Fragile Financing?
How Corporate Reliance on Shadow Banking Affects their Access to Bank Liquidity

Viral V. Acharya Manasa Gopal Sascha Steffen

This version: December 1, 2025*

Abstract

Greater reliance on nonbank financing makes firms fragile as it leads banks to limit firms' access to credit lines. Besides demonstrating this result in panel tests subject to range of controls and robustness checks, we employ the 2014–16 oil-price collapse as an exogenous rollover risk in nonbank financing of non-oil-sector firms by collateralized loan obligations (CLOs) exposed to oil sector firms. Nonbank-reliant firms with looming maturities faced reductions and wider spreads in bank credit lines after the shock, resulting in weaker financial and real performance in spite of their drawdowns of existing credit lines. The impact of nonbank dependence on banks' liquidity provision is strongest when firms rely on institutional loan-market investors such as CLOs, weaker for bond financing, and muted for private credit lenders, highlighting that the composition of nonbank funding critically shapes firms' access to bank liquidity.

JEL classification: G01, G21, G23
Keywords: Nonbank financing, CLOs, Rollover risk, Credit lines, Syndicated loans, Bonds, Private credit

* Acharya: NYU Stern School of Business, NBER, CEPR, and ECGI, vva1@stern.nyu.edu. Gopal: Georgia Institute of Technology – Scheller College of Business, manasa.gopal@scheller.gatech.edu.Steffen: Frankfurt School of Finance, CEPR, s.steffen@fs.de. Steffen greatly appreciates support from the Centre for European Transformation. We thank Mitch Berlin, Livia Chitu (discussant), Shohini Kundu, Daniel Streitz, Adi Sundaram (discussant), conference participants at NBER SI 2025 and European Finance Association 2025, as well as seminar participants at the Frankfurt School of Finance & Management, HHI Bergen, University of Sydney, University of Technology Sydney, University of Melbourne, Syracuse University, University of Central Florida, University of Miami, and Vrije University of Amsterdam for valuable feedback.

1 Introduction

Over the past two decades, we have observed a substantial growth in assets under management at "shadow banks" or nonbank financial institutions; see Acharya et al. (2024), among others. At the same time, there has been a noticeable increase in nonbank funding for large corporations. Figure 1, Panel A shows that nonbank term loan originations have exceeded bank term loan originations over most of the sample period from 2000 Q1 to 2022 Q1. In 2017, approximately 75% of term loans provided to non-financial corporations were originated by nonbank lenders (cite Irani et al. (2021)). Furthermore, nonbank-funded firms are large and economically important, surpassing in size borrowers that are entirely bank-dependent, again highlighting the growing importance of nonbank lending as a key source of corporate financing.[1]

However, nonbank lending or "shadow banking" - which we use synonymously - is characterized by a lack of stable and insured deposit base. Nonbanks also lack access to an explicit government or central bank backstop for emergency liquidity. Thus, opting for nonbank financing potentially introduces rollover risk into a firm's capital structure (Irani et al. 2021, Fleckenstein et al. 2024). As a result, in periods of market stress, firms that rely on nonbanks see a reduction in access to funding. A natural question then is whether bank credit lines are available to these firms for drawing down at attractive terms relative to rollover costs when market-wide risk increases and other credit options become scarce.[2]

The COVID-19 outbreak in March 2020 provides a prime and recent example of a large and unexpected market-wide shock wherein we witnessed a large decline in the issuance of nonbank loans as money flowed out of collateralized loan obligation (CLO) vehicles and

[1]We show the size of this sector in Online Appendix Figure OA1. In related work, Buchak et al. (2024) document a decrease in lending via bank balance sheets and increasing intermediation via nonbanks. They attribute this development to a decline in bank deposits as well as regulation. Berg et al. (2021) discuss trends in corporate borrowing over the last two decades, particularly the increasing importance of nonbank lenders in the syndicated corporate loan market.

[2]Theoretical work (Boot et al. 1987, Thakor and Udell 1987, Shockley and Thakor 1997) and empirical work (Berg et al. 2016, Acharya et al. 2013) has emphasized the drawdown option in credit lines.

mutual funds, two of the largest nonbank investors.[3] This period was also accompanied by a large drawdown in bank credit lines and a surge in preference for cash over credit lines across the entire corporate sector (Acharya and Steffen 2020, Kashyap 2020). We see, importantly though, that firms with an above-median level of pre-COVID dependence on nonbanks – measured as the ratio of term loans of a firm held by nonbanks relative to all term loans – utilized a larger portion of their credit lines, relative to borrowers with lower exposure to nonbanks (Panel B of Figure 1).Thus, during periods of market stress, funding shifts from nonbanks to bank balance sheets through credit line drawdowns.[4]

Given these motivating facts, we ask in this paper how the increase in nonbank funding dependence of firms has altered the provision of liquidity insurance by banks to non-financial firms. We specifically seek to determine whether banks, in their role as liquidity providers, take into account the financing sources of borrowers when making lending decisions. In times of market-wide stress, banks may experience a shift in credit allocation from nonbanks to their own balance sheets via credit line drawdowns, potentially raising liquidity and capital encumbrance at banks. If, in anticipation of such adverse spillovers or upon their unexpected realization, banks decide against extending credit lines to borrowers dependent on nonbank financing, then financial stress to nonbank borrowers can get exacerbated due to the lack of *both* bank and nonbank funding sources. Documenting empirically that reliance on nonbank funding is indeed associated with such fragility for borrowers is the key contribution of our paper.

