiations and creditor control rights. *Journal of Financial Economics 113*(3), 348–367.

Diamond, D. W. (1991). Monitoring and reputation: The choice between bank loans and directly placed debt. *Journal of Political Economy 99*(4), 689–721.

Falato, A. and N. Liang (2016). Do creditor rights increase employment risk? Evidence from loan covenants. *The Journal of Finance 71*(6), 2545–2590.

Favara, G., I. Ivanov, and M. Rezende (2021). Gsib surcharges and bank lending: Evidence from us corporate loan data. *Journal of Financial Economics 142*(3), 1426–1443.

Favara, G., E. Morellec, E. Schroth, and P. Valta (2017). Debt enforcement, investment, and risk taking across countries. *Journal of Financial Economics 123*(1), 22–41.

Fracassi, C., A. Previtero, and A. Sheen (2022). Barbarians at the store? Private equity, products, and consumers. *The Journal of Finance 77*(3), 1439–1488.

Giannetti, M. and R. Meisenzahl (2022). Ownership concentration and performance of deteriorating syndicated loans. *Swedish House of Finance Research Paper* (21-16).

Gompers, P. A., S. N. Kaplan, and V. Mukharlyamov (2022). Private equity and Covid-19. *Journal of Financial Intermediation 51*, 100968.

Gornall, W., O. Gredil, S. T. Howell, X. Liu, and J. Sockin (2021). Do employees cheer for private equity? the heterogeneous effects of buyouts on job quality. Working Paper (December 24, 2021).

Gryglewicz, S. and S. Mayer (2022). Dynamic contracting with intermediation: Operational, governance, and financial engineering. *Journal of Finance, Forthcoming*.

Gustafson, M. T., I. T. Ivanov, and R. R. Meisenzahl (2021). Bank monitoring: Evidence from syndicated loans. *Journal of Financial Economics 139*(2), 452–477.

Haque, S., Y. S. Jang, and S. Mayer (2022). Private equity and corporate borrowing constraints: Evidence from loan level data. *Available at SSRN 4294228*.

Hirtle, B., A. Kovner, and M. Plosser (2020). The impact of supervision on bank performance. *The Journal of Finance 75*(5), 2765–2808.

Hotchkiss, E. S., D. C. Smith, and P. Strömberg (2021). Private equity and the resolution of financial distress. *The Review of Corporate Finance Studies 10*(4), 694–747.

Irani, R. M., R. Iyer, R. R. Meisenzahl, and J.-L. Peydro (2021). The rise of shadow banking: Evidence from capital regulation. *The Review of Financial Studies 34*(5), 2181–2235.

Ivanov, I. and J. Wang (2022). Bank supervision, corporate credit supply, and bank monitoring. *Management Science, Forthcoming*.

Ivashina, V. and A. Kovner (2011). The private equity advantage: Leveraged buyout firms and relationship banking. *The Review of Financial Studies 24*(7), 2462–2498.

Johnston-Ross, E., S. Ma, and M. Puri (2021). Private equity and financial stability: evidence from failed bank resolution in the crisis. Technical report, National Bureau of Economic Research.

Kaplan, S. N. and P. Stromberg (2009). Leveraged buyouts and private equity. *Journal of Economic Perspectives 23*(1), 121–46.

Kiyotaki, N. and J. Moore (1997). Credit cycles. *Journal of Political Economy 105*(2), 211–248.

Lian, C. and Y. Ma (2021). Anatomy of corporate borrowing constraints. *The Quarterly Journal of Economics 136*(1), 229–291.

Liu, T. (2021). Bargaining with private equity: Implications for hospital prices and patient welfare. *Available at SSRN 3896410*.

Malenko, A. and N. Malenko (2015). A theory of LBO activity based on repeated debt-equity conflicts. *Journal of Financial Economics 117*(3), 607–627.

Nini, G., D. C. Smith, and A. Sufi (2009). Creditor control rights and firm investment policy. *Journal of Financial Economics 92*(3), 400–420.

Nini, G., D. C. Smith, and A. Sufi (2012). Creditor control rights, corporate governance, and firm value. *The Review of Financial Studies 25*(6), 1713–1761.

Roberts, M. R. (2015). The role of dynamic renegotiation and asymmetric information in financial contracting. *Journal of Financial Economics 116*(1), 61–81.

Roberts, M. R. and A. Sufi (2009a). Control rights and capital structure: An empirical investigation. *The Journal of Finance 64*(4), 1657–1695.

Roberts, M. R. and A. Sufi (2009b). Renegotiation of financial contracts: Evidence from private credit agreements. *Journal of Financial Economics 93*(2), 159–184.

Shive, S. and M. Forster (2022). Sponsor reputation and capital structure dynamics in leveraged buyouts. *Available at SSRN 3781879*.

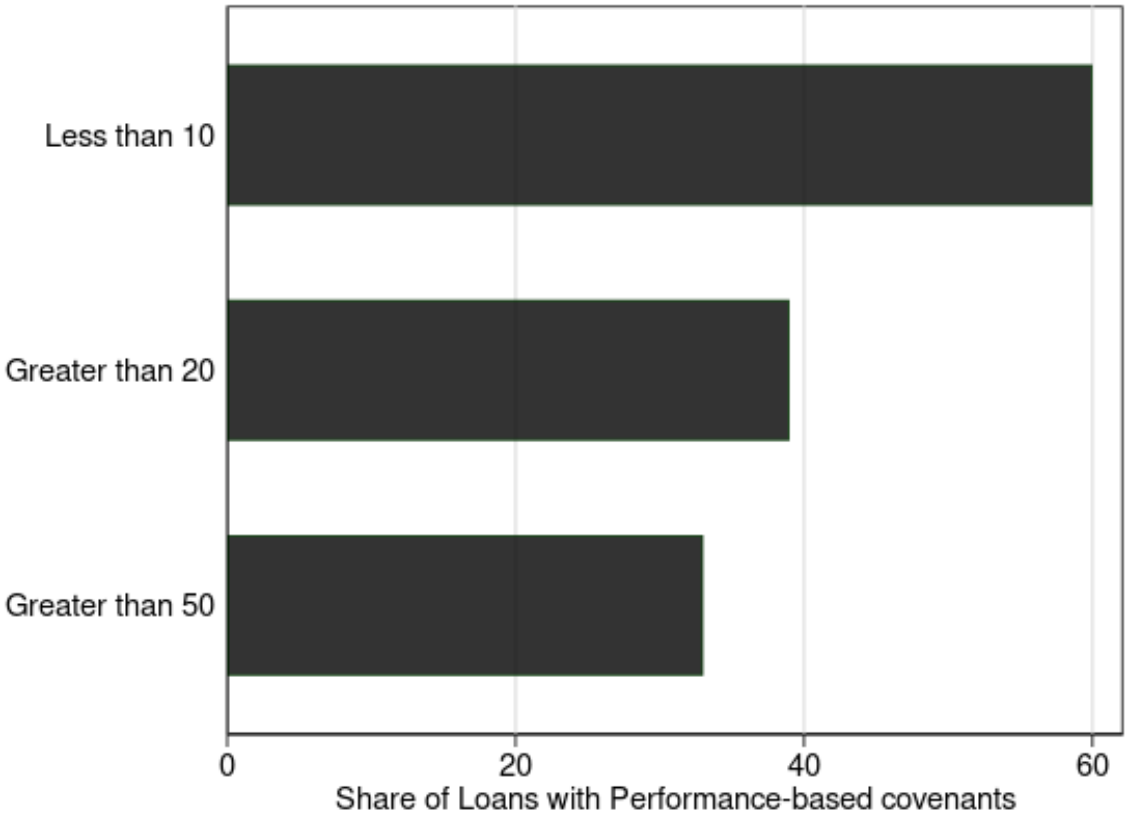
Smith Jr, C. W. and J. B. Warner (1979). On financial contracting: An analysis of bond covenants. *Journal of Financial Economics 7*(2), 117–161.

