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

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Abstract

We document the importance of a financial sponsor when a borrower violates a covenant, providing creditors the opportunity to enforce debt contracts. We identify private-equity (PE) sponsored borrowers in the Shared National Credit Program (SNC) data and find PE-sponsored borrowers violate covenants more often than comparable non-PE borrowers. Yet, compared to non-PE, PE-backed borrowers experience smaller reductions in credit commitment upon violation, suggesting lenders are lenient with PE sponsors. Moreover, this leniency is stronger among financially healthier lenders. We show that our results are consistent with a repeated-deals mechanism, as lenders frequently interact with financial sponsors and choose to preserve relationship rent. Consistent with this mechanism, we find little evidence that PE-sponsored loans eventually underperform relative to non-PE-sponsored ones following covenant violations. Our findings have important implications for understanding heterogeneity in debt contract enforcement and credit constraints faced by distressed borrowers with financial sponsors.

Keywords: Private Equity Funds; Covenants; Debt Contract Enforcement; Bank Lending

JEL Codes: G00; G10; G30; G32; G33

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1 Introduction

A central question in financial economics is how financial contract enforcement affects firm financing (Smith Jr and Warner, 1979; Gopalan, Mukherjee, and Singh, 2016). This question is particularly relevant for highly-leveraged borrowers, such as those backed by private equity (PE) funds. As Demiroglu and James (2010) show, PE funds traditionally rely on bank debt to finance leveraged buyout (LBO) deals, where creditors exercise control rights through some form of a covenant.[1] Prior research has shown that a PE sponsor's reputational capital can lead to more generous covenant structures (Ivashina and Kovner, 2011; Achleitner, Braun, Hinterramskogler, and Tappeiner, 2012).[2] However, these studies have generally been limited to covenants observed at loan origination or deal entry, and much less is known about (i) how often PE-sponsored firms violate covenants and (ii) the consequences of covenant violations. In particular, there is an important gap in our understanding of a lender's enforcement behavior towards PE-sponsored portfolio companies *after* a covenant is violated, which has important consequences for net debt issuance (Roberts and Sufi, 2009), real investment (Chava and Roberts, 2008), and employment (Falato and Liang, 2016).

Does the presence of a PE sponsor affect debt enforcement behavior following a contractual breach? How important is the lender's financial health in determining debt contract enforcement of PE-sponsored borrowers? Covenant violations represent a natural setting to study these questions because covenants appear in nearly all financial loan contracts, and covenant enforceability is their defining feature (Becker and Ivashina, 2016). Prior literature suggests two opposing potential effects. On one hand, consistent with Roberts and Sufi (2009), one might expect lenders to punish PE-sponsored borrowers by reducing credit availability. On the other hand, the expected gains from repeated deals and relationship rent

[1] Covenants are generally understood to protect debt-holders against activities that transfer wealth to shareholders. They outline the actions a borrower can take or specify minimum or maximum thresholds for cash flow or balance sheet variables (Jensen and Meckling, 2019).

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

could incentivize lenders to display leniency towards borrowers backed by PE sponsors relative to non-PE-owned borrowers consistent with Malenko and Malenko (2015) and Ivashina and Kovner (2011). Which effect dominates is thus an empirical question.

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). We follow covenant compliance of over 2,200 large PE portfolio firms which borrowed from the syndicated loan market between 2012 and 2021. 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). If a covenant is violated at a given point in time, the lender may reduce the stock of available credit, change other contractual terms, or waive or reset the covenant. We can observe these potential outcomes and how they vary between PE and non-PE-backed loans.

We begin by presenting two important facts about covenants in leveraged buyouts. Following Christensen and Nikolaev (2012), we first classify covenants into performance-based and non-performance-based and find around 56 percent of our PE sample observations have covenants directly linked to their current earnings. The rest of the sample includes a combination of negative, affirmative, and balance sheet covenants. Second, we find that PE-backed firms tend to violate covenants more often than non-PE-backed firms. The average annual rate of covenant violations is 17.8 percent when we look at all covenants and 21.4 percent when we focus on performance-based covenants, which depend on the firm's cash flows. In a typical year, non-PE firms violate covenants 16.1 (all covenants) and 20.4 (performance-based) percent of the time, respectively. We investigate these descriptive findings by estimating a loan-level linear probability model and find PE-backed firms have at least a 4 to

5 percent greater probability of violating a covenant relative to non-PE-backed loans. A higher covenant violation rate is not necessarily surprising considering PE-backed firms are typically more levered (Bernstein, Lerner, and Mezzanotti, 2019; Kaplan and Stromberg, 2009).

Establishing a causal impact of PE presence on covenant enforcement presents challenging identification problems as both covenant violations and PE investments are endogenous (Bernstein et al., 2019; Chava and Roberts, 2008). The ideal empirical research design would allow for random matching of 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 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 to 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.

Unobservable factors correlated with covenant violations and enforcement behavior could still exist. To further alleviate 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, 2020). 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 (2020), 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 lender leniency 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. We find the effect of lender leniency is even stronger at the extensive margin. Moreover, when we use our instrumental variable setting, we also document leniency in terms of loan maturity reduction (i.e. reduction in loan maturity is less for PE-backed borrowers relative to non-PE).

Next, we find lenders that display leniency towards PE sponsors tend to be financially healthier, as measured by a bank's equity-to-assets ratio immediately before a covenant violation. However, lenders in relatively worse financial conditions reduce credit access to all borrowers upon violation but display no leniency toward PE-backed borrowers. This result is robust to using an alternate bank health measure - total risk-based capital ratio. Moreover, since healthier lenders retain greater exposure to PE-backed covenant-violating firms, one might expect these lenders to increase the monitoring of PE-backed firms relative to non-PE-backed firms. Following Gustafson, Ivanov, and Meisenzahl (2021), we construct a measure of bank monitoring and find that lenders increase monitoring of PE-backed companies once they violate a covenant. To the best of our knowledge, these findings are novel to the private equity literature.

We connect our results to models of relationship rent stemming from repeated interactions between PE sponsors and creditors (Malenko and Malenko, 2015). 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 several measures of PE sponsor reputation and find results consistent with the repeated-deals mechanism (controlling for differences between contracts). Sponsors with a high reputation in credit markets obtain greater leniency from creditors upon covenant violations, conditional on lender health.

We corroborate the key mechanism by examining loan performance following covenant violations. Following covenant violations, if PE-sponsored loans eventually under-perform compared to non-PE loans, the reputation and repeated-deals effects are unlikely to be the driving mechanism. However, across several definitions of loan performance, we find little evidence of under-performance in PE-sponsored loans after covenant violation.

We recognize that lenders and borrowers do not match at random and that our research design cannot fully rule out this possibility. The main concern is that PE-backed borrowers are of lower risk (or higher quality) than other firms. While we match PE and non-PE loans on supervisory risk ratings, there could still be information we do not capture. We alleviate some of these concerns by matching our SNC sample with the Federal Reserve's FR Y-14Q dataset, which provides rich information on firm-level financial variables. Our results remain unchanged when we control for firm-level factors such as leverage, size, profitability, loss given default, and the share of bank debt.

Literature. We contribute to several strands of literature. First, we take a step further in understanding the role of covenants in PE-sponsored buyouts. Data limitations have restricted detailed research on covenants beyond the loan origination date. Closest to our paper are Demiroglu and James (2010), Ivashina and Kovner (2011) and Achleitner et al. (2012). These studies examine the number and tightness of covenants and highlight the role of sponsor reputation in covenant tightness at deal origination. Different from these papers, we are the first to examine (i) the propensity of PE-backed firms to violate covenants, (ii) the consequences of covenant violations, and (iii) the role of a creditor's health in determining covenant enforcement of PE-backed borrowers. By overcoming data limitations beyond deal origination, we are the first to speak about the *ex post* effects of covenants for PE-backed firms. This distinction is important because lending relationships and creditor health are time-varying, both of which can affect covenant terms after origination, violation probability, and a lender's enforcement behavior. Moreover, prior studies have been limited to relatively small samples, creating sample selection concerns. Our study examines the universe of U.S.

syndicated loans that fall within the SNC inclusion criterion, covering over USD 5 trillion in credit commitments and over 2,200 PE-sponsored borrowers, capturing more than 10,000 unique credit facilities.

Second, we contribute to the broader literature on how debt contract enforcement affects a distressed borrower's access to credit in the context of covenant violations. The extant literature shows real consequences of covenant violations include but are not limited to Chava and Roberts (2008), Roberts and Sufi (2009), Nini, Smith, and Sufi (2012), Denis and Wang (2014), Falato and Liang (2016), Adler (2020), and Carey and Gordy (2021). Similarly, Becker and Ivashina (2016) examine covenant enforcement in covenant-lite loans. Moreover, Gopalan, Nanda, and Seru (2007) show implicit enforcement mechanisms, such as reputation concerns, may be less effective for small firms, and finally, Kleymenova and Tomy (2022) examine the connection between disclosure of regulatory actions and enforcement behavior. Different from these papers, we are the first to examine how the presence of an independent financial intermediary can alleviate agency costs of lending and alter the dynamics of a lender's endogenous response to covenant violations. Using private equity funds as an example of a separate intermediary that engages in repeated deals with credit markets, we extend an existing understanding of factors that can lead to heterogeneous enforcement behavior of lenders following contractual breaches.

Finally, we contribute to the large literature on the effects of private equity buyouts. As suggested by Kaplan and Stromberg (2009), recent theories (Malenko and Malenko, 2015; Gryglewicz and Mayer, 2020), and survey evidence (Gompers, Kaplan, and Mukharlyamov, 2022), PE owners affect firm value and outcomes through operational, governance, and financial engineering. In this context, several papers study whether and how PE owners affect firm outcomes, managerial incentives, stakeholders, and value creation.[3] Different

[3]See, for example, Boucly, Sraer, and Thesmar (2011); Cronqvist and Fahlenbrach (2013); Cohn, Mills, and Towery (2014); Bernstein and Sheen (2016); Antoni, Maug, and Obernberger (2019); Haque (2020); Gupta, Howell, Yannelis, and Gupta (2021); Gornall, Gredil, Howell, Liu, and Sockin (2021); Cassel (2021); Ewens, Gupta, and Howell (2022); Fracassi, Previtero, and Sheen (2022); Haque, Jang, and Mayer (2022); Cohn, Hotchkiss, and Towery (2022).

from these papers, we show how sponsor reputation can affect access to credit following contractual violations, which has implications for real investment, and employment, and to the extent that violations are more likely to occur during aggregate downturns, the cyclicality of buyout activity.

2 Background and Testable Hypotheses

A large body of literature in financial economics highlights the unique role banks play in providing contractual flexibility in lending (e.g., Rajan, 1992; Chemmanur and Fulghieri, 1994; Bolton, Freixas, Gambacorta, and Mistrulli, 2016; Gorton and Kahn, 2000). Concentrated ownership of bank loans makes renegotiation easier relative to diffusely held public debt (Smith Jr and Warner, 1979), which allows for tighter covenants in order to diffuse moral hazard problems (Jensen and Meckling, 2019; Demiroglu and James, 2010).

Why would a lender's enforcement behavior following covenant violations be different when private equity investors back borrowers? This section motivates our key hypothesis.