Our focus is on syndicated loan originations to large, nonfinancial corporations—a market exceeding $2.9 trillion in outstanding volume as of 2022 ($5.9 trillion including credit lines).[5] We measure a firm's nonbank dependence as the volume of institutional (Term Loans B–K) financing held by nonbank investors, divided by total term loans. In other words , we classify

[3]Around 86% of leveraged loans are now held by institutional investors, mainly CLOs and mutual or hedge funds, constituting nearly 96% of this segment (Saunders et al. 2024).

[4]Online Appendix Table OA2 confirms this econometrically. Borrowers with greater nonbank dependence in term loan borrowing were more likely to draw down bank credit lines during the COVID-19 outbreak (March-June 2020), and conditional on drawdown had higher utilization rates as well.

[5]See https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20230224a1.pdf

Term Loan A tranches as "bank" loans (retained on bank balance sheets) and Term Loans B–K as "nonbank" loans (placed predominantly with institutional investors).[6] Figure 2 shows that, while nonbank funding often exceeds 60% of a firm's term loans, it significantly dips during systemic shocks—such as the 2008–09 financial crisis, the 2014–16 oil price collapse, and the onset of COVID-19—underscoring the cyclicality and fragility of nonbank supply. For credit line access, we gauge the share of bank revolvers in a firm's total liquidity (cash plus credit lines), as in the work of Sufi (2009), and in total lending (bank plus nonbank loans plus committed lines).

We first document a negative relationship between a firm's nonbank dependence and its credit line access in cross-sectional regressions, which holds both when looking at contemporaneous origination of credit lines and nonbank loans and also when looking at the stock of outstanding credit lines and term loans. In terms of economic magnitude, moving from a completely bank-dependent to a completely nonbank-dependent borrower leads to a reduction in credit lines issued as a share of total loans by 17.6 ppt and as a share of total liquidity by 3.5 ppt. Borrowers with greater nonbank exposure are also associated with more expensive credit lines. A borrower with only nonbank term loans pays, on average, 46.9 bps higher drawn spreads and a 7.6 bps higher undrawn spread relative to a borrower with only bank term loans. This is an economically meaningful increase, equivalent to 25% of the mean drawn and undrawn spread respectively. These results are robust to alternative explanations such as lending relationships, better screening technologies, bank-nonbank matching and regulation (as banks are being prevented from lending to negative EBITDA firms). Moreover, we show that our cross-sectional results also hold in the time-series, with nonbank dependent firms having less and more cyclical access to credit lines and, consequently, hold more cash relative to total liquidity compared to bank dependent firms.

Notwithstanding these robustness checks, causal identification ideally requires exogenous variation in nonbank lending. We thus exploit the 2014–16 oil price collapse—a severe,

[6] We discuss alternate classifications and robustness in Section 4.2.

unexpected decline of about 70% in oil prices– as a plausibly exogenous shock to the rollover risk of nonbank financing for non-oil-sector firms. Stock prices of oil and gas firms declined as did their loan prices in the secondary corporate loan market. This in turn triggered a sharp drop in CLO issuances, as some CLO managers were heavily exposed to oil-related firms. As a result, primary market issuance of nonbank term loans (TLB tranches) also contracted. As some of the CLOs were close to breaching covenants, they were forced to also offload loans to firms who were *not* exposed to the oil-price shock. However, and important for our identification strategy, this was neither an aggregate downturn for the economy nor was it a meaningful threat to banking sector health.

We construct a panel of firms from January 2012 through December 2017 to capture nine quarters before the oil price collapse (2012Q1–2014Q1), six quarters during the collapse (2014Q2–2015Q4), and eight quarters afterward. We focus on firms *outside* the oil and gas sector as the shock to nonbank credit supply then only arises through managers' oil-sector exposures rather than the borrowers' fundamentals. Moreover, we stratify firms by rollover risk— that is, with looming TLB maturities —where a sudden withdrawal of nonbank funding is more likely to matter. This setting thus offers a quasi-experimental window to test how banks respond in providing liquidity and credit to a borrower whose nonbank lenders pull back for exogenous reasons.[7]

Consistent with our identification strategy, we first confirm that *nonbank* financing contracted severely for all firms who were relying on CLOs heavily exposed to oil and gas firms. Particularly affected were those companies facing higher rollover risk (i.e., borrowers that had maturing term loans during the oil-price shock).

Notably, and consistent with our earlier findings, bank credit lines *increased* for firms whose nonbank funding declined—but only if they did not require immediate refinancing. Bank lenders likely anticipated a reduced future reliance on nonbank funding and were

[7]This shock has been used to generate exogenous variation in credit supply in other academic work such as, for example, Kundu (2023) and Saunders et al. (2024). Giannetti and Meisenzahl (2023) use a similar identification strategy.

therefore willing to expand their liquidity provision to these firms. Conversely, banks reduced liquidity provision to firms with immediate refinancing needs from nonbanks (and whose nonbank funding declined too). Before the oil-price shock, changes in credit line lending to both groups of firms hovered around zero, reinforcing the argument that the shock triggered a divergence in bank credit line lending between firms with maturing and non-maturing nonbank term loans. Consistently, after the oil-price shock, spreads were higher for firms with maturing nonbank term loans, both relative to their pre-shock levels and compared to firms without maturing nonbank term loans. In other words, using a plausibly exogenous shock to nonbank funding, we find evidence supporting our earlier hypothesis: banks account for the potential and realized higher drawdown risks of firms financed by nonbanks and accordingly provide more (less) liquidity to firms that are less (more) dependent on nonbank funding.[8]