A Variable definitions

Variable	Definition	Source
Dependent Variables		
Capital Injection	The indicator variable that takes the value of 1 if a loan receives an equity infusion and 0 otherwise.	SNC
Credit Reduced	The indicator variable that takes the value of one if total committed credits between a given bank-firm pair are reduced in a given time period relative to the prior period.	SNC
Commitment Fee	A fee paid to lenders on undrawn amounts under a revolving credit or a term loan prior to draw-down. This fee is usually referred to as a "ticking" fee on term loans.	DealScan
(Days Past Due >=60)	An indicator variable which takes the value of 1 if a loan payment is past due for 60 days or more.	SNC
Loan Spread	Spread over LIBOR expressed in basis points. Obtained using textual analysis from SNC Credit View from variables related to payment schedule and repayment terms description.	SNC and authors' calculations
Log(Commitments)	The natural logarithm of the commitment amount of a given credit facility.	SNC
Log(Loan Maturity)	The natural logarithm of the loan maturity which is measured as the difference between the origination date and maturity date.	SNC
Log(1+Non-Pass Amount)	The natural logarithm of the total dollar amount of a credit's committed exposure where the final exam rating is a Special Mention, Substandard, Doubtful, or Loss.	SNC
Substandard/Doubtful	Indicator variable that takes the value of 1 if a loan is classified as substandard or is under special mention and 0 otherwise.	SNC
Upfront Fee	A fee paid by the issuer at the time of deal closure. It is often tiered, with the lead arranger receiving a larger amount in consideration for structuring and/or underwriting the loan.	DealScan
Control Variables		
Amendment Outside Distress	Is an indicator variable that takes the value of 1 if a loan commitment amount is changed in period t relative to period $t-1$ outside of our definition of covenant violation.	SNC and authors' calculations
Concordance Rating	A numerical risk rating that federal supervisors assign to each credit facility at a given point in time. Lower ratings denote lower risk in a particular credit facility. We use the variable *Adjusted Concordance Rating*, which is based on the *Reported Concordance Rating* but is updated to reflect missing or invalid rating information reported by the Agent Bank. A rating of 1 is *Investment Grade Pass*, 2 is *Non-Investment-Grade pass*, 3 is *Lowest Rated Pass*, 4 is *Special Mention*, 5 is *Substandard*, 6 is *Doubtful* and 7 is *Loss*. We interchangeably use the terms "Supervisory Risk Ratings" and "Concordance Rating". For an example of how loan quality is mapped from the agent bank's internal rating to supervisory rating, see this reporting form by the SNC office.	SNC
Covenant-Lite Loan	A loan that has none of the following traditional financial maintenance covenants: (i) leverage ratio or senior leverage ratio, (ii) interest coverage ratio, (iii) debt service coverage ratio, and (iv) fixed charge coverage ratio. Covenant-heavy loans are defined symmetrically.	SNC and authors' calculations
Default	An indicator variable that takes the value of 1 if any payment related to a given loan is 60 days or longer past due and 0 otherwise.	SNC and authors' calculations
High Reputation	An indicator that takes the value of 1 if a PE sponsor is ranked within the top 50 of all sponsors in terms of market share of deal volume in the full SNC sample.	SNC and authors' calculations
Liquidity Covenants	An indicator variable that takes the value of 1 if a covenant explicitly mentions it contains liquidity covenants such as the current ratio in the description.	SNC
Loan Purpose	An indicator variable that takes the value of one for Acquisition and/or Merger Financing, General Corporate Purpose, Refinancing/Consolidation, etc.	SNC
Loan Time-to-Maturity	The difference between the loan maturity date and the review date (in years) of a given credit facility.	SNC
Loan Type	An indicator variable that takes the value of one for different loan facilities such as revolving credit lines, term loans, or other loans.	SNC
Negative Covenants	An indicator variable that takes the value of 1 if a covenant explicitly mentions negative covenants in the description.	SNC
Non-performance-based Covenant	Captures primarily negative covenants (e.g., equity payment limitations), affirmative covenants (e.g., financial reporting to the lender), minimum current ratio requirement, and maximum capital expenditure limits.	SNC

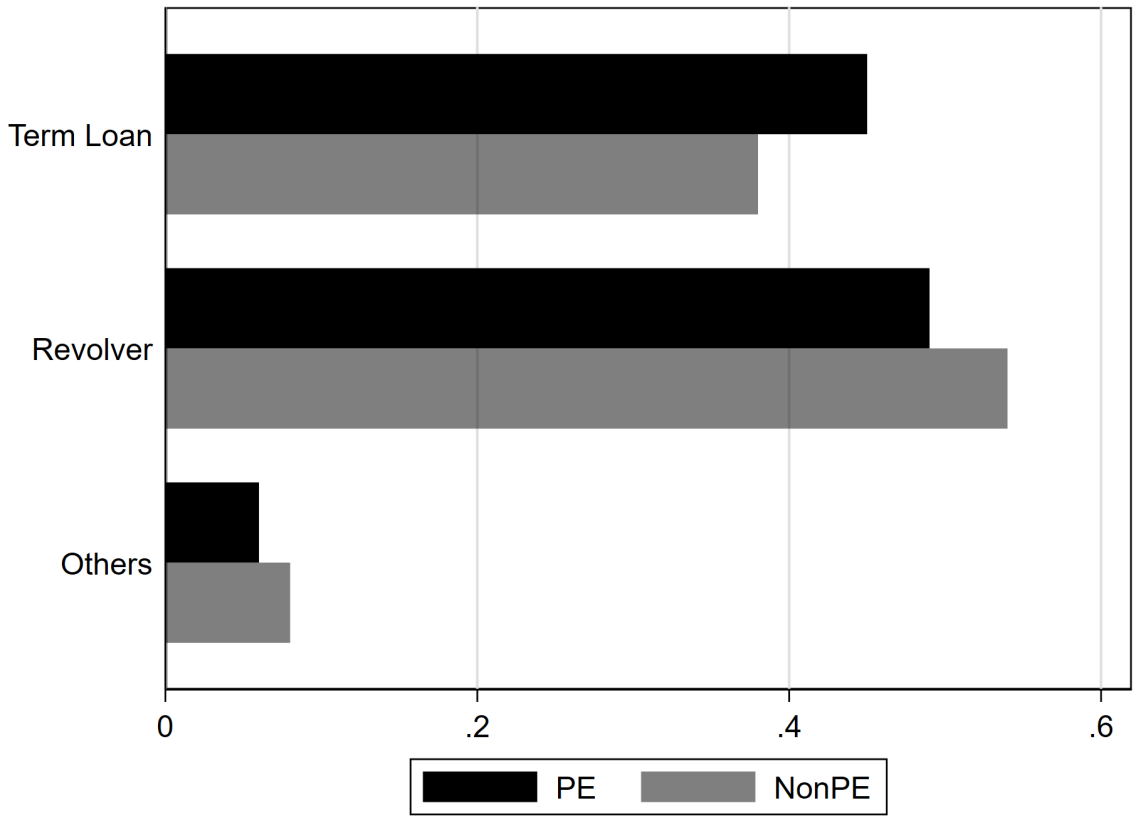
PE	Indicator variable that takes the value of 1 if a loan is sponsored by a PE firm and 0 otherwise.	SNC
Performance-based Covenant	An indicator variable that takes the value of 1 for any one of the following covenants: debt-to-EBITDA ratio, senior debt-to-EBITDA ratio, interest coverage ratio, fixed charge coverage ratio, debt service coverage ratios, level of EBITDA, minimum profitability requirements, debt-to-equity ratio, loan-to-value ratio, and net worth requirements.	SNC
Probability of Default	Bank estimated probability of default for a given borrower. Reported default probabilities are typically forward-looking one-year ahead projections.	FR Y-14Q
Public	An indicator variable which takes the value of 1 if a firm is publicly traded on a stock exchange in a given year.	FR Y-14Q
Total Number of Institutional Lenders	The number of institutional lenders (e.g., CLOs, hedge funds, or direct lenders) that invest in a given loan syndicate at a given point in time. This variable is computed only for loans with at least one institutional investor at any time.	SNC and authors' calculations
Total Number of Lenders	The number of lenders in a given loan syndicate at a given point in time.	SNC
Total PE Sponsor-Bank Exposure	The sum of all outstanding *utilized commitment* by all portfolio companies that are funded by a given PE fund-bank pair at observation date t.	SNC and authors' calculations
Total Risk-Based Capital Ratio	A ratio of the total risk-based capital over Risk-Weighted Assets, constructed at the Bank Holding Company $\times$ Time level.	FR Y-9C and authors' calculations
Violate	An indicator variable that takes the value of 1 if a loan breaches a covenant or requires a waiver or amendment in order to stay compliant and 0 otherwise. In robustness tests, we exclude waivers and resets.	SNC
Utilized Exposure	The outstanding drawn amount under a given line of credit in millions of US dollars.	SNC
Utilization Rate	The outstanding drawn amount divided by the total commitment amount.	SNC