Debt Contract Enforcement following Covenant Violations. The presence of covenants in financial contracts is motivated, and indeed rationalized (Bénabou and Tirole, 2006), by their ability to mitigate agency problems (Jensen and Meckling, 2019; Smith Jr and Warner, 1979) and aid in securing financing through the pledging of state-contingent control rights (Aghion and Bolton, 1992; Dewatripont and Tirole, 1994). Apart from a covenant violation, missed payment, or any other contractual breach by the borrower, a lender cannot renege on a loan commitment before the stated maturity. Upon violation, the lender gains the right but not the obligation to terminate the loan, including forcing immediate repayment of any outstanding principal and interest. Since the lender's bargaining power increases following a violation, it is common for loan contracts to be renegotiated. As a result, covenant violations can lead to lower availability of credit to the borrower. A large body of evidence shows that creditors can also use the threat of acceleration and the resulting shift in bargaining power

vis-à-vis management in an attempt to influence firm policies through a vast array of actions (see, for example, Chava and Roberts (2008), Roberts and Sufi (2009), Carey and Gordy (2021) and Falato and Liang (2016)).

The role of PE sponsors in shaping lender enforcement behavior. The banking literature argues that repeated borrowing from the same lender reduces asymmetric information about firms' quality, thereby improving access to financing and the terms of that financing (Boot and Thakor, 2000). However, this paper focuses on the relationship between lenders and PE investors (sponsors) rather than between lenders and borrowers. Ivashina and Kovner (2011) argue that sponsor-lender relationships are unique because the formal loan contract is between the portfolio company and the bank, with no direct claim against the financial sponsor (the PE fund). However, they suggest PE funds effectively shadow borrowers, as they control the borrower's equity, management, capital structure, and strategic direction. In turn, this makes sponsor-lender relationships a critical element in lending decisions.

The existing PE literature examines the role of sponsor-lender relationship for loan terms at origination (Ivashina and Kovner, 2011; Achleitner et al., 2012), without looking at outcomes of borrowers who breach contracts (e.g. violate a covenant). Data limitations have thus far prevented examination of *ex post* lender behavior, that is, if lenders strictly enforce contracts following a breach if PE investors back firms, and in particular, how different such behavior is relative to non-PE sponsored borrowers. This distinction is important since banking relationships can change depending on a contractual breach or time-varying creditor health.

Covenant violations offer a unique opportunity to study this question. While a sponsor-lender relationship can favorably affect *ex ante* loan terms, creditors may update their beliefs about the "true" quality of a loan if the borrower violates a covenant, regardless of PE-ownership status, thus restricting further credit access. On the other hand, soft information obtained from PE sponsors and the knowledge of repeated transactions might lead to lender

leniency following violations. Thus, we refer to our first hypothesis as the *lender leniency* channel and formalize it as follows:

Hypothesis 1 (H1): *Lenders display leniency in reductions in credit commitment following a covenant violation if the borrower is PE-backed, relative to comparable loans issued to non-PE-backed firms.*

Conversely, it could be that lenders learn the true quality of PE investors after violations. Similar to agency problems between PE general and limited partners, as shown in Brown, Gredil, and Kaplan (2019), lenders might update their beliefs on the reliability of information from PE investors about a particular borrower. Put differently, conditional on a violation, lenders may conclude PE general partners are over-optimistic or overestimating a borrower's expected performance. This leads us to our second hypothesis:

Hypothesis 2 (H2): *Relative to comparable loans issued to non-PE-backed firms, PE-backed borrowers experience a greater or similar reduction in credit commitment following a violation.*

3 Data

3.1 Data Sources

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, which contain 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, 2020). These 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 a regulated entity. As of August 2021, SNC commitments totaled USD 5.8 trillion.[4]

The reporting frequency is annual before 2015, quarterly in 2015, and semi-annual since 2016 onwards. For around one-third of the loans in the SNC universe, examiners collect information on covenant compliance. For most of our sample, covenants are reviewed twice a year, typically once in the first quarter of the calendar year and then again in August of the same year. 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 representative share of nonpublic borrowers. This is particularly important because we are investigating PE-sponsored firms, which are typically not publicly traded. Moreover, it contains supervisory information on covenant compliance, including when a covenant breach results in a waiver, and information on the lender's response to the violation. For example, we can see loan commitments, utilization rate, maturity, loan type, loan purpose, risk rating, and covenant type.

Covenant Violation definition: As already mentioned, for each loan in the covenant sample, SNC reports a flag for whether the loan was in compliance throughout the year. Moreover, if the loan remained 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.

PE Buyout List and Matched Sample Information: We rely on Preqin's leveraged

[4]We obtain this figure by collapsing all unique SNC credit facilities over their maximum observed commitment for all observations in 2021 and then computing the total commitment exposure.

buyout list to identify PE-sponsored deals.[5] Preqin's buyout data contains identifying information on sponsored portfolio companies, the name of the sponsor, and, crucially, deal closing dates allowing us to distinguish between pre-(post-) PE-ownership samples. If a company is acquired twice or more by a PE fund (secondary or tertiary buyout) in our sample, we only use the earliest chronological buyout date. We supplement our Preqin list with data from SNC, which also collects identifying information on PE sponsors. Preqin is generally considered a representative data source of PE-sponsored leveraged buyouts and has been utilized extensively in the academic literature.

Our sample period ranges from 2012 to 2021. 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. Finally, the sample includes 6,967 covenant violations, a 15.9 percent violation rate in the cross-section. We observe 3,025 violations for PE-backed firms (15.7 percent) and 3,942 violations for non-PE firms (16.1 percent) in the cross-section.

Other Data: We also rely on Call Reports provided by the SNC to extract the financial information of syndicate members. 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 health. 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). This data start in 2012 and represent supervisory data

[5]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, et al. (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.

collected as part of the Federal Reserve's Stress Testing exercise.[6]

3.2 SNC Sample Summary Statistics

Table 1 reports summary statistics for this loan-time sample where we differentiate between PE-sponsorship status. The sample is roughly evenly split between sponsored and non-sponsored commitments, although the number of non-sponsored loan-time observations is somewhat higher. We report loan commitment size, the amount utilized, maturity of the loan, loan type (e.g., revolving credit facility or term loan), and loan purpose (e.g., working capital or debt refinancing). Moreover, we observe "Concordance Ratings," which are credit risk ratings that Federal supervisors assign to a loan facility using information from the lead arrangers' internal risk ratings. These ratings are provided on a 5-grade scale from 1 to 5, where lower numbers denote higher-quality loans. For example, a risk rating of 1 denotes an "Investment Grade Pass", while ratings of 4 and 5 denote a "Special Mention", and "Substandard", respectively.[7]

While comparable in terms of maturity, utilization rate, and concordance ratings, we observe a higher share of PE loans in both "Special Mention" and "Substandard" categories. For example, 9.8 percent of PE-sponsored loans are in the substandard category, but only 7.7 percent of non-PE loans are classified similarly. This suggests that while the average PE-sponsored syndicated loan is comparable in terms of risk to a non-PE SNC loan, the distribution is somewhat different. Indeed, we confirm this by observing that the 90th percentile value of the concordance rating is 5 for PE and 4 for non-PE (not reported). This is also consistent with PE-sponsored firms being generally more leveraged (Bernstein et al., 2019).

Our sample also exhibits fairly similar patterns when broken down by loan type, which we broadly classify into revolving credit facilities, term loans, and other loan types. We

[6]We choose to begin the SNC sample from 2012 to coincide with FR-Y14Q data, which we use for part of our analysis.

[7]For details, see http://www.federalreserve.gov/newsevents/press/bcreg/20141107a.htm.

find more than 90 percent of facilities are revolvers and term loans for both types of firms. However, as shown in Figure 1, PE firms exhibit a somewhat more even distribution of the two major types of loan facilities. Unlike PE, non-PE firms appear to hold more revolving credit facilities and fewer term loans. Finally, we document that both PE and non-PE firms exhibit similarity in number of covenants per SNC loan, when we look at the loan-covenant-time sample. The median number of covenants per SNC loan is 1, while the 75th percentile shows 3 covenants per loan in both PE-backed and non-PE backed samples.

3.3 Stylized Facts

We proceed by establishing key trends related to our research focus.

Fact 1*: PE-sponsored loans are larger than non-PE loans.*

We find PE-sponsored loans are larger than non-PE credit facilities. Median and mean loan commitments are USD 250 million and 492 million, respectively. The median non-PE loan is USD 198 million, while the average is USD 403 million, reflecting the skewed nature of the distribution. This is consistent with a large literature that documents PE fund managers do not randomly select targets. In particular, Bernstein et al. (2019), Haque et al. (2022), and Brown, Harris, and Munday (2021) argue that PE-backed firms tend to be larger on average.

Fact 2*: More than half of all PE-sponsored loans include either a maximum leverage (senior leverage) ratio or other 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. See the appendix for a full definition and classification of each type of covenant.[8] Overall, we find more than 50 percent of the PE sample includes performance-based covenants that are directly linked to the borrower's cash flows. As discussed below, an overwhelming majority of performance-based covenants are Debt to EBITDA, Interest Coverage and Fixed Charge Coverage covenants.

The SNC database includes a textual description of each covenant type constraining a loan. We conduct textual analysis to identify various loan covenants and report these in Table 2. Consistent with the DealScan database, the most frequent loan covenant in the private equity sample is the maximum leverage ratio covenant which is present in at least 30 percent of the sample, while the second most frequent financial covenant is the interest coverage ratio. As the table shows, around 52 percent of the PE-sample include leverage/senior leverage ratio, interest coverage or fixed charge coverage ratio covenants. We also find that negative covenants are quite common. They are present in at least 20 percent of all PE-sponsored loans. Overall, we document that traditional financial covenants are present in just over half the PE-sample. In our benchmark regressions, we exploit this feature and compare enforceability within performance-based and within non-performance based covenants, to absorb confounding effects from the PE-sample potentially being more covenant-lite as suggested by recent studies (Ivashina and Vallee, 2020).

Fact 3*: PE-backed borrowers have higher covenant violation rate relative to non-PE.*

Figure 2 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. On average, both types of loans exhibit similar trends. However, we note that performance-based covenants tend to be violated at a higher frequency since these are more vulnerable to macroeconomic conditions. For example, both trends exhibit sharp spikes during the calendar years 2015 and 2016. This

[8]One concern is that some capital expenditure covenants are not entirely independent of borrowers' performance. To alleviate such concerns, we inspect covenant terms for 200 randomly selected firms with capital expenditure restrictions in our sample. We find that most capital expenditure covenants restrict the dollar amount of investment (e.g., the borrower agrees not to make capital expenditures in excess of some given dollar amount) and are entirely non-performance-based.

can be explained by the oil price shock of 2014 or the Federal Reserve ending its quantitative easing program. Intuitively, the effect is stronger for performance-based covenants, reaching as high as 30 percent in 2015–2016. This is not surprising as most PE-backed firms are highly leveraged. Since then, we observe a declining trend until the COVID-19 pandemic. In 2020, we observe a sharp spike in covenant violations as revenues dropped across most sectors, and violations were particularly pronounced for performance-based covenants. In the time series, simple back-of-the-envelope calculations show PE-sponsored loans exhibit an average (annual) violation rate of 17.8 percent for all covenants and 21.4 percent for performance-based covenants.

Figure 3 plots the same variables for non-PE-owned firms. We immediately observe a strikingly different pattern. First, the spike in violations in the 2015–2016 period was much less pronounced, which can be rationalized by the fact that non-PE firms tend to have, on average, lower debt. We again observe a similar declining trend in violations. 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.