We conduct several robustness tests to address alternative explanations. First, the oil-price shock coincides with the introduction of the Leveraged Lending Guidance, raising the possibility that the observed shift from nonbank to bank lending among CLO-exposed firms might result from regulatory actions rather than CLO-specific shocks. However, by studying changes within banks that were affected or by the leveraged lending guidelines, we confirm that the changing regulation does not account for our findings. These results also hold for positive EBITDA firms. Moreover, it could be that firms with maturing and non-maturing loans are different. The former firms might be riskier and therefore obtained shorter loan maturities when originating their loans. To investigate this, we compare the distributions of original loan maturities for firms with and without maturing loans during our sample period

[8]The First Brands Group bankruptcy in September 2025 provides a striking recent example of the realized rollover risk dynamics documented in our paper. Facing tariff-induced stress and operational challenges, the company attempted to refinance its USD 6.2 billion debt structure in July 2025, but NBFIs (representing 87.7% of its 81 syndicated loan lenders) refused to roll over the facilities. As liquidity deteriorated, First Brands sought to draw on its remaining USD 250 million credit line, but Bank of America—the administrative agent—instead effectively declared technical default on the existing USD 133 million drawn amount. This forced all cash flows into a controlled account under BoA's dominion, replicating the "double whammy" we identify: NBFIs withdrew refinancing while the bank simultaneously reduced (rather than expanded) credit line availability. This increased liquidity problems of First Brands, and the company was eventually forced into Chapter 11. (Source: Chapter 11 Motion, DIP Financing Filing)

and find no significant differences, mitigating concerns related to borrower risk heterogeneity driving our results.

Our findings indicate that firms with maturing nonbank term loans experienced not only a sharp decline in nonbank lending but also a significant reduction in bank credit line originations and higher borrowing costs—a "double whammy" effect. This raises an important question: how did these firms continue to manage their liquidity? We show that they responded by substantially increasing their credit line utilization during the oil-price shock period. This also had notable implications for their investment decisions, as we observe a significant reduction in both assets and capital expenditures. At the same time, their cash holdings and the proportion of cash relative to total liquidity remained unchanged, supporting the interpretation that these firms were rendered financially constrained and sought to preserve cash. Finally, we show that firms more dependent on bank financing (or, equivalently, less reliant on nonbank sources of funding) *prior* to the oil price shock are better able to mitigate its adverse effects. Specifically, these firms secure greater and cheaper access to bank-provided liquidity during the shock period, hold lower cash buffers, and sustain higher levels of investment.

A growing share of corporate debt is held by nonbank investors across multiple instruments such as bonds and syndicated term loans. We show that this lender heterogeneity matters for how banks provide liquidity insurance through credit lines. While both bond and loan market nonbank dependence are associated with tighter access to bank-provided liquidity, the effects are substantially stronger when firms rely on nonbank investors in the loan market, particularly Term Loan B (TLB) investors such as CLOs. In contrast, firms with greater bond dependence exhibit weaker and less robust effects, reflecting lower drawdown risk of firms borrowing from bond markets – likely stemming from lower rollover risk.

Private credit is another fast growing segment of the corporate loan market. We investigate the effects of loans extended through Business Development Companies (BDCs) on bank provided liquidity and find only economically small effects. This is consistent with overall

lower credit line drawdown rates of borrowers financed via BDCs vis-a-vis those funded by TLB investors.

The conventional view holds that on-balance-sheet term lending and bank liquidity provision through credit lines can be safely separated (see, for example, Berlin et al. (2020)). In this framework, banks primarily supply credit lines, while institutional investors fund firms' longer-term borrowing through bonds, syndicated loans or private credit. We propose that firms' increasing reliance on nonbank lenders reduces banks' ex-ante willingness to provide liquidity. The central friction arises from the greater cyclicality of rollover risk and bank credit line drawdowns of nonbank dependent firms, that in turn induces costly bank capital encumbrance and/or funding needs. Overall, the evidence we present is consistent with this hypothesis suggesting that heavy dependence on nonbank financing increases borrower fragility and constrains access to bank-provided liquidity.

2 Literature Review

Our paper relates to different strands of the literature. First, it relates to a growing literature on syndicated corporate loan sales and (indirect) nonbank lenders such as CLOs (e.g. Drucker and Puri 2008, Ivashina and Sun 2011, Nadauld and Weisbach 2012, Benmelech et al. 2012, Berlin et al. 2020, Giannetti and Jang 2024, Gustafson et al. 2021, Blickle et al. 2020, Cordell et al. 2023). The existing literature highlights the benefits of institutional investors in the secondary loan market as to, for example, ex-ante better access to (term) loans and lower cost of credit. Irani et al. (2021) and Fleckenstein et al. (2024), on the other hand, document an increase in fragility to market-wide stress because of the growth in nonbank lending due to, for example, elevated rollover risk and the cyclicality associated with nonbank credit. Bhardwaj et al. (2025) find that shocks to the supply of capital of CLO investors is a source of fragility for firms. We show that banks reduce the provision of contingent liquidity in the form of credit lines to corporations that are reliant on nonbank funding. Borrowers with

greater nonbank exposure also find it more expensive to borrow through credit lines.

Another set of papers shifts attention towards aggregate drawdowns of credit lines by non-financial firms during periods of widespread economic stress. Ivashina and Scharfstein (2010) and Acharya and Mora (2015), for example, highlight a double bank run during the global financial crisis of 2008-2009 when firms ran on both bank deposits and credit lines, particularly, when firms and banks are financially constrained. Other papers document a "dash for cash" during the COVID-19 pandemic, when firms drew down pre-arranged credit lines with far greater intensity than in past recessions (Acharya and Steffen 2020, Kashyap 2020, Acharya et al. forthcoming, Greenwald et al. 2023). Chodorow-Reich et al. (2022) document that small firms lack access to liquidity insurance during COVID-19 while large firms disproportionately drew down their credit commitments. We show that these drawdowns are correlated to the firm's funding sources, and, in particular, to their dependence on nonbanks.