Figure 1: Syndicate Concentration and Share of Performance-based Covenants in PE



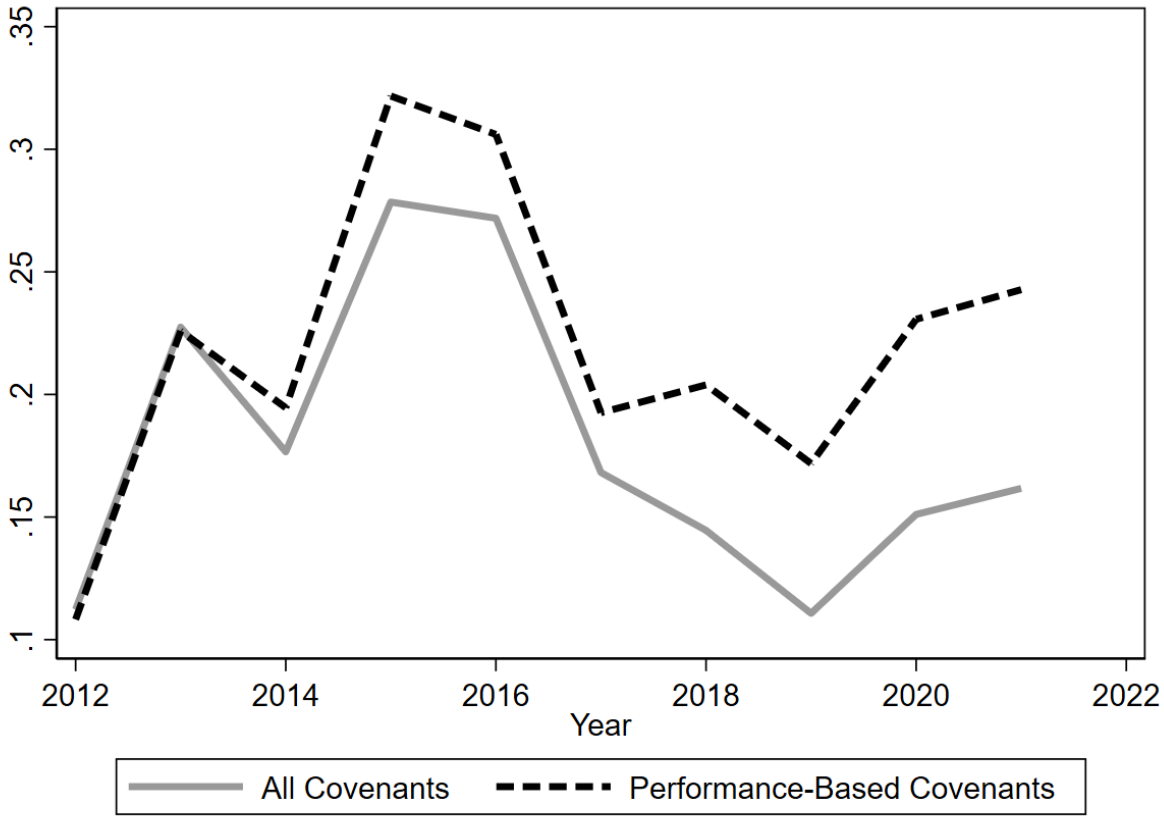
(a) *Notes: This chart shows the relationship between the number of lenders in a syndicate and the likelihood of the loan having performance-based covenants. The y-axis plots buckets of the number of non-bank investors holding a given loan at a given point in time, and the x-axis plots the share of loans in each bucket that have performance-based covenants. Performance-based covenants are defined in Appendix A and contain mostly traditional maintenance covenants such as maximum leverage ratio, interest coverage ratio, fixed charge coverage ratio, or debt service coverage ratio. The sample is restricted to PE-sponsored loans.*

Figure 2: Share of Commitments by Loan and Firm-Type



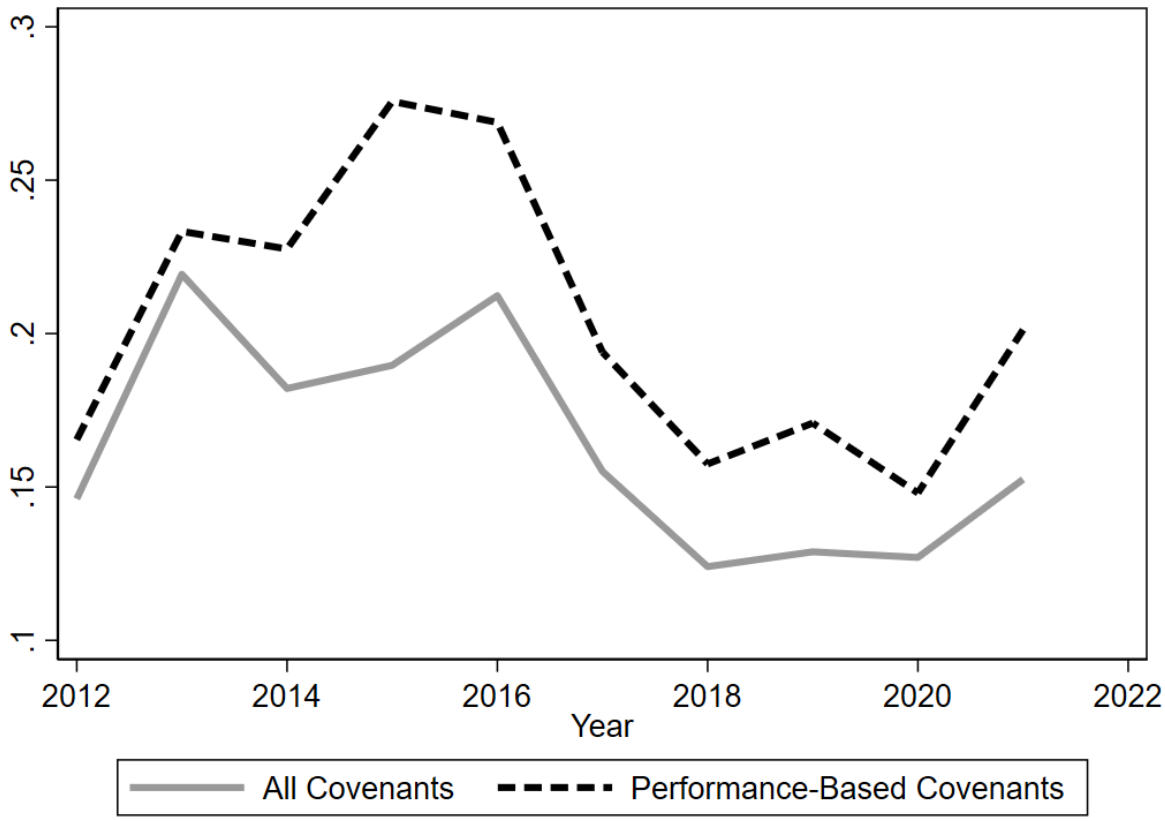
(a) *Notes: This chart plots the share of different types of loans within the PE and non-PE sample in the SNC database. Loan types are grouped into term loans, credit lines, and other types of facilities. All variables are defined in Appendix A.*

Figure 3: Probability of Violating a Covenant: PE Firms



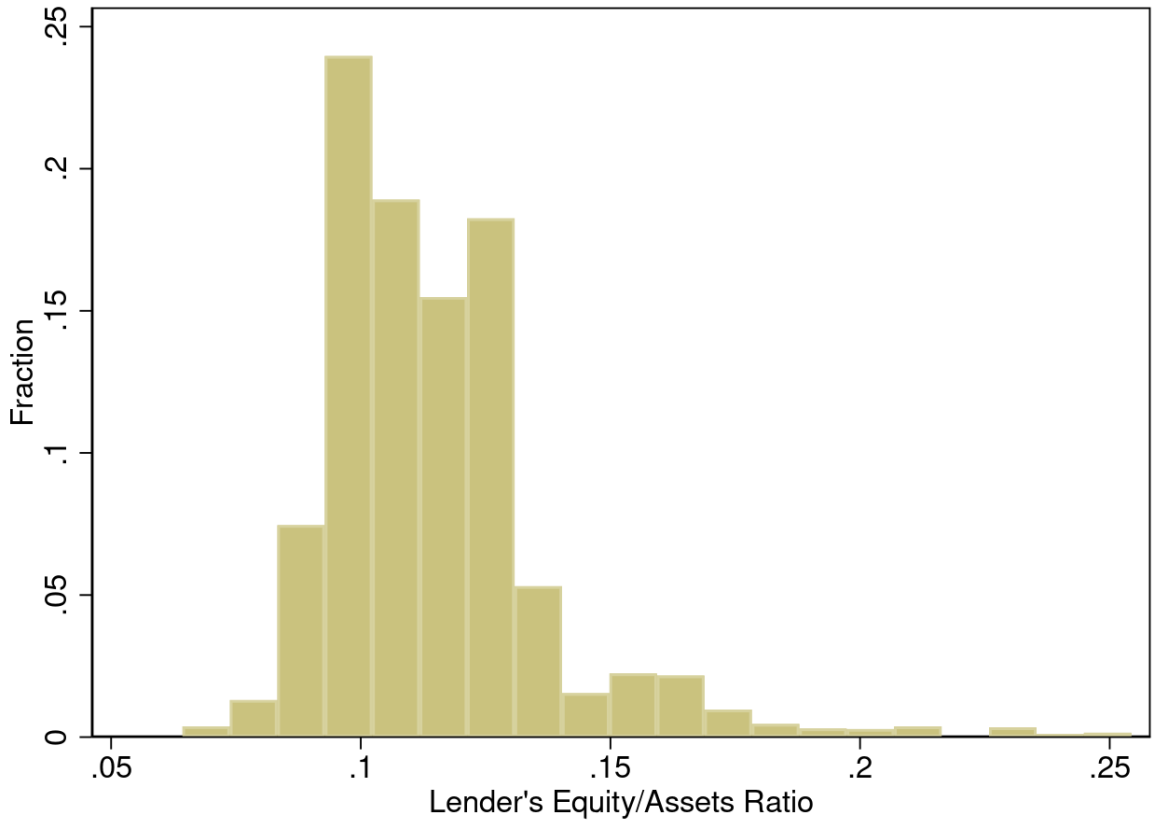
(a) *Notes: This chart plots the share of loans that are violated in a given year for firms backed by PE sponsors. The grey line plots the trend for all types of covenants, while the dashed black line restricts the same to only performance-based covenants. Performance-based covenants are defined in Appendix A.*