Given suggestive evidence that PE-backed firms have a somewhat higher covenant violation rate, 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 a host of loan-level controls, including loan amount, utilization rate, and maturity, along with several fixed effects. We describe our loan-level controls and fixed effects in detail in the next section (Section 4.1). The general form of the equation we estimate is shown below in Eq. (1), where the dependant variable is an indicator taking value 1 if any covenant in loan j between bank-firm pair $[b, i]$ in time t is violated and 0 otherwise. Our key variable of interest is an indicator of PE ownership. A positive coefficient on PE suggests that PE-backed firms are more likely to violate a covenant.

$$\mathbf{1}(Violate_{j,b,i,t}) = \alpha + \beta_1 PE_i + FEs + Controls + \epsilon_{j,b,i,t} \quad (1)$$

We report these results in Table A2 in the Appendix. Comparing PE and non-PE loans that are of the same type 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 violations. Our estimates suggest PE-backed firms have approximately 4 to 5 percent higher covenant violation rates. This is not necessarily surprising as their total leverage ratios are much higher than non-PE firms. For example, Brown (2021) documents that most PE-backed firms increase their debt-to-value ratio from 0.25 to 0.5 immediately following a buyout.

4 Empirical Strategy

4.1 Benchmark Analysis

In corporate credit markets, the allocation of control rights between borrowers and creditors is mainly decided by covenants, which represent constraints on borrower's behavior written into loan contracts (Becker and Ivashina, 2016). Our goal is to examine if ex-post enforcement behavior following contract violations varies systematically due to PE-ownership status. The key empirical challenge is that both PE-ownership and covenant violations are non-random and are likely determined in response to borrower-specific credit risk. For example, borrowing by PE portfolio companies may be rationally viewed by lenders as less risky since PE sponsors are able to inject equity into distressed firms at times of unforeseen difficulties (Bernstein et al., 2019; Demiroglu and James, 2010). 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 issued by the *same* bank, such that the loans differ only by PE-sponsorship

status. In particular, we begin with the following baseline specification:

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

The dependant variable is alternatively (i) *log* (*Commitment*), 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 (*Credit Reduced*) that takes the value of 1 if committed credit between a given bank-firm pair is reduced in a given time-period t relative to $t-1$.[9] The 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, with standard errors clustered at the bank×time level.

To absorb confounding borrower and lender risk factors, we consider a carefully selected array of fixed effects. In particular we include bank-time ($\eta_{j,t}$) and sector-time ($\theta_{z,t}$) fixed effects.[10] Moreover, the vector $Z_{j,b,i,t}$ includes loan purpose, loan type, loan origination-quarter, covenant type, and loan risk rating fixed effects, while $X_{j,b,i}$ include loan maturity and utilization rate.[11] As mentioned above, ($\eta_{j,t}$) allows us to examine observably similar loans issued by the *same* bank to borrowers within the same industry-time that differ only by PE status. Thus we can rule out confounding effects such as changes in macroeconomic conditions, bank capital adequacy ratios, or borrowers switching to a new lender after violating a covenant. Since PE status varies over time, our empirical framework also exploits this variation within the group of treated loans and includes firm fixed effects in some of our baseline 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-

[9] For our benchmark, we do not use the percentage change in committed credit since it reduces our sample size given the need to observe the same loan facility in years t and $t+1$. However, we show our results are unchanged when we use a restricted sample and the mentioned outcome of interest.

[10] Unless otherwise stated, all time fixed effects are at the SNC report date level following Blickle, Fleckenstein, Hillenbrand, and Saunders (2020).

[11] We refer to concordance risk ratings assigned by federal supervisors as loan credit ratings, which is the only time-varying indicator in $Z_{j,t}$. For covenant type, we assign an indicator taking the value of 1 if a covenant is performance-based and 0 otherwise. See Appendix A for the definition of a performance-based covenant.

firm relationship, such as banks' private or soft information on borrower creditworthiness and banks' portfolio specialization in particular types of borrowers (Chodorow-Reich, 2014). In our robustness tests, discussed subsequently, we also match our sample with the FR-Y14 data to control for firm-level characteristics.

[Insert Table 3 Here]

Table 3 reports our benchmark results. When the outcome is the natural logarithm of commitments, our expectation is that $\beta_2 < 0$ consistent with Chodorow-Reich and Falato (2022) and Chava and Roberts (2008) and $\beta_3 > 0$. Examining the estimates in column (1), we see the violation of a covenant reduces credit commitment by 11.6 percent.[12] However, relative to a non-PE-backed firm, this reduction is only 4.53 percent for a PE-backed firm. Taken together, we can infer that the mitigating effect of PE ownership on lenders' enforcement actions is quite strong. Simple back-of-the-envelope calculations show the presence of a PE sponsor dampens credit reductions by approximately 60 percent following a covenant breach. When we look at columns (2) to (6) with variations in fixed effects, we find similar results.

We next estimate Eq. (2) using a binary indicator $1(Credit\ Reduced)$, which captures the change in commitments. Since we estimate the probability of credit reduction, our expectation now is that $\beta_2 > 0$ and $\beta_3 < 0$. Table 4 reports these results. Consistent with our hypothesis, we find that covenant violations raise the probability of credit reductions. This result is again robust to reasonable variations in controls and fixed effects. The quantitative effect is quite large — ranging from 6.7 percent to 8.7 percent, depending on the specification. Crucially, when we estimate the linear probability model, we find that PE presence almost entirely eliminates the probability of credit reductions. This can be seen by adding the coefficients on $Violate$ and $PE \times Violate$. For example, the coefficient on β_2 in column (1) is 0.0842 and on β_3 is -0.0854.

[Insert Table 4 Here]

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

4.2 Instrumental Variables

Despite our rich set of controls, we cannot completely rule out non-random matching of borrower characteristics and covenant violations. While our risk-rating fixed effect essentially captures time-varying borrower quality while the bank-time fixed effect captures lender health, there may be unobserved mechanisms correlated with covenant violations. We address this concern by employing an instrumental variable research design, largely following Ivanov and Wang (2020) and Chodorow-Reich and Falato (2022). The excluded instrument is the strictness of the lender's supervisor at the time of loan origination.[13] 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, hence, will display a greater propensity for 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, 2020).

Moreover, we explicitly control for other loan characteristics that could be affected by strict supervisors (e.g., loan maturity 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

[13] 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, 2020).

federal district similar to Ivanov and Wang (2020), 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.

We proceed by first classifying a given examiner for a given loan-time observation as either *lenient* or *strict* using their history of supervisory loan ratings. This is confidential information that a borrower or PE sponsor cannot observe. We match each loan-time observation in our main sample to identify information on bank supervisors. We find our sample has 540 unique bank supervisors. We identify a loan as having failed supervisory examination if it did not receive a "Pass" rating at a given point in time. We identify a strict supervisor at loan origination if the examiner-in-charge during loan origination is classified as "Strict." An examiner is identified as "strict" if their total number of assigned "fail" ratings is greater than the sample median. Figure 5 plots the distribution of an examiner's propensity to not pass a loan at a given point in time. We note a large mass of examiners tends to display fail propensities of around 10 to 15 percent. 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.[14] The t-statistic of this relationship is 20.4.

[Insert Table 5 Here]

Table 5 reports the main results from our IV estimation. We alternate between district and district × Year FE to ensure that our identifying variation does not come from a small subset of observations that may not hold in the aggregate.[15] We begin with *1*(Credit Reduced)* as the main outcome of interest. Similar to our benchmark regressions, we find

[14]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.

[15]We follow Ivanov and Wang (2020) and choose to use District × Year FE instead of District × report date FE.

violations lead to a higher probability of loan commitment reduction. 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 future plans and expected performance, given tight relationships. The $PE \times Violate$ estimates are also significant when we examine the volume of loan commitments, although only at the 10 percent level.

To further examine the lender leniency 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 $PE \times Violation$ suggests this effect is substantially mitigated by the presence of PE sponsors. The point estimates suggest that the presence of PE investors reduces the negative effect on loan maturity by approximately 30 percent. We also re-estimate a version of this analysis without district or district $\times$ Year fixed effects to exploit a somewhat larger sample and find that the results are nearly similar. These findings are reported in Table A7. Overall, our findings in this section broadly corroborate our benchmark results in that lenders exhibit systematically different enforcement behavior when PE sponsors are present in a deal.

4.3 Lender Health and Enforcement Behavior

A natural question is how heterogeneity among lenders shapes the patterns documented by our baseline analysis. Prior studies have documented the importance of the health of the banking sector for real sector outcomes such as investment and employment.[16] Moreover, the existing literature has also documented lenders in worse health are more likely to force a reduction in the loan commitment following a violation (Chodorow-Reich and Falato, 2022).

[16]See, for example, Peek and Rosengren (2005); Chodorow-Reich (2014), and Benmelech, Bergman, and Seru (2021) for evidence from the United States.

In this section, we ask if the patterns documented in our main analysis are particularly pronounced for lenders in good or relatively worse financial health. In particular, are lenders that are well-capitalized more likely to be lenient with borrowers backed by PE sponsors? Alternatively, are lenient lenders associated with relatively worse financial performance? We proceed by merging our sample with data from FR Y-9C, which contains information on bank equity and assets. We can construct a merged sample using loan identifiers and review data for approximately 73 percent of our baseline sample.[17] We measure lender health as the ratio of bank equity to assets in the year *preceding* the year a loan covenant is reviewed by SNC examiners, leading to 28,550 unique loan-time observations on bank health. This construction allows us to mitigate concerns that lender health is the outcome of lender leniency. Figure 4 shows that the equity-to-assets ratio is concentrated around 9 to 13 percent. We document that banks in our sample have a median equity-to-assets ratio of 11 percent, with an inter-quartile range of 12.7 percent and 9.8 percent.

We then classify a bank as a "Good Lender" if it has an equity-to-assets ratio above the sample median of 11 percent and define a "Bad Lender" symmetrically. We find that PE-backed borrowers are nearly equally split between good and bad lenders. In our robustness tests, we offer an additional definition of good and bad lenders based on alternate thresholds. We then separately estimate our benchmark regression using Eq. (2) for each type of bank.

[Insert Table 6 Here]

Table 6 reports the results of this analysis. Columns (1) to (3), which focus on good lenders, offer qualitatively similar results to our baseline results, although the point estimates are considerably larger. The estimate in column (1) implies good lenders reduce commitments by approximately 32 percent for all borrowers but only by 17.4 percent for PE-backed borrowers following a violation. In other words, we again document that PE presence offsets lender punishment by almost 50 percent in terms of loan commitments. We

[17] In unreported analysis, we confirm the PE and non-PE loan samples look similar in terms of risk profile, loan types, and other characteristics listed in Table 1, thus mitigating any selection-related concerns.

also observe that both estimates $Violate$ and $Violate \times PE$ are remarkably stable across multiple specifications.

Column (4), which presents the first specification with bad lenders, offers a sharply diverging pattern. In particular, while we find bad lenders do reduce commitments to all borrowers following violations, the insignificant interaction term $PE \times Violate$ suggests that, unlike good or healthy lenders, bad lenders do not show any leniency towards PE-backed borrowers. Column (5), which adds sector-time fixed effects, again shows similar results. The interaction term becomes weakly significant at the 10 percent level when we include origination-quarter fixed effects. In our robustness tests, discussed in Section 6, we use alternate thresholds for identifying good and bad lenders. We again find good lenders exhibit leniency towards PE-backed borrowers, while bad lenders exhibit no differential enforcement behavior.

One interpretation is that good lenders are capitalized well enough to take the additional risk with PE-backed borrowers, given the expectation of greater PE monitoring and repeated deals in the future. At the same time, a better equity-to-assets ratio is an endogenous response of lender leniency to the extent that PE-backed loans ultimately do not default in terms of debt repayment.