Our paper is also related to the literature on bank competition through direct lending by nonbanks (e.g. Carey et al. 1998, Denis and Mihov 2003, Chernenko et al. 2022). More recent papers emphasize the emerging importance of FinTechs (Buchak et al. 2018, Gopal and Schnabl 2022) or private debt funds (Davydiuk et al. 2024, 2023, Jang 2024, Erel et al. 2024). The existing literature highlights that nonbank lenders differ from banks, as they typically serve (riskier or smaller, middle-market) borrowers which banks are less willing to lend to, for example, because of regulatory constraints. A recent paper by Haque et al. (2024) investigates lending by private debt lenders vs. banks to the same borrower. They show that private debt lenders do not compete with banks in the provision of liquidity via credit lines but are replacing banks in riskier term loan provision. Their sample focuses on smaller firms (so-called middle-market firms) than firms in our analysis, and, in contrast to their results that banks increase credit lines when private debt lenders participate as junior lenders, we document that banks *tighten* the provision of credit lines to firms that are subject

to rollover risk when financed (indirectly) by nonbanks (such as CLOs).[9]

There is a large literature on rollover risk in bond markets and the implications for asset pricing and corporate finance. Building on theoretical models such as He and Xiong (2012), several papers document that illiquidity increases corporate bond spreads due to rollover risks (e.g., Dick-Nielsen et al. 2012, Friewald et al. 2012, Nagler 2019). Almeida et al. (2012) show that firms exposed to rollover risk during the global financial crisis experienced higher investment declines. Choi et al. (2018), Parise (2018), and Xu (2018) show that firms manage the size of their exposure to rollover risk. We show that banks ex-ante take rollover risk of firms financed by nonbanks (including bond market, nonbank loan market investors and private credit lenders) into account when providing credit line commitments.

Finally, recent literature, e.g., Acharya et al. (2024), Acharya et al. (2025), and Chernenko et al. (2025) has also documented growing linkages between banks and some significant categories of nonbanks through credit lines (e.g., real estate investment trusts or REITs and private credit providers such as business development companies or BDCs). However, in our setting, CLOs cannot draw down on credit lines to transfer credit to non-financial borrowers and offset the lack of bank liquidity. To elaborate, CLOs use bank credit lines during the warehousing period but eventually CLO issuance and purchase of loans requires inflow of funds from investors. As it becomes harder for CLOs to issue lower-rated tranches during stress periods (Fleckenstein et al. (2024)), CLO issuance and nonbank funding to borrowers drop. This is unlike REITs or private credit providers that can draw down on credit lines for direct investment; besides, these NBFIs also have majority holdings in a borrower or property, unlike a syndicated loan that is typically split across hundreds of CLOs. These factors make our specific nonbank setting of CLOs distinct and yet important to understand how bank liquidity to borrowers is affected through indirect nonbank-borrower relationships.

[9] Anecdotal evidence indicates that private debt lenders commonly refinance middle-market loans initially provided by banks, particularly prior to covenant breaches or when borrowers approach distress. Banks reduce term loan lending and instead provide liquidity through (undrawn) credit lines, against fees and higher spreads. Overall, this anecdotal evidence is consistent with dual lending by banks and private debt funds to, on average, riskier borrowers.

3 Institutional Background and Framework

A critical funding source for medium- and large-sized U.S. corporations is the syndicated loan market, in which one or more "lead arrangers" structure a loan package and then distribute the loan among a syndicate of lenders. In this setting, banks and nonbank institutional investors play complementary roles: banks typically provide revolving credit facilities and "Term Loan A" tranches (TLA), while nonbanks—such as collateralized loan obligations (CLOs), loan mutual funds, and private credit funds—are the principal buyers of "Term Loan B" (TLB) tranches. A syndicated "deal" often comprises several of these facilities. Despite being part of a single loan package, these facilities differ in amortization profiles, pricing, and, importantly, ultimate investors. This difference lies at the heart of our study on the interplay between nonbank funding and bank liquidity provision.

Deal structures. Online Appendix Figure OA2 in shows the evolution of syndicated loan deal structures (loan facilities as a percentage of total deal size) in the syndicated loan market over time. TLB has become the most prevalent form of financing in the syndicated loan market with a facility size comprising around half of total term loans to a borrower. Deal structures are highly cyclical and bank financing (via TLA or credit lines) increases vis-a-vis TLB funding during periods of aggregate stress such as the GFC, the oil & gas shock or the COVID-19 pandemic (Fleckenstein et al. (2024)).

TLA tranches typically feature shorter maturities and amortizing structures (likely due to banks' internal risk management and regulatory constraints) and remain largely on bank balance sheets. By contrast, TLB tranches—often referred to as "institutional tranches"—usually carry bullet repayments and have longer maturities. It is important to note that while TLBs are still originated by an underwriting bank (or group of banks), the lead arranger typically places or sells these tranches to nonbank institutional investors in the secondary market soon after origination. Offloading TLB exposures allows banks to free up balance sheet capacity. Nonbanks, not bound by the same regulations as banks, can finance riskier or higher-yielding corporate loans—an arrangement that has driven growth in the institutional

loan market. However, it also exposes TLB borrowers to potentially volatile market-based funding conditions (Fleckenstein et al. 2024).