Figure 4: Probability of Violating a Covenant: Non-PE Firms



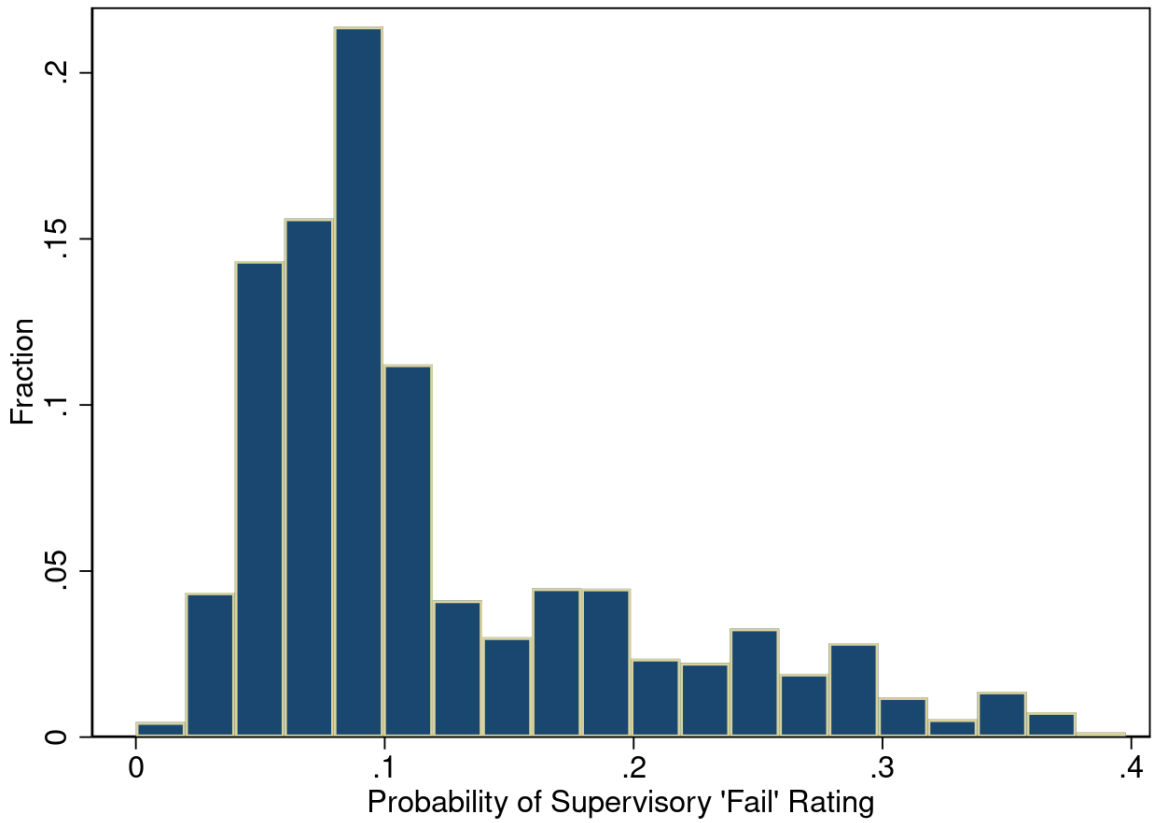
(a) *Notes: This chart plots the share of loans that are violated in a given year for firms not backed by PE. The grey line plots the trend for all types of covenants, while the dashed black line restricts the same to only performance-based covenants. Performance-based covenants are defined in Appendix A.*

Figure 5: Bank Capital: Equity to Assets Ratio



(a) *Notes: This chart plots the distribution of the lender's capital, proxied by the equity to assets ratio, using a histogram of 20 equal-width bins. The sample is restricted to the merged sample that includes the lender's financial information from FR-Y9C, leading to 28,550 unique loan-time observations.*

Figure 6: Examiner Strictness



(a) *Notes: This chart plots the distribution of examiner strictness. Examiner strictness is measured as the share of fail ratings assigned by a given examiner-in-charge. Thus, for a given examiner-in-charge, it is measured as the number of fail ratings over her total number of exams. The benchmark sample has 540 unique examiners.*

Table 1: Summary Statistics

Panel A: PE-backed	N	Mean	Stdev	p50	p25	p75
Commitments (USD Mn)	19,189	492	743	250	95	600
Maturity (Years)	19,189	6.1	7.7	5	5	7
Utilization Rate	19,189	0.62	0.42	0.85	0.13	1
Concordance Rating	19,189	2.5	1.2	2	2	3
Total PE Sponsor-Bank Exposure (USD Bn)	19,188	10.7	19.7	2.25	0.32	12.5
Amendment Outside Distress	19,188	0.33	0.47	0	0	1
Total Number of Lenders in Syndicate	19,189	86.2	195	10	6	27
Total Number of Institutional/Non-Bank Lenders	16,947	96.9	206	12	7	46
Loan Spread (bps)	3,832	322	169	300	200	425
Covenant Violations Waived or Reset (%)	3,420	13.9	-	-	-	-
Panel B: Non-PE-backed						
Commitments (USD Mn)	24,481	403	664	198	75	465
Maturity (Years)	24,481	6.1	3.36	5	5	7
Utilization Rate	24,481	0.61	0.41	0.73	0.16	1
Concordance Rating	24,481	2.3	1.2	2	2	3
Total Number of Lenders in Syndicate	24,481	44.3	115	8	5	17
Total Number of Institutional/Non-Bank Lenders	20,781	51.4	123	10	6	20
Amendment Outside Distress	24,481	0.32	0.46	0	0	1
Loan Spread (bps)	4,532	307	154	300	200	400
Covenant Violations Waived or Reset (%)	2,686	13.9	-	-	-	-

(a) *Notes: This table reports summary statistics of loan-time observations included in the benchmark sample from the Shared National Credit. The summary statistics presented here pertain to loans that have been sampled and that have available information for all loan and borrower characteristics. Time is defined at the year-quarter level. All variables are defined in Appendix A.*

Table 2: Covenant Type and Dollar Volume

		Commitment (Mn USD)	
Panel A: PE-backed loans	Freq (%)	Mean	Median
Leverage/Senior Leverage Ratio	29.3	405	200
Negative Covenants	20.0	635	365
Interest Coverage Ratio	13.3	428	234
Affirmative Covenants	10.6	650	350
Fixed Charge Coverage	9.9	237	117
Current Ratio	4.6	617	393
Springing Covenant	4.5	450	200
Debt Service Coverage Ratio	3.3	254	147
Net Worth Covenant	2.1	339	210
Maximum Capital Expenditure	2.0	170	85
Loan to Value	0.3	489	380
Panel B: Non-PE-backed loans			
Leverage/Senior Leverage Ratio	29.5	433	200
Negative Covenants	9.4	486	250
Interest Coverage Ratio	15.8	404	200
Affirmative Covenants	4.3	430	231
Fixed Charge Coverage	12.8	223	110
Current Ratio	4.7	464	185
Springing Covenant	2.7	383	250
Debt Service Coverage Ratio	4.0	195	102
Net Worth Covenant	4.0	314	160
Maximum Capital Expenditure	3.8	209	100
Loan to Value	0.4	218	125

(a) *Notes: This table reports the frequency of different types of loan covenants, split between the PE-backed loan sample (Panel A) and the non-PE-backed loan sample (Panel B) in the SNC database. We also report the distribution of loan amounts secured by each covenant and borrower type. All variables and covenants are defined in Appendix A.*

Table 3: Probability of Violating a Covenant and Subsequent Resolution

$Y_{j,i,b,t}$	$\mathbb{1}(Violated)$			$\mathbb{1}(Violation\ Waived)$		
	(1)	(2)	(3)	(4)	(5)	(6)
PE	0.0391***	0.0384***	0.0445***	0.0398***	0.0397***	0.0454***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
R-squared	0.102	0.117	0.129	0.0934	0.108	0.120
Bank x Time FE	Y	Y	Y	Y	Y	Y
Sector x Time	N	Y	Y	N	Y	Y
Loan Controls	Y	Y	Y	Y	Y	Y
Origination Yr-Qtr FE	N	N	Y	N	N	Y
N	43,491	43,481	43,478	43,491	43,481	43,478

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports estimates of a linear probability model. In columns (1)-(3), the dependant variable is an indicator taking the value of 1 if a covenant is violated at a given point in time and 0 otherwise. In columns (4)-(6), the dependant variable is an indicator taking the value of 1 if a loan covenant would have been noncompliant but for a covenant waiver or reset granted by the lender. PE is an indicator variable taking the value of 1 if a loan involves a PE-owned borrower and 0 otherwise. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC review date. Loan controls include utilization rate, total loan commitment in logs, time-to-maturity, and indicators for supervisory risk rating, loan type (credit lines, term loans, etc.), and loan purpose. All variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table 4: Benchmark Results: Covenant Breach and Creditor Enforcement