Finally, we show the robustness of our results in Table 6 using an alternate measure of lender health: total risk-based capital ratio. This is discussed in Section 6.

4.4 Do Lenders Increase Monitoring Activity Post-Violation?

We next examine how bank monitoring changes following covenant violations, and in particular, if that differs between PE and non-PE. Since we established lenders reduce commitment to non-PE borrowers following a violation, it is plausible that they have a lower incentive to monitor a non-PE borrower relative to PE-backed ones. We want to emphasize that we do not speak to the general relationship between bank monitoring and PE presence, but rather, we examine monitoring conditional on covenant violation and subsequent changes in

credit commitments. Since PE borrowers receive more lenient treatment in terms of credit commitments following a violation, we expect lenders to monitor PE-backed borrowers *more* compared to non-PE.

To construct a measure of bank monitoring activity, we follow Gustafson et al. (2021) and use the SNC database to construct an indicator for the presence of active bank monitoring, which can include borrower site visits and the use of third-party appraisers. Similar to Gustafson et al. (2021), we conduct textual analysis of the lender's periodic appraisal of the collateral used to secure a loan. This appraisal includes a qualitative discussion of the procedures the bank uses to monitor a loan, allowing us to identify active monitoring. We go to great lengths to validate this measure, such as reading each individual comment provided by lenders for a given loan-time observation and running regressions of bank monitoring on the lead arranger's share similar to the prior literature and confirming nearly similar estimates.[18]

[Insert Table 7 Here]

We then estimate the effect of covenant violations on bank monitoring. Table 7 reports these results. In column (1), we restrict the sample to PE-owned borrowers only. We find covenant violations lead to a 4.8 percent increase in the probability of bank monitoring. Our regressions again control for loan quality, lender, and industry health over time. In columns (2)–(4), we compare the effect of violations on bank monitoring between PE-backed and non-PE borrowers. To the extent that lenders remain more exposed to PE-backed borrowers following violations, we expect greater monitoring of borrowers owned by PE investors. Indeed, the positive and highly significant coefficient on the interaction term confirms our intuition. On average, banks display a 5.4 to 6.4 percent increase in the probability of active monitoring of loans with a PE sponsor, conditional on a violation.

[18]To wit, Gustafson et al. (2021) examine the impact of the lead arranger's share on bank monitoring controlling for other relevant factors. They obtain a positive and highly significant coefficient estimate of 0.3, while we obtain a positive and highly significant estimate of 0.19. We do not use the exact same time frame and have some differences in control. These are available upon request.

5 Mechanism

5.1 PE Sponsor Reputation and Relationship Rent

Our main hypothesis in this paper is motivated by extensive literature that examines how reputational contracts can serve as self-enforcing agreements, where agents are better off honoring the agreement rather than deviating value and suffering a loss in reputational capital (e.g., Malenko and Malenko, 2015; Badoer, Emin, and James, 2021). Reputational contracts can thus affect the agency's cost of debt. To the extent that the expected gains from repeated games and future relationship rents between lenders and PE fund sponsors surpass the cost of enforcing written contracts, we predict lenders are likely to be more lenient in enforcing contracts following covenant breaches.[19] In particular, we expect to see lower reductions in credit commitments (following violations) for portfolio companies that are backed by a high-reputation PE sponsor relative to borrowers that are not.

We test our hypothesis by constructing two measures of sponsor reputation. First, for our preferred measure, we construct reputation as a function of the market share of deal volume held by a PE sponsor in the U.S. syndicated loan market. 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. Based on this measure, we find the PE sponsors with high reputations are well-known sponsors that have appeared in previous studies such as Demiroglu and James (2010) and Brown (2021).[20] 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 funds 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. This confirms that our measure captures both a fund's activity in the syndicated loan market as well as

[19] Billett, Elkamhi, Popov, and Pungaliya (2016) demonstrate the value of relationship rents in a borrower-lender theoretical model.

[20] Due to confidentiality reasons, we are prevented from disclosing names of unique sponsors.

the amount of equity capital sponsors raised as an indicator of future activity.

Second, we construct a continuous measure of a reputation as the natural logarithm of one plus the total number of deals executed by a PE sponsor. To the extent that reputational capital begins to accumulate when sponsors start repeatedly interacting with lenders, as opposed to surpassing an arbitrary number of deals, we expect to see greater lender leniency for sponsors with a greater number of deals. Figure A1 in the Appendix shows this measure approximately reflects a Gaussian distribution.

Armed with these two measures, we re-run 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, the log of credit commitment, and an indicator capturing reductions in commitment between a given bank-firm pair. We again cluster standard errors at the bank-time level.

[Insert Table 8 Here]

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 comments. 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 *Credit Reduced* in columns (3) and (4). While violations lead to a higher probability of credit reductions, this effect is negated when a borrower is backed by a high-reputation PE sponsor. Note that our PE indicator absorbs standard PE effects, allowing us to disentangle the effect of reputation on lender enforcement. Our specification includes bank-time as well as sector-time fixed effects and controls for an assortment of loan characteristics. Thus, our estimate is identified from changes in commitment from the same bank to two observably identical loans that differ primarily by information related to the sponsor's reputation.

[Insert Table 9 Here]

Table 9 reports results where the interaction is between $Violate$ and the natural logarithm of one plus the number of deals. Since this measure will include funds that have compared relatively fewer deals, we expect the lender-leniency effect to be somewhat smaller but significant nonetheless. Consistent with our hypothesis, the interaction term is again positive when the outcome is log (Commitments) in columns (1) and (2) and negative for *Credit Reduced* in (3) and (4). While the estimate on $Violate$ is quite similar in magnitude compared to those in Table 8, we immediately notice 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 *Credit Reduced*. Compared to Table 8, where we observed that the entire covenant violation effect is mitigated by high-reputation sponsors, we see lender leniency is much smaller since this measure captures sponsors that are below the top 50 or 100 ranked funds in our sample.

Next, for completeness and robustness purposes, we also run a triple interaction specification with $PE \times High\ Reputation \times Violate$ as the key variable of interest, outlined in Eq. (3). Note these regressions include all lower-order interactions that are not absorbed by fixed effects but omitted from display for brevity.

$$\begin{aligned} Y_{j,b,i,t} =& \eta_{b,t} + \theta_{z,t} + \beta_1 PE_{i,t} + \beta_2 Violate_{j,b,i,t} + \\ & \beta_3 PE_{i,t} \times Reputation_{j,t} \times Violate_{j,b,i,t} + Z_{j,t} + Other\ interactions + X_{j,b,i} + \epsilon_{j,b,i,t} \end{aligned} \tag{3}$$

These results are reported in Table A5 in the Appendix. We find qualitatively similar results. The point estimates themselves suggest when we look at high-reputation sponsors, lenders are entirely lenient in the sense that the entire negative effect of violation is negated (the unreported interaction between PE and $Violate$is insignificant in this specification).

Finally, we run the following specification to show the connection between reputation,

lender health and leniency. If the repeated-games mechanism is conditional on lender health, then the triple interaction in Eq. (4) should be positive and significant. *Other interactions* in this specification refer to all other lower order interactions that are already not absorbed by fixed effects. We report these results in Table A9. As can be seen, the positive coefficient in β_3 supports our hypothesis related to creditor health.

$$Y_{j,b,i,t} = \eta_{b,t} + \theta_{z,t} + \beta_1 PE_{i,t} + \beta_2 Violate_{j,b,i,t} + \beta_3 GoodLender_{b,t} \times Reputation_{j,t} \times Violate_{j,b,i,t} + Z_{j,t} + Other\ interactions + X_{j,b,i} + \epsilon_{j,b,i,t} \quad (4)$$

5.2 Loan Performance Post-Violation

If creditors display leniency to financial sponsors due to the relationship rent channel, one implication is that PE-backed loans' eventual performance is not systematically worse than non-PE loans. Put differently, if a PE-backed loan eventually defaults or is flagged with very low repayment probability, lenders have a lower incentive to display leniency towards sponsored borrowers. In this section, we examine loan performance conditional on covenant violation. We estimate Eq. (2) with loan performance as the dependent variable. Our expectation, consistent with the repeated deals mechanism, is that PE-backed loans at least do not underperform relative to non-PE loans.

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 substandard or doubtful and 0 otherwise. Second, we compute the natural logarithm 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. Our expectation is that the coefficient on $PE \times Violate$ should either be insignificantly different from 0 or it should be negative.

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 below-average

outcomes are positively correlated. We also see PE is positively related to the probability of becoming classified or doubtful. However, when we examine the interaction effect, we find it is not statistically significant across any of our specifications. Thus we find no evidence of a greater probability of a loan becoming classified as substandard or doubtful, conditional on being PE-backed and having violated a covenant. One explanation is that PE sponsors enhance operational engineering and distress resolution mechanisms once a firm is in distress in order to preserve relationship rent (Gryglewicz and Mayer, 2020; Hotchkiss, Smith, and Strömberg, 2021).

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. Again the interaction term is insignificantly different from zero.

Interestingly, if we re-define the indicator variable used in columns (1) to (3) to also include loans that received the lowest grade pass, we find PE-backed loans actually perform better relative to non-PE, conditional on covenant violation. We report these results in Table A6 of the Appendix.

6 Additional Robustness Tests

1. Time-varying firm-level risk characteristics from FR Y-14Q.

One concern could be that our loan-level sample does not explicitly control for time-varying firm-level risk factors on which lenders could condition their decisions. We believe this concern is not particularly plausible since we include loan-level risk ratings, which are based on firm-level information such as leverage, size, or profitability. Nevertheless, we now merge the SNC sample with the Federal Reserve's FR Y-14Q sample, which includes annual financial statement information on borrowers. 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) in the U.S. and began in 2012 as part of the Federal Reserve's Stress

Testing exercises. 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.[21] One hurdle we face is that there is no common identifier between the SNC and the FR Y-14, requiring us to run a string-matching algorithm based on borrower name and 2-digit industry. We are able to match approximately 20,000 loan-time observations with FR Y-14Q data. We find that this matched sample has nearly the same PE and non-PE loan split as our main sample.

We re-estimate our baseline regressions with four firm-level characteristics, which we believe should capture any additional information lenders might consider that is not already present in our loan-level baseline specification. In particular, we include the natural logarithm of a firm's book assets, leverage ratio measured by total debt over prior year assets, ROA measured by EBITDA over prior year book assets, and the share of bank debt in total debt.

[Insert Table A8 Here]

Table A8 in the Appendix reports these results. In column (1), we only include firm size and leverage ratio, along with bank time, sector time, risk rating fixed effects, and loan controls. The outcome is, again, the natural logarithm of committed credit. Remarkably, while both the two new explanatory variables are significantly associated with credit commitments, we find that the quantitative impact from our key variable of interest $PE \times Violate$ is almost unchanged from our baseline result. In columns (2) to (4), we iteratively include the share of bank debt and ROA and then run a horse race with all controls and origination quarter fixed effect as an additional check. The estimates display remarkable stability. Column (5)-(8) repeat this exercise with *Credit Reduced*. We again find qualitatively similar results.

2. Alternate Covenant Breach definition. Our benchmark definition of covenant violations follow Chodorow-Reich and Falato (2022). We now depart from this definition

[21] Prior studies that have used the FR Y-14Q Corporate Loan Schedule include Brown et al. (2021); Greenwald, Krainer, and Paul (2021); Favara, Minoiu, and Perez (2021); Chodorow-Reich, Darmouni, Luck, and Plosser (2022).

and exclude covenant waivers or reset as a type of covenant violation and re-estimate our benchmark results in Table 3 and Table 4. This leads to a much lower number of violations. However, we find that our results remain unchanged using both of our main outcomes variables (i.e. *log (commitments)* and *Credit Reduced*). These results are reported in Table A3.