Credit lines. Banks typically also provide credit lines—an essential form of corporate liquidity insurance—within leveraged loan deals. Because they rely on deposit funding and central bank facilities, banks can more effectively manage liquidity risk, allowing borrowers to draw on revolvers at a pre-agreed spread making banks the optimal credit-line providers (Kashyap et al. 2002, Gatev and Strahan 2006). Until drawn down, these revolvers remain off bank balance sheets. However, when market-wide risk spikes and borrowers tap lines en masse, banks' own balance sheets can come under pressure (Acharya et al. forthcoming), highlighting the trade-offs inherent in offering such liquidity commitments.

Rollover risk of nonbank loans. When market-wide stress (or borrower-specific distress) arises, a firm's first recourse might be to draw on the revolving facility, avoiding the higher cost of issuing new debt in a dislocated market. Significant drawdowns can strain bank balance sheets, particularly if a simultaneous wave of borrowers taps their revolvers.

Corporate borrowers might benefit from the synergy of cheap nonbank financing (via TLB) during stable times and stable bank credit lines if a shock materializes.[10] However, this arrangement also introduces rollover risk in TLB and potential constraints on bank credit lines when many borrowers turn to banks at once.

One central premise in our study is that TLB tranches carry significant refinancing (or "rollover") risk. By design, TLB tranches often have bullet maturities—i.e. principal is repaid at maturity rather than gradually. If nonbank investors become unwilling to roll over (refinance) the loan, the borrower faces a sudden funding gap. In principle, a bank-provided revolver can help bridge shortfalls. Banks, however, anticipating these drawdown pressures, may scale back or price up revolvers for borrowers heavily reliant on nonbank financing.

[10]We graphically investigate the loan spread differences of bank and nonbank loans within a loan deal (Online Appendix Figure OA3), holding borrower risk and other factors constant. Consistent with prior evidence (Ivashina and Sun 2011), we find that spreads on nonbank term loans are, on average, approximately 100 basis points lower than those on bank loans. However, during periods of market stress–when the supply of (cyclical) nonbank credit contracts–the spread differential narrows substantially and may even reverse.

This leads to the possibility of a *"double whammy"* effect in bad times: Nonbank lenders pull back or refuse to refinance TLB, and banks, in anticipation of widespread drawdowns, tighten revolver capacity or terms for these same borrowers.

Implications. Building on this institutional setting, our analysis centers on two related questions. First, do banks ration or increase the cost of revolvers for firms that rely heavily on nonbank term loans (TLB)? Second, does such nonbank dependence heighten rollover risk during stressed periods, limiting both new and existing bank lines and amplifying borrower vulnerability? We address these issues in the following sections.

4 Data and Summary Statistics

4.1 Data

To investigate the effect of nonbank funding on bank liquidity provision, we construct a dataset using different sources, which we describe below.

Loan data. We obtain data on new originations of syndicated loans from Refinitiv DealScan. We focus on syndicated loans originated and refinanced in the United States to non-financial companies between 2000Q1 and 2022Q4. We proxy for a loan refinancing if an already originated loan is amended with a change in loan spread and maturity. Each origination and refinancing is considered a new facility. We obtain secondary market loan prices from the Loan Syndication and Trading Association (LSTA).

Company data. To obtain borrower financial information, including credit ratings, we merge the borrowers in Dealscan to Compustat via the legacy Dealscan version using the link provided by WRDS and the augmented Dealscan-Compustat link file provided by Chava and Roberts (2008). Roughly 30% of the facilities in DealScan are public firms we can match to the Compustat data. We use CapitalIQ to track credit line drawdowns of borrowers on a quarterly basis (daily basis during COVID-19). Stock returns are from CRSP.

CLO data. We obtain data on CLO tranches, and holdings from Creditflux, which in

turn extracts these data from monthly trustee reports that CLOs provide to their investors. Creditflux captures the near universe of CLO tranches and the majority of holdings since approximately 2005. All variables used in the paper are described in Appendix Table OA1.

4.2 Nonbank Dependence

We define *Nonbank Dependence* as the share of total term loans (Term Loans B–K) of the borrower that are financed by nonbanks at a given point.[11]. In our setting, we calculate nonbank dependence in each quarter for a borrower based on outstanding (un-matured) loans. We use the "tranche-type" field in Dealscan and classify all "Term Loan A" tranches as bank loans and all "Term Loan B", "Term Loan C"... tranches jointly as nonbank loans. We include all tranches designated as "Term Loan" (i.e., without A, B, C,...) in the bank loan category to be conservative, as they are not clearly identifiable as nonbank loans. Since DealScan only has loan origination information, we back out the information on loan outstanding from the loan-level data. Specifically, we track each loan from origination to maturity through any amendment, refinancing, etc. to identify the current size and maturity of each loan that is still active. We plot *Nonbank Dependence* in Figure 2. In Panel A, we plot the nonbank shares based on loans originated in a given quarter. In Panel B, we plot the nonbank dependence measure used in the paper, calculated for each borrower-quarter based on their outstanding loans. There is noticeable increasing trend in nonbank share and nonbank dependence over time. Nonbank share is also procyclical, declining during periods of economic weakness (such as the GFC and COVID-19 recessions as well as during the oil-price shock period) and increasing when the economy is booming. Nonbank dependence also increased significantly in the early 2000s, followed by a decline during the GFC and post-COVID-19.