Panel A : Log (Commitments)	(1)	(2)	(3)	(4)	(5)	(6)
Violate	-0.124***	-0.116***	-0.113***	-0.111***	-0.0958***	-0.280***
	(0.027)	(0.027)	(0.027)	(0.027)	(0.026)	(0.038)
PE × Violate	0.0776**	0.0686**	0.0682**	0.0678**	0.0680**	0.124***
	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)	(0.045)
R-squared	0.752	0.754	0.756	0.756	0.767	0.398
Bank x Time FE	Y	Y	Y	Y	Y	Y
Sector x Time FE	N	Y	Y	Y	Y	Y
Loan Controls	Y	Y	Y	Y	Y	Y
Origination Yr-Qtr FE	N	N	Y	Y	Y	Y
Covenant-type FE	N	N	N	Y	Y	Y
Firm FE	N	Y	Y	Y	N	N
Bank-Firm FE	N	N	N	N	Y	N
N	42,874	42,864	42,861	42,861	42,801	43,478
Panel B : 𝟙 (Credit Reduced)	(1)	(2)	(3)	(4)	(5)	(6)
Violate	0.0842***	0.0874***	0.0818***	0.0812***	0.0766***	0.0671***
	(0.018)	(0.019)	(0.018)	(0.018)	(0.018)	(0.014)
PE × Violate	-0.0854***	-0.0844***	-0.0792***	-0.0793***	-0.0808***	-0.0538***
	(0.026)	(0.027)	(0.026)	(0.026)	(0.026)	(0.020)
R-squared	0.165	0.176	0.181	0.181	0.187	0.0642
Bank x Time FE	Y	Y	Y	Y	Y	Y
Sector x Time FE	N	Y	Y	Y	Y	Y
Loan Controls	Y	Y	Y	Y	Y	Y
Origination Yr-Qtr FE	N	N	Y	Y	Y	Y
Covenant-type FE	N	N	N	Y	Y	Y
Firm FE	N	Y	Y	Y	N	N
Bank-Firm FE	N	N	N	N	Y	N
N	36,560	36,548	36,545	36,545	36,496	37,274

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports the benchmark results where the dependent variable is (i) the natural logarithm of loan commitment at time t in Panel A, and (ii) 𝟙 (Credit Reduced) in Panel B.* PE *is an indicator variable taking the value of 1 if a loan involves a PE-owned borrower and 0 otherwise. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC report date. Loan controls include utilization rate, total loan commitment in logs, time-to-maturity, and indicators for supervisory risk rating, loan type (credit lines, term loans, etc.), and loan purpose. Covenant types are split into performance-based and non-performance-based. All variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table 5: Instrumental Variable: Examiner Strictness at Loan Origination

	$\mathbb{1}(Credit\ Reduced)$		$Log\ (Commitments)$		$Log\ (Maturity)$	
	(1)	(2)	(3)	(4)	(5)	(6)
Violate	0.389*	0.457**	-2.624***	-1.823***	-2.821***	-3.327***
	(0.204)	(0.198)	(0.492)	(0.457)	(0.287)	(0.396)
PE × *Violate*	-0.674**	-0.609**	1.241*	0.381*	0.859**	1.460***
	(0.320)	(0.306)	(0.733)	(0.218)	(0.397)	(0.446)
District FE	N	Y	N	Y	N	Y
District x Year FE	Y	N	Y	N	Y	N
Bank FE	Y	N	Y	N	Y	N
Bank x Time FE	N	Y	N	Y	N	Y
Loan Controls	Y	Y	Y	Y	Y	Y
Sector FE	Y	Y	Y	Y	Y	Y
First-Stage F-Stat	19.3	21.5	23.7	20.9	24.0	33.1
N	28,254	28,217	33,124	33,087	33,124	33,093

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports instrumental variable regression estimates where the outcomes are* $\mathbb{1}$ *(Credit Reduced), Log(Commitments), and the natural logarithm of loan maturity expressed in number of quarters (Log(Maturity)). The excluded instrument is the strictness of the lender's supervisor at the time of loan origination. Sector fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC report date. Loan controls include utilization rate and time-to-maturity in Columns (1) - (4) and utilization rate and Log (commitments) in columns (5) and (6). They also include indicators for supervisory risk rating, loan type, and loan purpose in all specifications. All variables are defined in Appendix A. Standard errors are clustered at the Bank* × *Time level.*

Table 6: Enforcement and Covenant Heterogeneity

Y : *Log (Commitments)*	Covenant-Heavy Sample		Covenant-Lite Sample	
	(1)	(2)	(3)	(4)
Violate	-0.0871***	-0.0788**	-0.187***	-0.180***
	(0.033)	(0.033)	(0.057)	(0.058)
PE × *Violate*	0.0902**	0.0800*	0.198***	0.183**
	(0.045)	(0.045)	(0.077)	(0.077)
R-squared	0.764	0.770	0.780	0.784
Firm FE	Y	Y	Y	Y
Bank x Time FE	Y	Y	Y	Y
Sector x Time FE	N	Y	N	Y
Loan Controls	Y	Y	Y	Y
N	21,948	21,934	19,575	19,557

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports OLS estimates of the baseline equation, estimated separately on loans that are classified as "Covenant-Heavy" and those that are classified as "Covenant-Lite." Covenant-Heavy loans are those that have at least one of the following financial covenants: maximum leverage/senior leverage ratio, interest coverage ratio, debt service coverage ratio, and fixed charge coverage ratio. Covenant-lite loans are those that have none of the financial covenants listed above. Loan controls include utilization rate, time-to-maturity, and indicators for supervisory risk rating, loan type (credit lines, term loans, etc.), loan purpose, and loan origination year-quarter. All variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table 7: Covenant Violations, PE presence, and Bank Capital

$Y: Log(Commitments)$	High Equity Capital			Low Equity Capital		
	(1)	(2)	(3)	(4)	(5)	(6)
Violate	-0.392***	-0.382***	-0.374***	-0.262***	-0.267***	-0.226***
	(0.050)	(0.050)	(0.050)	(0.067)	(0.063)	(0.061)
$PE \times Violate$	0.202***	0.184***	0.182**	0.0848	0.0928	0.129*
	(0.069)	(0.069)	(0.073)	(0.081)	(0.080)	(0.072)
R-squared	0.377	0.401	0.409	0.338	0.376	0.408
Bank x Time FE	Y	Y	Y	Y	Y	Y
Sector x Time FE	N	Y	Y	N	Y	Y
Loan Controls	Y	Y	Y	Y	Y	Y
Origination Yr-Qtr FE	N	N	Y	N	N	Y
N	14,320	14,311	14,308	14,153	14,129	14,126

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports OLS estimates where the dependent variable is the natural logarithm of loan commitment between a given firm-bank pair at time t. High Equity Capital lenders are defined as those with an equity-to-assets ratio above the sample median in the year preceding a covenant violation. Low Equity Capital banks are defined symmetrically. PE is an indicator variable taking the value of 1 if a loan involves a PE-owned borrower and 0 otherwise. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC report date. Loan controls include utilization rate, total loan commitment in logs, time-to-maturity, and indicators for supervisory risk rating, loan type (credit lines, term loans, etc.), and loan purpose. All variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table 8: Sponsor Reputation and Creditor Enforcement

	Log (Commitments)		*𝟙(Credit Reduced)*	
	(1)	(2)	(3)	(4)
Violate	-0.275***	-0.267***	0.0559***	-0.267***
	(0.034)	(0.034)	(0.012)	(0.034)
High Reputation	0.252***	0.256***	0.00363	0.00472
	(0.026)	(0.025)	(0.008)	(0.008)
Violate × High Reputation	0.152***	0.152***	-0.0545**	-0.0593***
	(0.049)	(0.049)	(0.022)	(0.022)
R-squared	0.389	0.394	0.0515	0.0610
Bank x Time FE	Y	Y	Y	Y
Sector x Time FE	Y	Y	Y	Y
Origination Yr-Qtr FE	N	Y	N	Y
Loan Controls	Y	Y	Y	Y
N	43,490	43,480	37,285	37,275

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports OLS estimates where the dependant variables are the same as in the baseline.* High Reputation *is a proxy for a sponsor's reputation and takes the value of 1 if the sponsor is ranked within the top 50 funds in the baseline sample in terms of market share of deal volume in the US syndicated loan market. In addition to the controls listed above, all regressions also include an indicator for PE-backed firms. Loan controls include utilization rate, total loan commitment in logs, time-to-maturity, and indicators for supervisory risk rating, loan type (credit lines, term loans, etc.), and loan purpose. All variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table 9: Loan Renegotiation and PE Bargaining Power

Panel A : Concentrated Syndicates	*Log (Commitments)*		*𝟙(Credit Reduced)*	
	(1)	(2)	(3)	(4)
PE × Violate × Concentrated	0.240***	0.252***	-0.00844	-0.0138
	(0.079)	(0.079)	(0.044)	(0.044)
Violate × Concentrated	-0.374***	-0.374***	0.0551*	0.0544*
	(0.056)	(0.056)	(0.030)	(0.030)
Concentrated	-1.023***	-1.017***	0.0496***	0.0502***
	(0.020)	(0.020)	(0.009)	(0.009)
R-squared	0.567	0.572	0.0715	0.0752
Bank x Time FE	Y	Y	Y	Y
Sector x Time FE	Y	Y	Y	Y
Origination Yr-Qtr FE	N	Y	N	Y
Loan Controls	Y	Y	Y	Y
N	37,555	37,551	32,277	32,275
Panel B : Reliance on Deal Flow	*Log (Commitments)*		*𝟙(Credit Reduced)*	
	(1)	(2)	(3)	(4)
Violate	-0.193***	-0.184***	0.0456**	0.0453**
	(0.044)	(0.045)	(0.023)	(0.023)
Violate × High Exposure	0.151**	0.148**	-0.0719**	-0.0723**
	(0.063)	(0.063)	(0.031)	(0.031)
High Exposure	0.355***	0.352***	0.0172*	0.0134
	(0.027)	(0.027)	(0.010)	(0.010)
R-squared	0.461	0.471	0.0787	0.0787
Bank x Time FE	Y	Y	Y	Y
Sector x Time FE	Y	Y	Y	Y
Origination Yr-Qtr FE	N	Y	N	Y
Loan Controls	Y	Y	Y	Y
N	19,097	19,100	16,551	16,557