3. Alternate lender health measures. In Table A4 in the Appendix, we repeat our exercise in section 4.3 with alternate thresholds classifying a healthy and an unhealthy lender. In columns (1) to (3), we identify a lender as a healthy or "good" lender if its equity to assets ratio is in the top quartile of the sample distribution. The outcome of interest is, again, the natural logarithm of loan commitments. We then proceed to define a bad lender if its equity-to-assets ratio is in the bottom quartile of the sample distribution in columns (4)–(6). We find our results are nearly unchanged.

Finally, we use total risk-based capital ratio as an alternate measure of lender health to check the robustness of our results in Table 6. This is defined as the sum of Tier 1 and Tier 2 capital (plus Tier 3 capital where applicable) over total risk-weighted assets.[22] We classify good lenders as those with a risk-based capital ratio above the sample median immediately before a covenant violation. These results are reported in Table A10. Our results remain unchanged. Crucially, the quantitative estimates of $PE \times Violate$ are quite similar when we look at healthy lenders. But as before, they are insignificant when we look at unhealthy lenders.

7 Conclusion

This paper examines the role of a private equity sponsor's reputation in explaining the heterogeneous consequences of covenant violations. 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

[22] For further details see: https://www.federalreserve.gov/boarddocs/supmanual/bhcpr/UsersGuide13/s318.pdf

as they do when non-PE firms violate covenants. We show that our result is driven by a repeated-deals mechanism as lenders and financial sponsors frequently interact in credit markets consistent with Malenko and Malenko (2015) and Ivashina and Kovner (2011).

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 issued by the same bank to borrowers in the same 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. The idea is that strict supervisors will demand tighter covenants, which are more likely to be violated. The quasi-exogenous variation stems from differences in personalities across bank examiners following Ivanov and Wang (2020), which is unobserved by the PE sponsor or borrower. Overall, we uncover a novel mechanism that affects lenders' enforcement behavior following a contractual breach. Our paper has significant implications for both the financial contracting and credit constraints in PE-backed firms.

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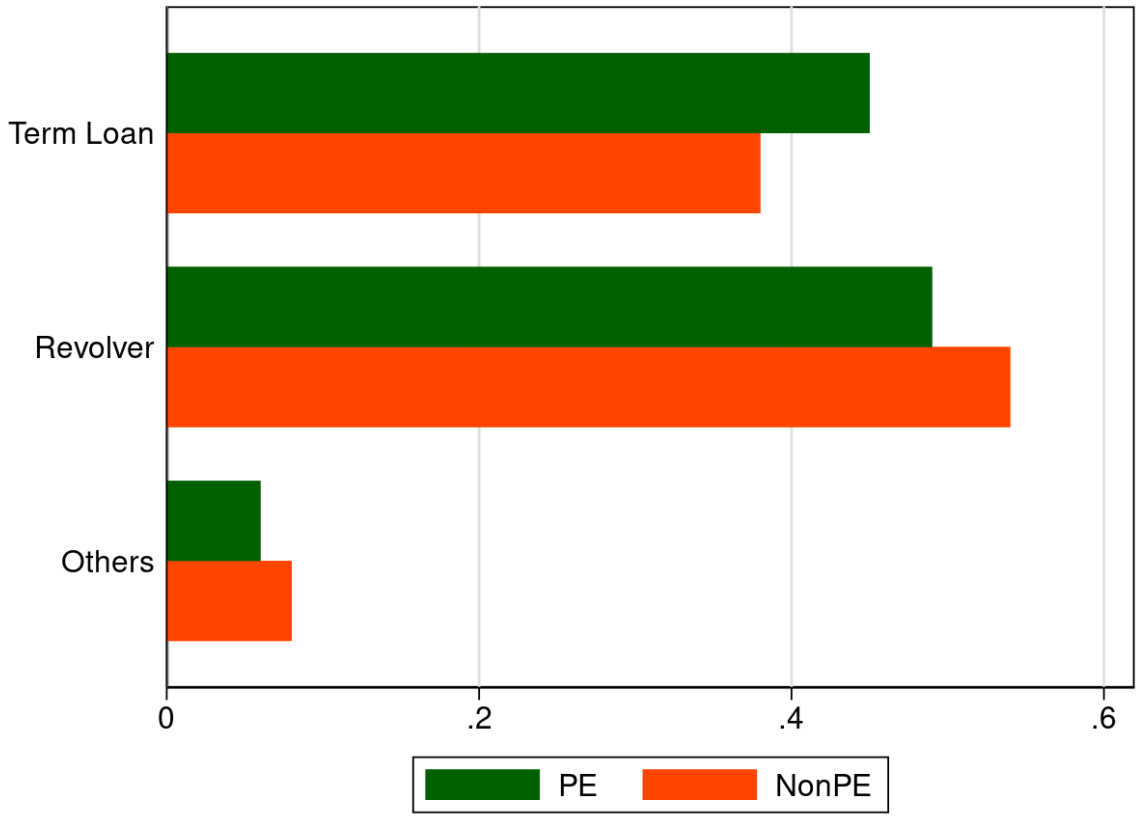
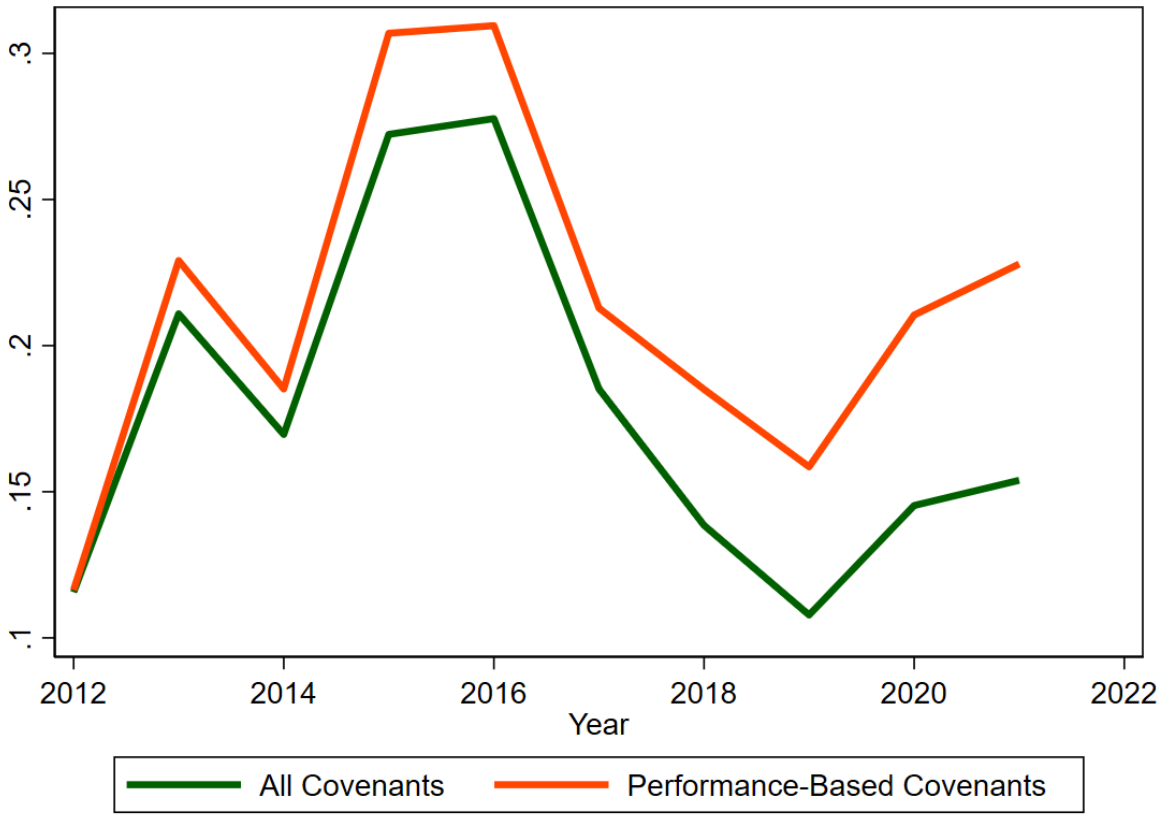
Figure 1: Share of Commitments by Loan and Firm-Type



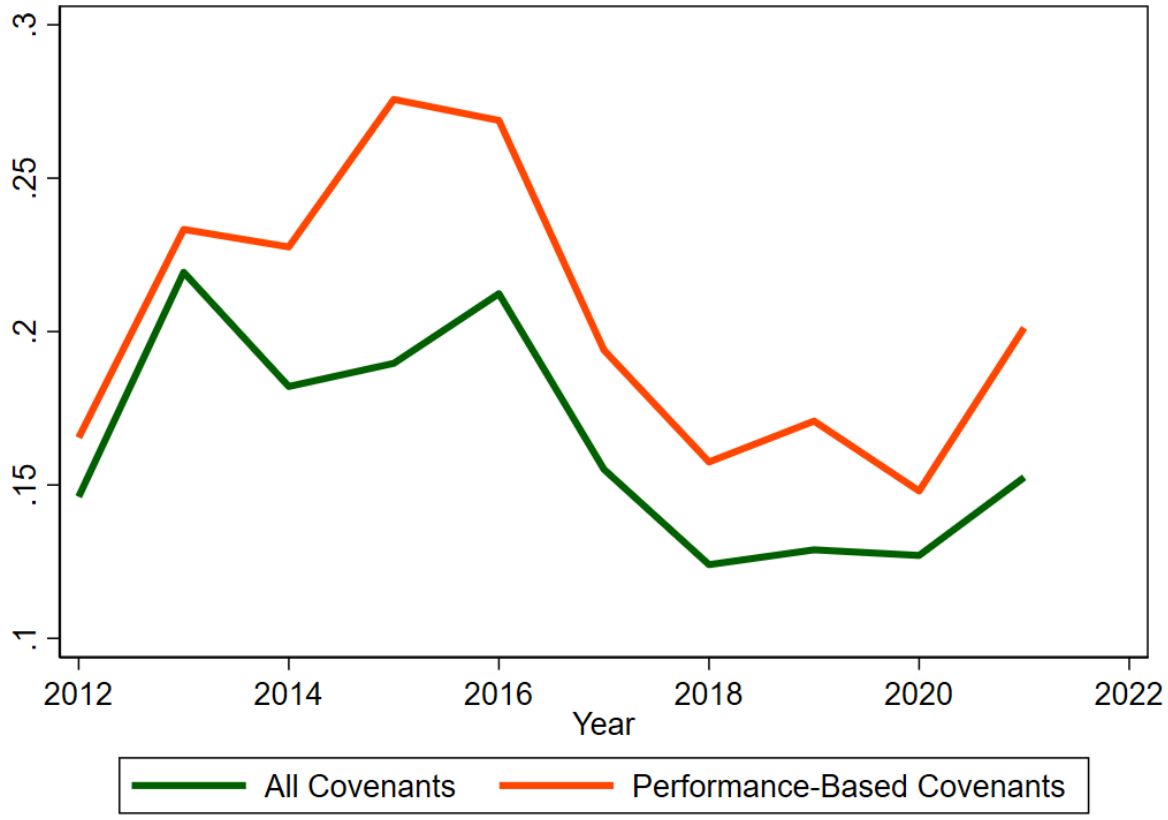
(a) *Notes: This chart plots the frequencies of different types of loans within the PE and non-PE sample in the SNC database. Loan types are grouped into term loans, credit lines, and other types of facilities. Performance-based covenant is defined in Appendix 8.*