As robustness tests, we construct two alternative measures of *Nonbank Dependence*. In the first alternate measure, we assign all "Term Loans" to the nonbank (Term Loan B)

[11]This approach follows the classification of loan tranches based on industry practice (Standard and Poors 2020) and prior academic literature (Ivashina and Sun 2011, Nini 2008, Fleckenstein, Gopal, Gutierrez, and Hillenbrand 2024)

category. In the second measure, we include those term loans as either nonbank or bank loan if the "Market Segment" field in Dealscan assigns them as institutional (i.e., nonbank) or pro-rata (i.e., bank) loan. All other loans in the "Term Loan" tranche-type field are dropped. Our preferred method, used in the paper, classifies all "Term Loans" as bank term loans as described above. Panel A of Online Appendix Figure OA2 shows that, in fact, the trends in "Term Loan" origination very closely mirror those on bank term loan originations, and move counter to the origination of nonbank loans. Panel B and C of Online Appendix Figure OA2 plots the time-series of nonbank shares and nonbank dependce using all three different nonbank loan classifications. While the first alternative measure (TL=TLB) does not exhibit much variation, the second alternative measure (TL based on pro-rata) and our preferred measure (TL=TLA) closely follow each other. Table 1 shows that the nonbank dependence used in our paper and the nonbank dependence calculated using the market segment classification have over 96% correlation at the borrower-quarter level, and 99% correlation in the quarterly level data lending support to classifying the remaining "Term Loans" to the bank loan category.

4.3 Summary Statistics

Table 2 presents the summary statistics. In Panel A, we present the descriptive statistics for all borrowers. In Panel B, we split borrowers by those that have dependence on nonbanks (TLB borrowers) and those without any nonbank dependence in a given year-quarter.

Conditional on having loans from nonbanks, the average firm receives 77% of its term loans from nonbanks.The average firm has about $8.9 billion in assets, with smaller borrowers being bank reliant relative to nonbank borrowers ($7.71 bil. vs. $12.71 bil.). Firms also hold about 10% of their assets in the form of liquid cash. A majority of the firms in our sample are unrated. This fraction, however, is significantly larger for bank-dependent borrowers with 61% of these borrowers having no credit rating while only 40% of nonbank borrowers have no credit rating.

Credit lines are a common source of liquidity for borrowers. 95% of borrower-quarter pairs have access to credit lines, with the occurrence slightly higher for bank borrowers relative to nonbank borrowers (96% vs. 92%). However, when we compare the size of credit lines as a share of either total loans to the borrower or total liquidity (cash + credit lines), bank borrowers have a significantly higher share. Bank borrowers have about 87% of their total credit in the form of credit lines relative to 38% for nonbank borrowers. Firms also get 70% of their liquidity in the form of credit lines. Bank borrowers are able to borrow credit lines at much cheaper rates (drawn spread 168 vs 245 bps; undrawn spread 28 vs 44 bps). Overall, nonbank borrowers have slightly larger dollar amounts of credit lines drawndown ($100 mil vs. $92 mil) and lower total credit line commitment, on average, than bank borrowers ($541 mil. vs. $672 mil.). But, the average bank borrower credit line utilization at 22% is slightly greater than that for nonbank borrowers (19%).

These descriptive statistics suggest that nonbank borrowers receive fewer credit lines, and pay more for these credit lines. In the rest of the paper, we test these differences more rigorously and establish a causal impact of nonbank dependence on driving them.

5 Empirical Results

We begin by assessing whether a borrower's nonbank (institutional) financing correlates with reduced provision of bank credit lines. We then leverage the 2014–16 oil price shock as a plausibly exogenous contraction in nonbank supply to examine how both firms and banks respond in stressed conditions (Section 5).

5.1 Methodology

Our initial tests focus on how the availability and pricing of newly issued bank credit lines vary with a borrower's nonbank financing. Specifically, we estimate:

$$y_{i,j,t} = \alpha + \beta \times \text{Nonbank Dependence}_{i,t} + \sum \gamma \mathbf{X}_{i,t} + \nu_j \times \lambda_t + \pi_i \times \lambda_t + \delta_i + \epsilon_{i,t} \qquad (1)$$

where $y_{i,j,t}$ is either the volume or spread on newly issued credit lines to borrower i in industry j in quarter t. *Nonbank Dependence* is the share of total term loans (Term Loans B–K) financed by nonbanks. We measure both $y_{i,j,t}$ and *Nonbank Dependence* contemporaneously, as banks assess a firm's overall reliance on nonbank financing at the time a credit line is issued.[12] Our central hypothesis is that $\beta < 0$ for credit-line volume (i.e., higher nonbank use predicts fewer bank lines) and $\beta > 0$ for spreads (banks charge more when nonbank reliance is high).

We absorb time-varying demand and supply factors by including borrower (δ_i), industry-by-quarter ($\nu_j \times \lambda_t$) and rating-by-quarter ($\pi_i \times \lambda_t$) fixed effects. In addition, we control for key firm-level variables ($\mathbf{X}_{i,t}$)—size, leverage, rating, loan maturity, and deal purpose—to isolate the incremental impact of *Nonbank Dependence*. Standard errors are clustered at the borrower level.

5.2 Results

Descriptive analysis. We begin by exploring the relationship between credit line availability and nonbank funding in Figure 3. In Panel A, we measure credit line availability (CL) as the volume of credit lines relative to Total Loan Volume (credit lines + bank term loans + nonbank term loans). This ratio gauges the share of a firm's overall borrowing dedicated to credit lines.

Panel B instead plots credit lines as a fraction of available liquidity, defined as *CL + Cash*. The rationale is that firms can meet liquidity needs either by drawing on existing credit lines or by holding cash reserves (Sufi 2009, Acharya et al. 2013, Disatnik et al. 2013). Their choice depends on relative costs, spreads, and the firm's risk profile.