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports two tests related to the high bargaining power of PE sponsors vis-a-vis lenders. Panel A reports triple-difference estimates where the dependent variable is the same as the baseline.* Concentrated *is a proxy for a syndicate's ownership concentration and takes the value of 1 if the total number of institutional lenders in a given loan time is less than the sample median, 0 otherwise. All regressions include lower-order interactions and controls for loan time-to-maturity, utilization rate, and the actual number of institutional lenders. In Panel B, High Exposure captures a lender's total loan exposure to a specific PE sponsor through every outstanding LBO deal. Loan controls also include indicators for supervisory risk rating, loan type (credit lines, term loans, etc.), and loan purpose. All variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table 10: Loan Performance: Downgrades

	$\mathbb{1}(Substandard/Doubtful)$			$log\ (1\ +\ Non\ Pass\ Amount)$		
	(1)	(2)	(3)	(4)	(5)	(6)
Violate	0.204***	0.189***	0.192***	4.722***	4.370***	4.463***
	(0.016)	(0.016)	(0.016)	(0.273)	(0.279)	(0.279)
PE	0.0158***	0.0128**	0.0268***	0.457***	0.392***	0.695***
	(0.006)	(0.005)	(0.005)	(0.113)	(0.107)	(0.107)
$PE \times Violate$	0.0184	0.0140	0.00276	-0.0764	-0.154	-0.358
	(0.023)	(0.022)	(0.023)	(0.389)	(0.398)	(0.400)
R-squared	0.160	0.196	0.214	0.162	0.208	0.227
Firm FE	Y	Y	Y	Y	Y	Y
Bank x Time FE	Y	Y	Y	Y	Y	Y
Sector x Time FE	N	Y	Y	N	Y	Y
Loan Controls	Y	Y	Y	Y	Y	Y
Origination Yr-Qtr FE	N	N	Y	N	N	Y
N	43,491	43,481	43,478	43,491	43,481	43,478

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports OLS estimates where the dependant variable captures loan performance. In columns (1) to (3), we measure performance through an indicator that takes the value of 1 if a loan is classified as Special Mention, Substandard, Doubtful, or Loss. In columns (4) to (6), we use the natural logarithm of 1 plus the dollar amount of a loan facility's committed exposure where the final exam rating is Special Mention, Substandard, Doubtful, or Loss. Loan controls are the same as in the baseline. All variables are defined in Section Appendix A. Standard errors are clustered at the Bank × Time level.*

Table 11: Loan Defaults

$Y : \mathbb{1} \times (Days\ Past\ Due >= 60)$	(1)	(2)	(3)	(4)
Violate	0.0143***	0.00926**	0.0143***	0.00964**
	(0.004)	(0.004)	(0.004)	(0.004)
$PE \times Violate$	-0.0107*	-0.0135**	-0.0105*	-0.0140***
	(0.006)	(0.005)	(0.006)	(0.005)
R-squared	0.168	0.477	0.159	0.479
Firm FE	N	Y	N	Y
Bank x Time FE	Y	Y	Y	Y
Sector x Time	Y	Y	Y	Y
Loan Controls	Y	Y	Y	Y
Origination Yr-Qtr FEs	N	N	Y	Y
N	43,478	42,861	43,478	42,861

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports regression estimates where the dependent variable is an indicator that takes the value of 1 if a loan payment is past due for 60 days or more. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC report date. Loan controls are the same as in the baseline. All variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table 12: Capital Injection

$\mathbb{1} \times (Capital\ Injection)$	(1)	(2)	(3)	(4)
Violate	0.0178**	0.0165**	0.0165**	0.00597
	(0.007)	(0.007)	(0.007)	(0.005)
$PE \times Violate$	0.0148	0.0174*	0.0153	0.00707
	(0.011)	(0.010)	(0.010)	(0.007)
R-squared	0.0298	0.0450	0.102	0.865
Firm FE	N	N	N	Y
Bank x Time FE	N	N	Y	N
Sector x Time	Y	Y	Y	Y
Origination Yr-Qtr FE	N	Y	Y	N
Loan Controls	Y	Y	Y	Y
N	43,660	43,657	43,478	43,046

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports regression estimates using the baseline equation for equity injection. The dependent variable is an indicator that takes the value of 1 if a loan received equity infusion and 0 otherwise. Equity Infusion is identified from the SNC data as described in section 4. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC report date. Loan controls are the same as in the baseline. All variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table 13: Other Outcomes: Loan Spreads and Maturity

	Loan Spreads				*Loan Maturity*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Violate	50.36***	38.32***	34.43***	-2.345	-1.952***	-1.953***	-1.675***	-0.774***
	(8.122)	(7.674)	(6.801)	(8.071)	(0.269)	(0.199)	(0.266)	(0.275)
PE × *Violate*	-35.66***	-28.94**	-17.65	0.549	1.105**	-0.331	1.032**	-1.845
	(12.693)	(12.014)	(11.077)	(14.026)	(0.447)	(0.349)	(0.431)	(1.603)
R-squared	0.189	0.247	0.397	0.756	0.0366	0.200	0.0936	0.303
Firm FE	N	N	N	Y	N	N	N	Y
Bank x Time FE	N	N	Y	N	N	N	Y	N
Sector x Time	Y	Y	Y	Y	Y	Y	Y	Y
Origination Yr-Qtr FE	N	Y	Y	N	N	Y	N	N
Loan Controls	Y	Y	Y	Y	Y	Y	Y	Y
N	8,334	8,324	8,262	6,962	43,660	43,657	43,481	42,864

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports regression estimates using the baseline equation with additional dependant variables: loan spreads (over LIBOR, expressed in basis points) and loan maturity (expressed in a number of quarters). Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC report date. In columns (1) to (4), loan controls include loan utilization rate and time-to-maturity. In columns (5) to (8), loan controls include loan utilization rate and Log (Commitments). Loan controls also include indicators for loan type. All variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table 14: Matched Sample Analysis using Firm-level Factors