Figure 2: Probability of Violating a Covenant: PE Firms



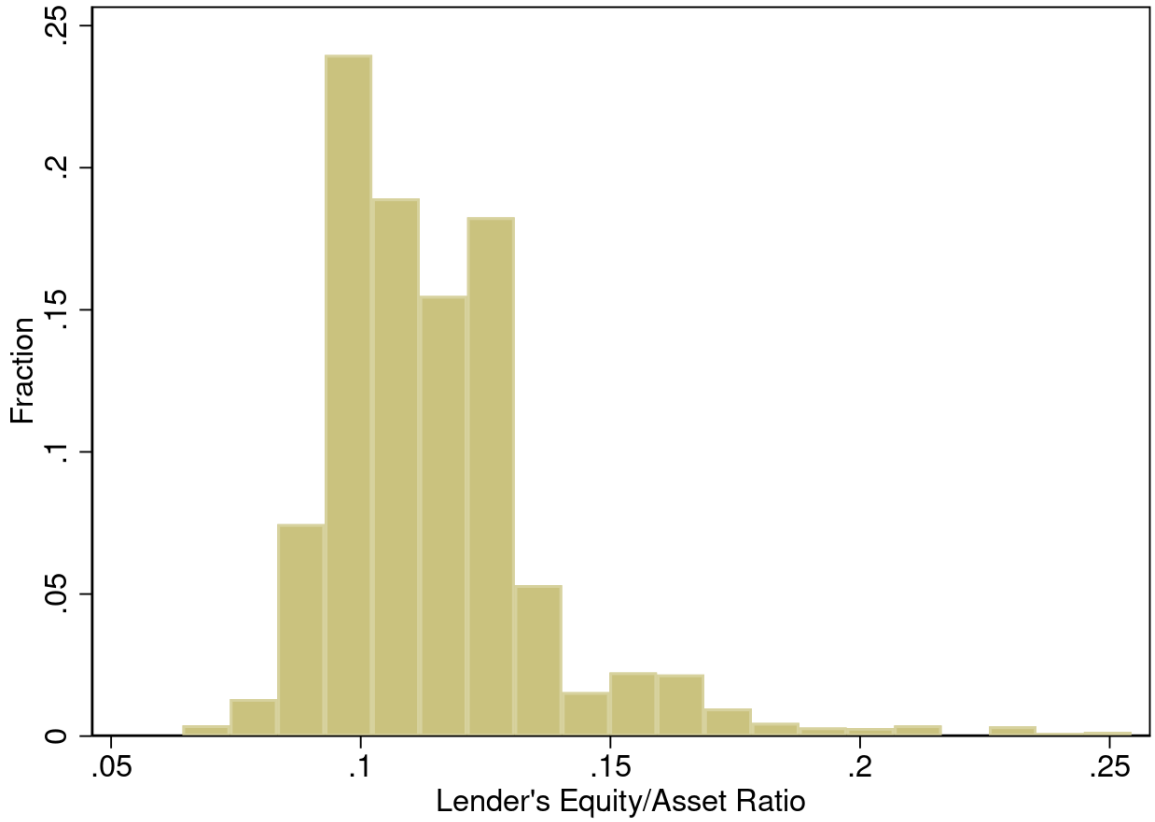
(a) *Notes: This chart plots the share of loans that are violated in a given year for firms backed by PE sponsors. The green line plots the trend for all types of covenants, while the orange line restricts the same to only performance-based covenants. Performance-based covenant is defined in Appendix 8.*

Figure 3: Probability of Violating a Covenant: Non-PE Firms



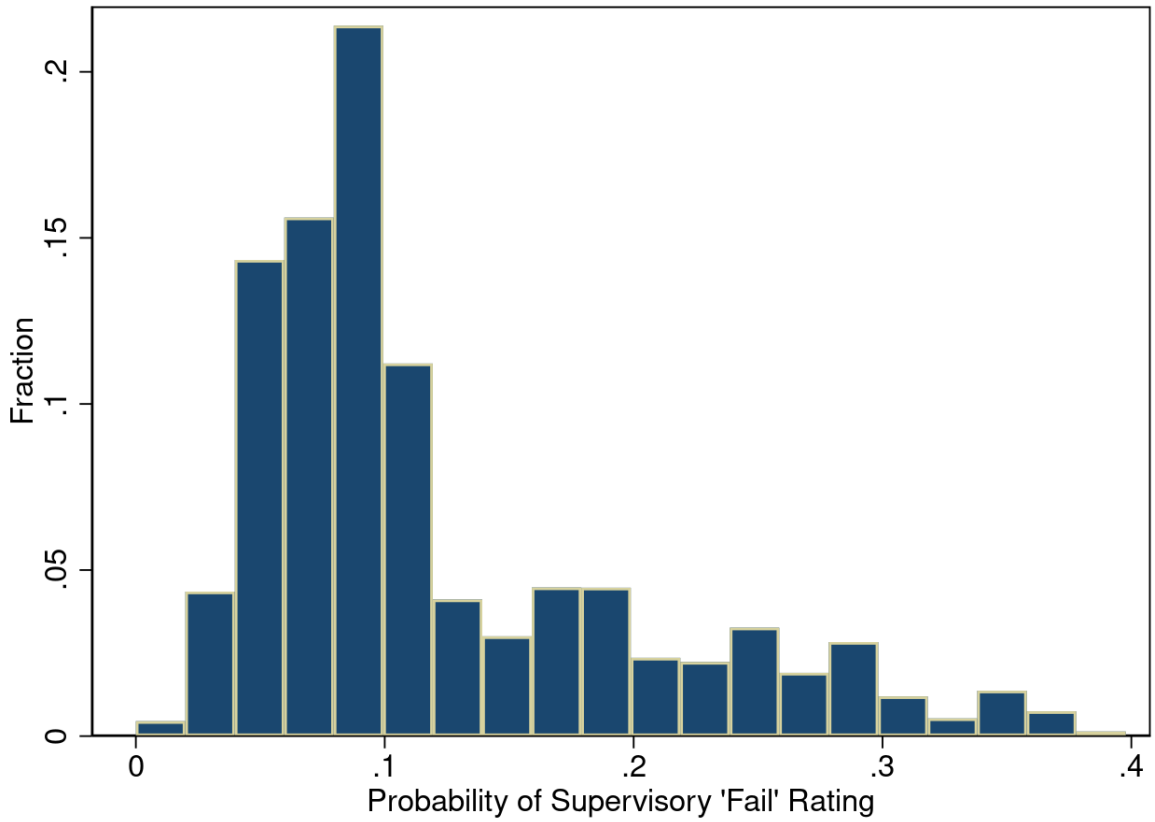
(a) *Notes: This chart plots the share of loans that are violated in a given year for firms not backed by PE. The green line plots the trend for all types of covenants, while the orange line restricts the same to only performance-based covenants. Performance-based covenant is defined in Appendix 8.*

Figure 4: Lender Health: Equity to Assets Ratio



(a) *Notes: This chart plots the distribution of the lender's financial health, 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 5: Examiner Strictness



(a) *Notes: This chart plots the distribution of examiner strictness. Examiner strictness is measured as the total number of fail ratings over the total number of examinations by a given examiner-in-charge as identified by the Shared National Credit Program. Our benchmark sample has 540 unique examiners. Examiners are rotated across banks through a pre-determined rotation policy.*

8 Variable Definitions

- *Committed Exposure* is defined as the commitment amount of a given credit facility in millions of US dollars.
- *Utilized Exposure* is defined as the outstanding drawn amount under a given line of credit in millions of US dollars.
- *Utilization Rate* is defined as the outstanding drawn amount divided by the total credit line commitment amount. This variable always takes the value of one for term loans
- *Loan Maturity* is defined as the difference between the loan maturity date and origination date (in years) of a given credit facility.
- *Credit Line* is an indicator variable that takes the value of one if the credit facility is a revolving line of credit and zero elsewhere.
- *Term Loan* is an indicator variable that takes the value of one if the credit facility is a term loan and zero elsewhere.
- *Covenant Violation* is set to 1 if a loan breaches a covenant or required a waiver or amendment in order to stay compliant, 0 otherwise. In an alternate definition, we exclude waivers and resets.
- *Examiner Risk Rating* is a 5-scale 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. A rating of 1 is "Investment Grade Pass", 2 is "Non-Investment-Grade pass", 3 is "Lowest Rated Pass", 4 is "Special Mention", and 5 is "Substandard".
- *Performance-based covenant* is an indicator equal to 1 for any one of the following covenants: debt service coverage ratios, level of EBITDA, interest coverage ratio, debt-to-EBITDA ratio, senior debt to EBITDA ratio, debt-to-equity ratio, loan-to-value ratio, the ratio of debt to tangible net worth, leverage and senior leverage ratios, minimum profitability requirements, fixed charge coverage ratio, and net worth requirements.
- *Non-performance-based covenant, NPCov* 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.

- *Negative covenants* take value 1 if a covenant explicitly mentions negative covenants in the description.
- *Liquidity covenants* take value 1 if a covenant explicitly mentioned it contains liquidity covenants such as the current ratio in the description.
- *High Reputation* takes value 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.
- *Voter Dollar Rating Non-Pass* is the total dollar amount of a credit's committed exposure where the final exam rating is Special Mention, Substandard, Doubtful, and Loss.
- *Total Risk-Based Capital Ratio* is defined as total risk-based capital over Risk-Weighted Assets, constructed at the Bank Holding Company $\times$ Time level. This is obtained from Y-9C.

Table 1: Summary Statistics

Panel A: PE	N	Mean	Stdev	p50	p25	p75
Commitments (USD Mn)	19189	492	743	250	95	600
Maturity (Years)	19189	6.1	7.7	5	5	7
Utilization Rate	19189	0.62	0.42	0.85	0.13	1
Concordance Rating	19189	2.5	1.2	2	2	3
Loans in "Special Mention" category (%)	1622	8.4	-	-	-	-
Loans in "Substandard" category (%)	1782	9.8	-	-	-	-
Panel B: Non-PE						
Commitments (USD Mn)	24481	403	664	198	75	465
Maturity (Years)	24481	6.1	3.36	5	5	7
Utilization Rate	24481	0.61	0.41	0.73	0.16	1
Concordance Rating	24481	2.4	1.2	2	2	3
Loans in "Special Mention" category (%)	1824	7.4	-	-	-	-
Loans in "Substandard" category (%)	1886	7.7	-	-	-	-

(a) *Notes: This table reports summary statistics of loans 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. All variables are defined in Section 8.*

Table 2: Covenant Type and Dollar Volume in PE Sample

		Commitment (Mn USD)	
	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
Sprinring 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

(a) *Notes: This table reports the loan covenant type, sorted by their frequency in the PE sample in the SNC database. We also report the distribution of loan amounts secured by each covenant type in the PE sample. Note one loan-time observation can have multiple covenants. At least one of the above covenants appears in over 86 percent of the sample. All variables and covenants are defined in Section 8.*

Table 3: Benchmark Results: Covenant Breach and Volume of Loan Commitment

$Y_{j,i,b,t}$: *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
BankxTime FE	Y	Y	Y	Y	Y	Y
SectorxTime	N	Y	Y	Y	Y	Y
Loan Controls and Loan FEs	Y	Y	Y	Y	Y	Y
Origination Year-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	42874	42864	42861	42861	42801	43478