In both panels, after controlling for borrower- and time-specific fixed effects, we see

[12] Using contemporaneous measures rather than lagged variables does not pose significant concerns in our context, as nonbank dependence is measured as a stock rather than a flow variable. Additionally, credit lines and term loans are typically issued concurrently within the same financing deal, minimizing any timing discrepancies between issuances. Nevertheless, as a robustness check, we repeat our analysis using one-period lagged explanatory variables and find qualitatively similar results.

that greater nonbank dependence in term loans correlates with lower credit line availability. Panel A indicates that firms with high nonbank reliance use fewer bank credit lines relative to total borrowing; Panel B shows that these same firms hold more cash relative to credit lines than their less nonbank-dependent counterparts. Together, the figures suggest that nonbank-financed borrowers substitute away from bank-provided liquidity, consistent with our hypothesis that banks scale back credit line provision when borrowers carry heavier nonbank exposure.

Access to credit lines. We estimate Equation (1) using OLS and present the findings in Table 3.[13] Panel A regresses the share of newly issued credit lines (CL) on the borrower's nonbank dependence. In Columns (1)–(4), the dependent variable is *CL/Total Loans*, while Columns (5)–(8) replace the denominator with *CL+Cash*.

In Column (1), a one-standard-deviation increase in nonbank exposure (0.32) reduces *CL/Total Loans* by 8.1 ppt. Moving from all-bank to all-nonbank financing (a shift from 0 to 1 in nonbank dependence) lowers credit-line issuance by 25.1 ppt. Although nonbank borrowers differ systematically from bank borrowers (Table 2), adding controls for borrower size, leverage, rating, loan purpose, and maturity—and progressively stronger fixed effects—shrinks but does not eliminate this effect. In the most stringent specification (Column 4), moving from fully bank-dependent to fully nonbank-dependent borrower cuts credit-line availability by 17.6 ppt.

Replacing the denominator with total liquid resources yields a similar pattern. In Column (5), a complete shift from bank- to nonbank-financed borrowing decreases the credit-line share of liquidity by 5.7 ppt, falling to 3.5 ppt in Column (8) after controlling for borrower and loan characteristics. Thus, nonbank-dependent firms appear to rely more on cash reserves, while bank-dependent firms hold a larger fraction of liquidity in credit lines.

Cost of Credit Lines. Having documented the negative relationship between credit-

[13]Online Appendix Table OA3 (Panels A through F) presents the results using alternate measures of nonbank dependence including amortization schedules for Term Loan A loans. All results are robust to these alternative measures.

line volume and nonbank reliance, we now examine borrowing costs. Figure 4 plots both new (Panel A) and existing (Panel B) credit-line spreads against outstanding nonbank exposure. In both cases, drawn and undrawn credit spreads rise with nonbank dependence.

Panel B of Table 3 quantifies these spreads. Column 1 and 2 show that moving from zero to full nonbank dependence increases the drawn and undrawn spread by 48.5 bps and 7.6 bps respectively —about 25% of their respective mean spreads. There is no difference in the upfront or commitment fee paid by these borrowers (Coumns 3 and 4) while the total cost of borrowing is higher for nonbank borrowers. Thus, nonbank-financed borrowers face both fewer credit lines and higher costs of bank liquidity, consistent with the idea that banks perceive heightened risk stemming from nonbank fragility (Sufi 2009, Acharya et al. 2013).

Online Appendix Figures OA4 and OA5 additionally document the cost of term loans for borrowers as a function of their nonbank dependence. Unsurprisingly, nonbank borrowers pay lower spreads on nonbank loans and a higher spread on bank loans.

5.3 Discussion: Covenants in Loan Facilities

So far, our results suggest that firms relying more on nonbank lenders face smaller, costlier credit lines from banks. Another dimension of credit supply is covenant tightness, which can restrict borrowers' ability to draw on existing lines (Chodorow-Reich et al. 2022). Although prior research indicates that nonbank financing often features weaker covenants (Ivashina and Vallee 2020), new evidence suggests banks may still impose strict terms on their portion of these deals (Berlin et al. 2020).

To capture this non-pricing channel, Panel C of Table 3 replaces the dependent variable in Equation (1) with indicators for various covenant provisions documented in LSEG Dealscan (e.g., the presence of material restrictions, interest coverage ratios, or debt-to-cash-flow constraints). We specifically focus on the presence of covenants for minimum interest coverage ratio (Column 1), covenants restricting capital expenditure (Column 2), if a cash sweep is part of the credit agreement wherein there is a requirement that cash proceeds from

certain activities (e.g., asset sales) are used to repay debt (Column 3). Colun 4 looks are whether there are any material restrictions in the contract. Finally in Column 5 and 6, we look at the existence of performance or capital based covenants as in Christensen and Nikolaev (2012). Performance Based Covenant takes a value of one if there are any performance (profitability) related covenants. The performance indicators include: debt service coverage ratio, fixed charge coverage ratio, interest coverage ratio, senior debt to cash flow (EBITDA) ratio, and total debt to cashflow (EBITDA) ratio. Capital Ratio Based Covenant takes a value of one if covenants are formulated in terms of capital ratio–based indicators. The list of capital indicators includes: leverage, debt to tangible net worth, and senior debt leverage ratio.