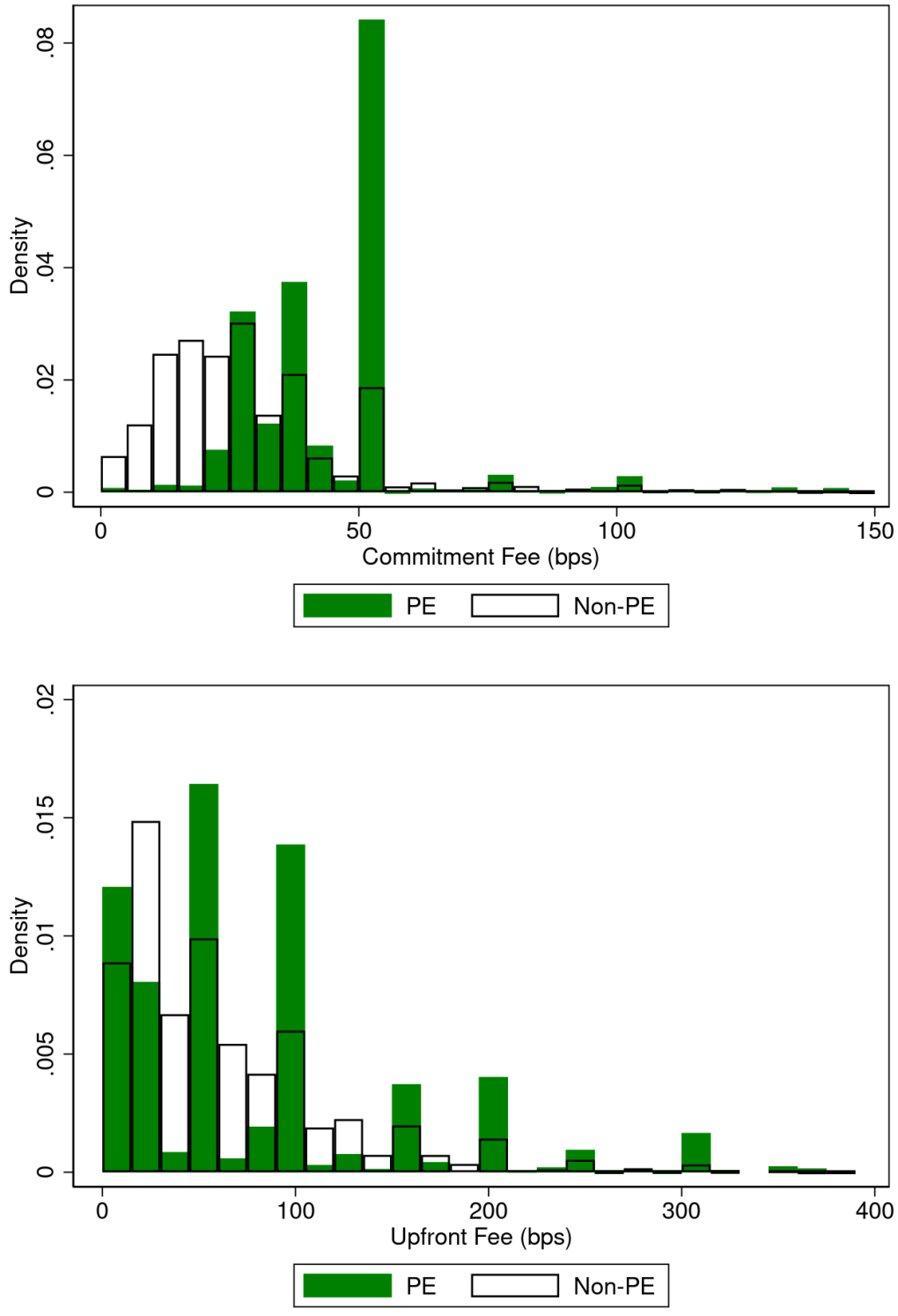
Panel A: Matched Control Sample and firm controls	$Log(Commitments)$		$\mathbb{1}$ $(Credit\ Reduced)$	
	(1)	(2)	(3)	(4)
Violate	-0.224***	-0.211***	0.116***	0.109***
	(0.060)	(0.062)	(0.038)	(0.039)
$PE \times Violate$	0.210**	0.199**	-0.0968*	-0.0896
	(0.082)	(0.084)	(0.055)	(0.056)
R-squared	0.785	0.789	0.245	0.278
N	9,335	9,307	8,093	8,066
Firm FE	Y	Y	Y	Y
Bank x Time FE	Y	Y	Y	Y
Sector x Time	N	Y	N	Y
Loan Controls	Y	Y	Y	Y
Firm-level Controls	Y	Y	Y	Y
Panel B: Only firm-controls without matching				
Violate	-0.189***	-0.181***	0.0898***	0.0913***
	(0.047)	(0.048)	(0.031)	(0.032)
$PE \times Violate$	0.180***	0.183***	-0.0739	-0.0800*
	(0.064)	(0.065)	(0.046)	(0.047)
R-squared	0.780	0.783	0.229	0.251
N	16,207	16,190	13,934	13,913
Firm FE	Y	Y	Y	Y
Bank x Time FE	Y	Y	Y	Y
Sector x Time	N	Y	N	Y
Loan Controls	Y	Y	Y	Y
Firm-level Controls	Y	Y	Y	Y

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports OLS estimates of the benchmark regression, augmented with a matching procedure and firm-level controls from the FR Y-14Q in Panel A. PE loans are matched to non-PE loans based on firm size (Log (Total Assets), Debt/Assets, EBITDA/Assets, and 1-year ahead probability of default in the* pre-buyout *year within the same 2-digit NAICS industry. In Panel B, the control group is not matched but includes firm-level controls. Firm controls in both panels include Debt/Assets, EBITDA/Assets, Log (Total Assets) and* $\mathbb{1} * (Public)$*. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC report date. Loan controls are the same as in the baseline, except for the omission of the supervisory risk rating. All explanatory variables are defined in Appendix A. Standard errors are clustered at the Bank* $\times$ *Time level.*

Online Appendix

Figure A1: Fee-Based Income



(a) *Notes: This chart plots the distribution of the Loan Commitment Fee (upper chart) and Upfront Fee for sponsored and non-sponsored syndicated loans, using data from DealScan between 2012-2021. This data only represents DealScan and is not merged with SNC. Total deals in the top chart is 149,459 and in the bottom chart is 125,955. Data is truncated at the 99 percent level. All explanatory variables are defined in Appendix A.*

Table A1: Loans by Industry (%)

NAICS Code	Desc.	PE	Non-PE
2	Mining, Utilities and Construction	13.1	16
3	Manufacturing	21.8	21.1
4	Trade, Transportation and Warehousing	14.9	16.5
5	IT, Finance, Professional and Management Services	37.7	33.8
6	Education and Health Care	5.6	4.7
7	Arts, Entertainment and Accommodation	5.3	5.8
	Others	1.6	2.1

(a) *Notes: This table reports loan-time observations by 1-digit NAICS code, split by PE and Non-PE loans.*

Table A2: Share of Loans by Concordance Ratings and Borrower Types

Concordance Rating	Description	Pass/Fail	PE	Non-PE
1	Investment Grade Pass	Pass	16.2%	22.5%
2	Non-Investment Grade Pass	Pass	47.8%	43.5%
3	Lowest Rated Pass	Pass	16.9%	17.5%
4	Special Mention	Fail	8.5%	7.5%
5	Substandard	Fail	9.3%	7.7%
6	Doubtful	Fail	0.9%	0.7%
7	Loss	Fail	0.4%	0.6%

(a) *Notes: This table reports the share of observations by Supervisory Risk Rating, also called Concordance ratings, split by borrower type. This rating is used to control for borrower risk in the empirical analysis in this paper. We also add the column Pass/Fail to clarify ratings that correspond to a pass rating. Concordance rating is a 7-scale numerical rating fully defined in Appendix A.*

Table A3: Examiner Strictness at Loan Origination: Robustness Test

	$\mathbb{1}(Credit\ Reduced)$		$Log\ (Commitments)$		$Log\ (Maturity)$	
	(1)	(2)	(3)	(4)	(5)	(6)
Violate	0.439**	0.403*	-1.413***	-0.276	-3.410***	-3.285***
	(0.204)	(0.210)	(0.468)	(0.501)	(0.389)	(0.388)
PE × *Violate*	-0.817***	-0.681**	0.808**	-0.541	1.778***	1.534***
	(0.310)	(0.309)	(0.355)	(0.747)	(0.456)	(0.450)
Bank FE	Y	Y	N	Y	Y	Y
Sector FE	Y	N	Y	N	Y	N
Sector x Time FE	N	Y	N	Y	N	Y
Loan Controls	Y	Y	Y	Y	Y	Y
N	30,516	30,507	35,700	35,679	35,687	35,679

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports instrumental variable regression estimates where the outcomes are indicators for credit reduction, Log(Commitments), and the natural logarithm of loan maturity expressed in a number of quarters. The excluded instrument is the strictness of the lender's supervisor at the time of loan origination. The key difference from Table 5 is that we exclude regulatory district fixed effects. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC report date. Loan controls include utilization rate, total loan commitment in logs, time-to-maturity, and indicators for supervisory risk rating, loan type (credit lines, term loans, etc.), and loan purpose. All explanatory variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table A4: Are the results stronger for covenant-lite loans?

	(1)	(2)	(3)
Violate	-0.117***	-0.115***	-0.0991***
	(0.031)	(0.031)	(0.031)
$PE \times Violate$	0.0911**	0.0867**	0.0768*
	(0.040)	(0.040)	(0.040)
$PE \times Violate \times \mathbb{1}\,(Covlite)$	0.0138	0.0179	0.0278
	(0.077)	(0.077)	(0.077)
R-squared	0.749	0.750	0.754
Firm FE	Y	Y	Y
Bank x Time FE	Y	Y	Y
Sector x Time	N	N	Y
Loan Controls	Y	Y	Y
Origination Yr-Qtr FE	N	Y	Y
N	42,874	42,871	42,864

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports triple interaction specifications to examine if the limited punishment effect is stronger for Covenant-lite loans in our sample. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC report date. All lower-order terms are included but omitted from display for brevity. Loan controls include utilization rate, total loan commitment in logs, time-to-maturity, and indicators for supervisory risk rating and loan type (credit lines, term loans, etc.). All explanatory variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table A5: Sensitivity of Benchmark Result to Loan Renegotiation Outside of Distress

$Y_{j,i,b,t}$: *Log (Commitments)*	(1)	(2)	(3)	(4)	(5)	(6)
Violate	-0.269***	-0.109***	-0.106***	-0.0988***	-0.0899***	-0.238***
	(0.040)	(0.027)	(0.027)	(0.027)	(0.027)	(0.039)
PE × Violate	0.168***	0.134***	0.134***	0.134***	0.135***	0.201***
	(0.048)	(0.035)	(0.035)	(0.035)	(0.036)	(0.047)
Amendment Outside Distress	0.0571**	0.00898	0.0105	0.0117	-0.00463	0.0500**
	(0.025)	(0.018)	(0.018)	(0.018)	(0.017)	(0.025)
PE × Amendment Outside Distress	0.188***	0.187***	0.187***	0.185***	0.188***	0.189***
	(0.042)	(0.035)	(0.035)	(0.035)	(0.035)	(0.041)
R-squared	0.373	0.755	0.757	0.757	0.768	0.404
Bank x Time FE	Y	Y	Y	Y	Y	Y
Sector x Time FE	N	Y	Y	Y	Y	Y
Loan Controls	Y	Y	Y	Y	Y	Y
Origination Yr-Qtr FEs	N	N	Y	Y	Y	Y
Covenant-type FE	N	N	N	Y	Y	Y
Firm FE	N	Y	Y	Y	N	N
Bank-Firm FE	N	N	N	N	Y	N
N	43,491	42,864	42,861	42,861	42,801	43,478