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports OLS estimates where the dependent variable is the natural logarithm of loan commitment between a given firm-bank pair in time t. All explanatory variable is defined in the Appendix. PE is an indicator variable taking value 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 SNC report date. Loan controls include utilization rate and maturity. Loan fixed effects include supervisory risk rating, loan type, loan purpose, and loan origination quarter. Covenant types are split into performance-based and non-performance based. Standard errors are clustered at the bank × Time level.*

Table 4: Benchmark Results: Covenant Breach and Probability of Credit Reduction

$Y_{j,i,b,t}$: 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)
$PE \times Violate$	-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
BankxTime FE	Y	Y	Y	Y	Y	Y
SectorxTime	N	Y	Y	Y	Y	Y
Loan Controls and Loan FEs	Y	Y	Y	Y	Y	Y
Origination Year-Qtr FEs	N	N	Y	Y	Y	Y
Covenant-type FE	N	N	N	Y	Y	Y
Firm FE	N	N	Y	N	N	N
Bank-Firm FE	N	N	N	N	Y	N
N	36560	36548	36545	36545	36496	37274

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports OLS estimates where the dependant variable is an indicator taking value 1 if credit commitment between a given firm-bank pair in time t is reduced relative to $t-1$. All explanatory variable is defined in the Appendix. PE is an indicator variable taking value 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 SNC report date. Loan controls include utilization rate and maturity. Loan fixed effects include supervisory risk rating, loan type, loan purpose, and loan origination quarter. Covenant types are split into performance-based and non-performance based. Standard errors are clustered at the bank × Time level.*

Table 5: Instrumental Variable: Examiner Strictness at Loan Origination

	$1 * (Credit\ Reduced)$		$Log\ (Commitments)$		$Log\ (Maturity)$	
	(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)
$Violate \times PE$	-0.674**	-0.609**	1.241*	0.381*	0.859**	1.460***
	(0.320)	(0.306)	(0.733)	(0.218)	(0.397)	(0.446)
Examiner FE	Y	Y	Y	Y	Y	Y
District FE	N	Y	N	Y	N	Y
DistrictxYear FE	Y	N	Y	N	Y	N
Bank FE	Y	N	Y	N	Y	N
BankxTime FE	N	Y	N	Y	N	Y
Sector FE	Y	Y	Y	Y	Y	Y
Loan Controls and Loan FEs	Y	Y	Y	Y	Y	Y
N	28254	28217	33124	33087	33124	33093

* $p < .10$, ** $p < .05$, *** $p < .01$

(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. All explanatory variable is defined in the Appendix. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the SNC report date. Loan controls include utilization rate and maturity in Columns (1) - (4), and utilization rate and log (commitments) in column (5) and (6). Loan fixed effects include supervisory risk rating, loan type, and loan purpose. Standard errors are clustered at the bank × Time level.*

Table 6: Covenant Violations, PE presence, and Lender Health

	Good Lender			Bad Lender		
	(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)
$Violate \times PE$	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
BankxTime FE	Y	Y	Y	Y	Y	Y
SectorxTime	N	Y	Y	N	Y	Y
Loan Controls and Loan FEs	Y	Y	Y	Y	Y	Y
Origination Qtr FE	N	N	Y	N	N	Y
N	14320	14311	14308	14153	14129	14126

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports OLS estimates where the dependent variable is the natural logarithm of loan commitment between a given firm-bank pair in time t. All explanatory variable is defined in the Appendix. Good lenders are defined as those with equity to assets ratio above the sample median, while Bad lenders are defined symmetrically. PE is an indicator variable taking value 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 SNC report date. Loan controls include utilization rate and maturity. Loan fixed effects include supervisory risk rating, loan type, loan purpose, and loan origination quarter. Standard errors are clustered at the bank × Time level.*

Table 7: Covenant Violations and Bank Monitoring

$Y_{l,t} : 1 * (Active\ Monitoring)$	(1)	(2)	(3)	(4)
$Violate$	0.0476**	-0.0187	-0.0168	-0.0164
	(0.019)	(0.016)	(0.015)	(0.016)
$Violate \times PE$		0.0545**	0.0636**	0.0594**
		(0.025)	(0.025)	(0.025)
R-squared	0.364	0.205	0.246	0.254
BankxTime FE	Y	Y	Y	Y
SectorxTime	Y	N	Y	Y
Loan Controls and Loan FEs	Y	Y	Y	Y
Origination Qtr FE	Y	N	N	Y
N	6646	16419	16402	16396

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports OLS estimates where the dependant variable is an indicator taking the value 1 if a bank actively monitors a loan commitment between a given firm-bank pair in time t. All other explanatory variable is defined in the Appendix. Column (1) is restricted to only the PE sample, while columns (2)-(4) include the non-PE sample as well. PE is an indicator variable taking value 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 SNC report date. Loan controls include utilization rate and maturity. Loan fixed effects include supervisory risk rating, loan type, loan purpose, and loan origination quarter. Standard errors are clustered at the bank × Time level.*

Table 8: High Reputation Sponsors, Covenant Violation and Loan Commitments

	Log (Commitments)		*Credit Reduced*	
	(1)	(2)	(3)	(4)
Violate	-0.276***	-0.272***	0.0549***	0.0574***
	(0.034)	(0.034)	(0.012)	(0.012)
$1 * (High\ Reputation)$	0.265***	0.269***	0.00631	0.00714
	(0.026)	(0.026)	(0.008)	(0.008)
$Violate \times 1 * (High\ Reputation)$	0.147***	0.146***	-0.0587***	-0.0579***
	(0.050)	(0.048)	(0.021)	(0.022)
R-squared	0.389	0.394	0.0515	0.0610
BankxTime FE	Y	Y	Y	Y
Sector FE	Y	N	Y	N
SectorxTime	N	Y	N	Y
Loan FEs	Y	Y	Y	Y
Loan Controls	Y	Y	Y	Y
N	43490	43480	37285	37275

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports OLS estimates where the dependant variable is the natural logarithm of loan commitment between a given firm-bank pair in time t in columns (1) and (2), and an indicator 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 our sample of over 600 funds 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. All variables are defined in Section 8. The sample size is marginally higher than the baseline due to fewer fixed effects employed.Standard errors are clustered at the bank × Time level.*

Table 9: Sponsors' Deal Volume, Covenant Violations, and Loan Commitments

	Log (Commitments)		*Credit Reduced*	
	(1)	(2)	(3)	(4)
Violate	-0.325***	-0.321***	0.0666***	0.0690***
	(0.042)	(0.042)	(0.015)	(0.015)
$ln(1 + no.\ of\ deals)$	0.104***	0.104***	0.00245	0.00261
	(0.009)	(0.009)	(0.003)	(0.003)
$Violate \times ln(1 + no.\ of\ deals)$	0.0505***	0.0498***	-0.0153***	-0.0151***
	(0.014)	(0.014)	(0.006)	(0.006)
R-squared	0.390	0.395	0.0515	0.0610
BankxTime FE	Y	Y	Y	Y
Sector FE	Y	N	Y	N
SectorxTime	N	Y	N	Y
Loan FEs	Y	Y	Y	Y
Loan Controls	Y	Y	Y	Y
N	43490	43480	37285	37275

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports OLS estimates where the dependant variable is the natural logarithm of loan commitment between a given firm-bank pair in time t in columns (1) and (2), and an indicator 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. Unique PE deals are identified through the first sponsor-borrower pair observations in the full SNC universe. In addition to the controls listed above, all regressions also include an indicator for PE-backed firms. All variables are defined in Section 8. Standard errors are clustered at the bank × Time level.*

Table 10: Loan Performance

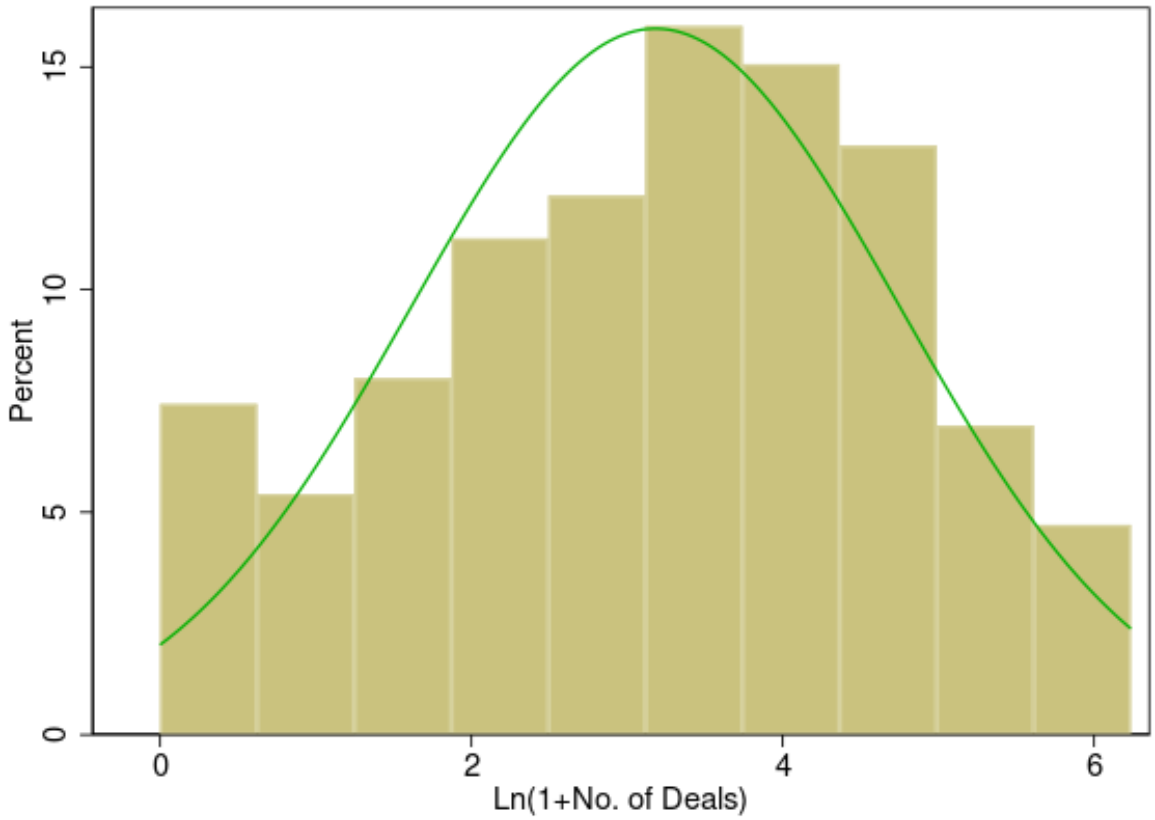
	$\mathbf{1} * (Substandard/Doubtful)$			$log\ (1\ +\ Non\ Pass\ Amount)$		
	(1)	(2)	(3)	(4)	(5)	(6)
$Violate$	0.204***	0.189***	0.192***	4.722***	4.370***	4.463***
	(0.016)	(0.016)	(0.016)	(0.273)	(0.279)	(0.279)
PE	0.0158***	0.0128**	0.0268***	0.457***	0.392***	0.695***
	(0.006)	(0.005)	(0.005)	(0.113)	(0.107)	(0.107)
$Violate \times PE$	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
BankxTime FE	Y	Y	Y	Y	Y	Y
SectorxTime	N	Y	Y	N	Y	Y
Loan Controls and Loan FEs	Y	Y	Y	Y	Y	Y
Origination Qtr FE	N	N	Y	N	N	Y
N	43491	43481	43478	43491	43481	43478