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports the robustness test of Table 4, by testing if the propensity of amendments outside of distress affects renegotiation and debt enforcement upon covenant violation. Amendment_outside_distress takes the value of 1 if a loan commitment amount is changed in period t relative to period $t-1$ outside of our definition of covenant violation. All other controls are the same as the baseline. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC report date. Loan controls include utilization rate, total loan commitment in logs, time-to-maturity, and indicators for supervisory risk rating, loan type (credit lines, term loans, etc.), and loan purpose. Covenant types are split into performance-based and non-performance-based. All explanatory variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table A6: Sponsor Reputation and Creditor Enforcement: Triple Interaction Specification

	$Log\ (Commitments)$		$\mathbb{1}\ (Credit\ Reduced)$	
	(1)	(2)	(3)	(4)
$Violate \times PE \times High\ Reputation$	0.293***	0.296***	-0.0559***	-0.0548***
	(0.067)	(0.065)	(0.021)	(0.021)
$Violate$	-0.293***	-0.289***	0.0543***	0.0566***
	(0.039)	(0.038)	(0.012)	(0.012)
R-squared	0.386	0.391	0.0515	0.0610
Bank x Time FE	Y	Y	Y	Y
Sector FE	Y	N	Y	N
Sector x Time FE	N	Y	N	Y
Loan Controls	Y	Y	Y	Y
N	43,490	43,480	37,285	37,275

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports OLS estimates where the dependant variable is the natural logarithm of loan commitment between a given firm-bank pair at time t in columns (1) and (2), and an indicator* $\mathbb{1}(Credit\ Reduced)$ *in columns (3) and (4).* High Reputation *is a proxy for a sponsor's reputation and takes the value of 1 if the sponsor is ranked within the top 50 funds in the baseline sample in terms of market share of deal volume in the US syndicated loan market. In addition to the controls listed above, all regressions also include an indicator for PE-backed firms as well as lower-order interactions but are omitted from display for brevity. All variables are defined in Appendix A. Standard errors are clustered at the Bank* $\times$ *Time level.*

Table A7: Firm-level Comparison

	N	PE	N	Non-PE
Panel A: SNC-FR Y14Q Merged Sample				
Log (Size)	7,137	20.9	9665	20.8
Debt/Assets	7,137	0.52	9665	0.47
EBITDA/Assets	7,137	0.12	9665	0.12
Probability of Default	7,137	0.05	9665	0.037
Panel B: SNC-FR Y14Q Merged Sample with Matching				
Log (Size)	4,012	20.7	5643	20.7
Debt/Assets	4,012	0.51	5643	0.46
EBITDA/Assets	4,012	0.12	5643	0.12
Probability of Default	4,012	0.05	5643	0.04

(a) *Notes: This table reports firm-year level summary statistics (means) of standard financial variables for PE and non-PE firms. The sample is constructed by merging the SNC database with the FR Y-14Q schedule H1 using the string matching algorithm outlined in Cohen et al. (2021) based on borrower name and industry. Panel A reports the full merged sample of SNC and FR Y-14Q and Panel B restricts the merged sample to loans that were matched following the methodology described in section 4.*

Table A8: Benchmark Test with Alternate Violation Definition: Robustness Test

	Log (Commitments)		*𝟙 (Credit Reduced)*	
	(1)	(2)	(3)	(4)
Violate	-0.369***	-0.354***	0.113***	0.111***
	(0.082)	(0.081)	(0.029)	(0.029)
PE	-0.0256	-0.0227	-0.00310	-0.00341
	(0.017)	(0.017)	(0.006)	(0.006)
PE × *Violate*	0.226**	0.238**	-0.126***	-0.126***
	(0.105)	(0.106)	(0.044)	(0.044)
R-squared	0.397	0.401	0.0639	0.0642
Bank x Time FE	Y	Y	Y	Y
Sector x Time FE	Y	Y	Y	Y
Loan Controls	Y	Y	Y	Y
Covenant-type FE	N	Y	N	Y
N	43,478	43,478	37,274	37,274

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports OLS estimates where the dependent variable is the natural logarithm of loan commitment between a given firm-bank pair at time t. The only difference from the benchmark regressions is that we exclude covenant waivers or resets in our definition of covenant violations. PE is an indicator variable taking the value of 1 if a loan involves a PE-owned borrower and 0 otherwise. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC report date. Loan controls include utilization rate, total loan commitment in logs, time-to-maturity, indicators for supervisory risk rating, loan type (credit lines, term loans, etc.), and loan purpose. Covenant types are split into performance-based and non-performance-based. All explanatory variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table A9: Covenant Violations, PE presence, and Bank Capital: Alternate Thresholds

	High Equity Capital			Low Equity Capital		
	(1)	(2)	(3)	(4)	(5)	(6)
Violate	-0.470***	-0.432***	-0.468***	-0.220**	-0.246**	-0.184**
	(0.072)	(0.073)	(0.073)	(0.098)	(0.095)	(0.092)
PE × *Violate*	0.307**	0.241**	0.272**	0.134	0.173	0.175
	(0.119)	(0.122)	(0.129)	(0.103)	(0.111)	(0.114)
R-squared	0.380	0.437	0.467	0.257	0.314	0.354
Bank x Time FE	Y	Y	Y	Y	Y	Y
Sector x Time FE	N	Y	Y	N	Y	Y
Loan Controls	Y	Y	Y	Y	Y	Y
Origination Yr-Qtr FE	N	N	Y	N	N	Y
N	5,704	5,661	5,657	6,698	6,651	6,648

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports OLS estimates where the dependent variable is the natural logarithm of loan commitment between a given firm-bank pair at time t, using alternate definitions of lenders' capital position. High Equity Capital lenders are defined as those with equity-to-assets ratio in the top quartile of the sample (12.7 percent), while Low Equity Capital lenders are defined as those with equity-to-assets ratio in the bottom quartile (9.8 percent) of the sample. PE is an indicator variable taking the value of 1 if a loan involves a PE-owned borrower and 0 otherwise. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the year-quarter level of the SNC report date. Loan controls include utilization rate, total loan commitment in logs, time-to-maturity, and indicators for supervisory risk rating, loan type (credit lines, term loans, etc.), and loan purpose. All explanatory variables are defined in Appendix A. Standard errors are clustered at the Bank × Time level.*

Table A10: Sponsors' Deal Volume, Covenant Violations, and Loan Commitments

	$Log\ (Commitments)$		$\mathbb{1}\ (Credit\ Reduced)$	
	(1)	(2)	(3)	(4)
$Violate$	-0.322***	-0.315***	0.0675***	0.0709***
	(0.042)	(0.042)	(0.015)	(0.015)
$Log(1\ +\ No.\ of\ Deals)$	0.101***	0.102***	0.00184	0.00234
	(0.009)	(0.009)	(0.003)	(0.003)
$Violate \times Log(1\ +\ No.\ of\ Deals)$	0.0502***	0.0505***	-0.0146**	-0.0163***
	(0.014)	(0.014)	(0.006)	(0.006)
R-squared	0.389	0.394	0.0515	0.0610
Bank x Time FE	Y	Y	Y	Y
Sector x Time FE	Y	Y	Y	Y
Origination Yr-Qtr FE	N	Y	N	Y
Loan Controls	Y	Y	Y	Y
N	43,490	43,480	37,285	37,275

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports OLS estimates where the dependant variable is the natural logarithm of loan commitment between a given firm-bank pair at time t in columns (1) and (2), and an indicator* $\mathbb{1}\ (Credit\ Reduced)$ *in columns (3) and (4). The key variable of interest is the interaction between Violate and* $ln(1\ +\ no.\ of\ deals)$*. The latter is the natural logarithm of 1 plus the total number of deals executed by a PE sponsor. In addition to the controls listed above, all regressions also include an indicator for PE-backed firms. All variables are defined in Appendix A. Standard errors are clustered at the Bank* $\times$ *Time level.*

Table A11: Supplementary Analysis: Sponsored Loans and Fee-Based Income using DealScan

	Upfront Fees		*Commitment Fees*	
	(1)	(2)	(3)	(4)
PE	23.68***	23.51***	15.78***	15.91***
	(2.788)	(2.850)	(0.928)	(0.951)
R-squared	0.0780	0.109	0.214	0.257
Bank FE	Y	N	Y	N
Year FE	Y	N	Y	N
Bank x Year FE	N	Y	N	Y
N	125,510	124,783	149,047	148,166

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(a) *Notes: This table reports OLS estimates where the dependent variable is either Upfront fees or Commitment fees of syndicated loans at origination only, using DealScan. It documents that PE-sponsored loans are associated with higher fee rates relative to non-PE. Both fee types are measured in basis points and are defined fully in Appendix A. Standard errors are clustered at the bank and year level.*