* $p < .10$, ** $p < .05$, *** $p < .01$

(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 1 if a loan is classified as substandard or is under special mention. In columns (4) to (6), we use the natural logarithm of 1 plus the dollar volume of a loan facility's committed exposure where the final exam rating is Special Mention, Substandard, Doubtful, and Loss. All variables are defined in Section 8. Standard errors are clustered at the bank × Time level.*

Online Appendix

Figure A1: Distribution of Sponsor Relationship Measure



(a) *Notes: This chart plots the distribution of the natural logarithm of the sum of 1 plus the number of deals executed by a PE sponsor in the past three years. PE sponsors are identified from Pitchbook and SNC databases.*

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: Probability of Violating a Covenant

	(1)	(2)	(3)
PE	0.0391***	0.0384***	0.0445***
	(0.004)	(0.004)	(0.004)
R-squared	0.102	0.117	0.129
BankxTime FE	Y	Y	Y
SectorxTime	N	Y	Y
Loan Controls and Loan FEs	Y	Y	Y
Origination Qtr FE	N	N	Y
N	43491	43481	43478

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports estimates of a linear probability model where the dependant variable is an indicator taking the value of 1 if a covenant is violated at a given point in time, 0 otherwise. The equation takes the general form below:*

$$1 * (Violation) = 1 * (PE) + Loan\ Controls\ + FEs$$

PE is an indicator variable taking value 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 SNC report date. Loan controls include utilization rate, total loan commitment, and maturity. Loan fixed effects include supervisory risk rating, loan type, and loan purpose. Standard errors are clustered at the bank × Time level.

Table A3: Robustness Test: Benchmark test with alternate violation definition

	$Log\ (Commitments)$		$1 * (Credit\ Reduced)$	
	(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)
$PE \times Violate$	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
BankxTime FE	Y	Y	Y	Y
SectorxTime	Y	Y	Y	Y
Loan Controls and Loan FEs	Y	Y	Y	Y
Covenant-type FE	N	Y	N	Y
N	43478	43478	37274	37274

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports OLS estimates where the dependent variable is the natural logarithm of loan commitment between a given firm-bank pair in time t. All explanatory variable is defined in the Appendix. 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 value 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 SNC report date. Loan controls include utilization rate and maturity. Loan fixed effects include supervisory risk rating, loan type, loan purpose, and loan origination quarter. Covenant types are split into performance-based and non-performance based. Standard errors are clustered at the bank × Time level.*

Table A4: Covenant Violations, PE presence, and Lender Health: Alternate Thresholds

	Good Lender			Bad Lender		
	(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)
$Violate \times PE$	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
BankxTime FE	Y	Y	Y	Y	Y	Y
SectorxTime	N	Y	Y	N	Y	Y
Loan Controls and Loan FEs	Y	Y	Y	Y	Y	Y
Origination Qtr FE	N	N	Y	N	N	Y
N	5704	5661	5657	6698	6651	6648

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports OLS estimates where the dependent variable is the natural logarithm of loan commitment between a given firm-bank pair in time t, using alternate definitions of good and bad lenders. All explanatory variable is defined in the Appendix. Good lenders are defined as those with equity to assets ratio in the top quartile of the same (12.7 percent), while Bad 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 value 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 SNC report date. Loan controls include utilization rate and maturity. Loan fixed effects include supervisory risk rating, loan type, loan purpose, and loan origination quarter. Standard errors are clustered at the bank × Time level.*

Table A5: Triple Interaction: Sponsors' Reputation, Covenant Violations, and Loan Commitments

	Log (Commitments)		*Credit Reduced*	
	(1)	(2)	(3)	(4)
$Violate \times PE \times$ *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
BankxTime FE	Y	Y	Y	Y
Sector FE	Y	N	Y	N
SectorxTime	N	Y	N	Y
Loan FEs	Y	Y	Y	Y
Loan Controls	Y	Y	Y	Y
N	43490	43480	37285	37275

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports OLS estimates where the dependant variable is the natural logarithm of loan commitment between a given firm-bank pair in time t in columns (1) and (2), and an indicator Credit Reduced in columns (3) and (4). The key variable of interest is the triple interaction between Violate, PE, and High Reputation. The latter is the natural logarithm of 1 plus the total number of deals executed by a PE sponsor. Unique PE deals are identified through the first sponsor-borrower pair observations in the full SNC universe. In addition to the controls listed above, all regressions also include an indicator for PE-backed firms. All variables are defined in Section 8. Standard errors are clustered at the bank × Time level.*

Table A6: Loan Performance: Additional Results

	$\mathbf{1} * (Substandard/Doubtful/Lowest\ Pass)$		
	(1)	(2)	(3)
$Violate$	0.226***	0.208***	0.216***
	(0.017)	(0.017)	(0.017)
PE	0.0321***	0.0267***	0.0347***
	(0.007)	(0.007)	(0.007)
$Violate \times PE$	-0.0348	-0.0399*	-0.0533**
	(0.024)	(0.024)	(0.024)
R-squared	0.266	0.295	0.306
Firm FE	Y	Y	Y
BankxTime FE	Y	Y	Y
SectorxTime	N	Y	Y
Loan Controls and Loan FEs	Y	Y	Y
Origination-Qtr FE	N	N	Y
N	43491	43481	43478

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports OLS estimates where the dependant variable captures loan performance. We measure performance through an indicator that takes value 1 if a loan is classified as lowest-grade pass, substandard, or under special mention. All variables are defined in Section 8. Standard errors are clustered at the bank × Time level.*

Table A7: Examiner Strictness at Loan Origination: Robustness Test

	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)
$PE \times Violate$	-0.817***	-0.681**	0.808**	-0.541	1.778***	1.534***
	(0.310)	(0.309)	(0.355)	(0.747)	(0.456)	(0.450)
Examiner FE	Y	Y	Y	Y	Y	Y
Bank FE	Y	Y	N	Y	Y	Y
Sector FE	Y	N	Y	N	Y	N
SectorxTime	N	Y	N	Y	N	Y
Loan Controls and Loan FEs	Y	Y	Y	Y	Y	Y
N	30516	30507	35700	35679	35687	35679

* $p < .10$, ** $p < .05$, *** $p < .01$

(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. All explanatory variable is defined in the Appendix. Sector-time fixed effects are defined at the 2-digit NAICS level. Time FEs are at the SNC report date. Loan controls include utilization rate and maturity. Loan fixed effects include supervisory risk rating, supervisor identity, loan type, and loan purpose. Standard errors are clustered at the bank × Time level.*

Table A8: Benchmark results controlling for firm-level characteristics

	Log (Commitments)				*Credit Reduced*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Violate	-0.230***	-0.230***	-0.229***	-0.213***	0.0583***	0.0583***	0.0585***	0.0568**
	(0.044)	(0.044)	(0.044)	(0.043)	(0.022)	(0.022)	(0.022)	(0.021)
Violate × *PE*	0.116**	0.116**	0.116**	0.130**	-0.0470**	-0.0470**	-0.0470**	-0.0524**
	(0.058)	(0.058)	(0.058)	(0.058)	(0.022)	(0.022)	(0.022)	(0.023)
Leverage	0.0846***	0.0851***	0.0868***	0.0837***	-0.0132***	-0.0132***	-0.0129***	-0.0126***
	(0.020)	(0.021)	(0.020)	(0.019)	(0.003)	(0.003)	(0.003)	(0.003)
log (Assets)	0.396***	0.397***	0.399***	0.393***	-0.00346	-0.00327	-0.00303	-0.00165
	(0.011)	(0.011)	(0.011)	(0.011)	(0.003)	(0.003)	(0.003)	(0.003)
Bank Debt Share		0.0000982	0.000179	0.000189		0.0000513***	0.0000606***	0.0000660***
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
ROA			0.131	0.128			0.0150*	0.0156*
			(0.084)	(0.082)			(0.008)	(0.008)
R-squared	0.550	0.550	0.550	0.559	0.0827	0.0828	0.0828	0.0919
BankxTime FE	Y	Y	Y	Y	Y	Y	Y	Y
SectorxTime	Y	Y	Y	Y	Y	Y	Y	Y
Loan Controls and Loan FEs	Y	Y	Y	Y	Y	Y	Y	Y
Origination Qtr FE	N	N	N	Y	N	N	N	Y
Bank-Firm FE	19641	19633	19633	19629	17088	17081	17081	17081

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports OLS estimates of the benchmark regression, augmented with firm-level controls from the FR Y-14Q. All explanatory variable is defined in the Appendix. PE is an indicator variable taking value 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 SNC report date. Loan controls include utilization rate and maturity. Loan fixed effects include supervisory risk rating, loan type, loan purpose, and loan origination quarter. Standard errors are clustered at the bank × Time level.*

Table A9: Repeated Games and Lender Health

$log\ (Commitments)$	(1)	(2)	(3)
$Good\ Lender \times HighRep \times Violate$	0.280*	0.257*	0.254*
	(0.150)	(0.136)	(0.141)
$PE \times Violate$	0.0812	0.0397	0.0406
	(0.081)	(0.077)	(0.077)
$Violate$	-0.408***	-0.344***	-0.343***
	(0.043)	(0.039)	(0.039)
R-squared	0.322	0.376	0.368
Bank FE	Y	Y	Y
Loan Risk FE	Y	Y	Y
SectorxTime	N	Y	Y
Loan Controls	Y	Y	N
N	28547	28540	28540

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports triple-difference estimates where the dependent variable is the natural logarithm of loan commitment between a given firm-bank pair in time t. All explanatory variable is defined in the Appendix. Good lenders are defined as those with equity/asset ratio above the sample median prior to violation, while Bad lenders are defined symmetrically. PE is an indicator variable taking value 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 SNC report date. Loan controls include utilization rate and maturity. Standard errors are clustered at the bank × Time level.*

Table A10: Covenant Violations and Lender Health: Alternate Lender Health Measure

	Good Lender			*Bad Lender*		
	(1)	(2)	(3)	(4)	(5)	(6)
$Violate$	-0.363***	-0.352***	-0.341***	-0.240***	-0.236***	-0.187***
	(0.052)	(0.052)	(0.050)	(0.058)	(0.058)	(0.055)
$Violate \times PE$	0.217***	0.189***	0.203***	0.000870	0.0219	0.0363
	(0.067)	(0.068)	(0.069)	(0.094)	(0.098)	(0.089)
R-squared	0.401	0.431	0.446	0.410	0.453	0.480
BankxTime FE	Y	Y	Y	Y	Y	Y
SectorxTime	N	Y	Y	N	Y	Y
Loan Controls and Loan FEs	Y	Y	Y	Y	Y	Y
Origination Qtr FE	N	N	Y	N	N	Y
N	17618	17602	17596	10729	10705	10703

* $p < .10$, ** $p < .05$, *** $p < .01$

(a) *Notes: This table reports OLS estimates where the dependent variable is the natural logarithm of loan commitment between a given firm-bank pair in time t. All explanatory variable is defined in the Appendix. Good lenders are defined as those with total risk-based capital ratio above the sample median prior to violation, while Bad lenders are defined symmetrically. PE is an indicator variable taking value 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 SNC report date. Loan controls include utilization rate and maturity. Loan fixed effects include supervisory risk rating, loan type, loan purpose, and loan origination quarter. Standard errors are clustered at the bank × Time level.*