Our results show that nonbank dependent borrowers are more likely to have capex or cash sweep covenants. However, they have a lower likelihood of capital based covenants. This lines up with the argument in Christensen and Nikolaev (2012) that capital covenants are used when there is ex-ante interest alignment, which is efficient when lender and borrower cannot contract well on performance but can rely on monitoring based on private information or relationship lending. Nonbank borrowers may also prefer to have flexibility in capital structure decisions, and may have more transparent, public information relative to bank borrowers, reducing their incentives to agree to capital based covenants. Importantly, it does not appear the nonbank borrowers have, uniformly, weaker covenants that could explain the higher pricing on credit lines.

5.4 Alternative hypotheses and discussion

Our results are robust to a variety of alternative interpretations.

Bank–Firm Relationships. A lack of banking relationships might explain why nonbank-funded borrowers get fewer lines. In Panel A of Table 4, we add a relationship strength control—the share of a borrower's total lending from a given bank over the past three years. Even after including this measure, nonbank dependence remains a strong predictor of lower

credit lines and higher spreads, suggesting that relationship lending alone does not drive our results.

Bank–Nonbank Matching. Nonbanks often partner with particular banks, and low-deposit banks especially may prefer distributing TLBs rather than credit lines (Fleckenstein et al. (2024), Kashyap et al. (2002)). This would suggest a negative correlation between TLB occurrence and CL issuance, but due to bank business model rather due to borrower financing conditions. Thus, we include bank-time fixed effects, comparing different borrowers at the same bank in the same quarter. The effect of nonbank dependence on credit lines remains large and significant, ruling out bank-level factors.

Compositional Effects. To isolate changes to credit lines as a borrower's own nonbank financing changes, Panel A further includes bank-borrower fixed effects, comparing changes in nonbank funding within the same bank–firm relationship over time. An increase from 0 to 1 in nonbank dependence now reduces credit-line volume by 10.7 ppt and raises spreads by 29.1 bps. We then focus on the intensive margin and on borrowers that already hold a bank term loan (i.e., Term Loan A) in Columns 2 and 4. We find that higher nonbank dependence reduces credit-line access even for bank borrowers.

Systemic Risk. One alternate concern is that the reason nonbank borrowers see lower credit line availability is due to higher systemic risk of these borrowers. If these borrowers have higher betas, implying that they would fare worse precisely when the market and banks suffer, that could reduce bank credit supply. To test this, we calculate firm market betas based on stock returns for each borrower i our sample. We include this as a control in Panel B of Table 4. We see that nonbank depenendence continues to matter, over and above, any systemic risk concerns.

Bank Regulation. Next, we address whether supervisory constraints, such as the 2013 leveraged-lending guidelines, might bar banks from lending to certain borrowers (Chernenko et al. 2022). Negative-EBITDA firms indeed see lower bank credit-line access (Online Appendix Figure OA6, Panel A), but not necessarily more nonbank term loans (Panel B). Panel

C and D of Table 4 restricts the sample to positive-EBITDA firms and, further, to those far above zero EBITDA. Our core results persist, indicating that the observed negative relationship between nonbank dependence and bank credit lines is not solely driven by regulatory restrictions on distressed borrowers. Overall, nonbank dependence negatively correlates with bank-provided liquidity, even controlling for selection at the bank or borrower level and excluding negative-EBITDA firms. This reinforces our conclusion that firms tapping nonbank markets face constraints when seeking bank credit lines.

Other Robustness. Lastly, we run robustness tests to check whether the results are driven by specific time periods or borrowers. For example, the lack of credit lines to nonbank borrowers is not driven by unrated borrowers, borrowers with only term loans, or crisis periods. We see quantitatively similar effects when focusing on unrated borrowers (Online Appendix Table OA4), borrowers without credit lines (i.e., comparing borrowers with term loans from banks to term loans from nonbanks; Online appendix Table OA5), and non-crisis time periods (Online Appendix Table OA6). In Online Appendix Table OA7, we split borrowers by credit rating. We see that the effect of nonbank dependence is strongest for borrowers that are rating BB or below, with lower credit line volumes and higher spreads on available credit lines. Consistently, Online Appendix Figure OA7 shows that Non-IG and unrated firms have significantly higher credit line drawdowns.

Time-series evidence. If banks adjust liquidity supply in response to changes in firms' reliance on nonbank funding, we would expect liquidity provision to exhibit greater cyclicality over time for firms with higher dependence on nonbank financing. To examine this, we plot the time-series of credit lines (as a percentage of total loans) in Online Appendix Figure OA8. Consistent with our hypothesis, the figure shows that firms more reliant on nonbank funding experience stronger cyclicality in the availability of credit lines. Moreover, if borrowers have fewer credit lines available for their liquidity management, we would expect to see higher and more cyclical cash holdings. Online Appendix Figure OA9 shows that this is indeed the case.

6 Oil Price Shock

In the previous section, we have documented a robust, negative correlation between a firm's reliance on nonbank term loans and its access to bank credit lines, even after controlling for a range of borrower, bank, and regulatory mechanisms. Ideally, we would test whether an *exogenous* shift in nonbank credit causes banks to adjust their liquidity provision. In reality, credit changes seldom occur randomly. Therefore, we exploit the 2014–16 oil price shock—which sharply reduced nonbank lending capacity for reasons unrelated to most borrowers' fundamentals—as a plausibly exogenous shock to nonbank credit supply. This setting allows us to investigate banks' responses to reduced nonbank financing.

6.1 Background

Between mid-2014 and early 2016, global oil prices plunged by nearly 70% — one of the largest declines on record. The initial drop was driven by booming U.S. shale oil production—whose break-even prices had fallen drastically—together with shifting OPEC policies aimed at protecting market share. From June 2014 through January 2015, the price of West Texas Intermediate (WTI) crude slipped from $107.95 to $44.08, a 59% decline in just seven months (Figure 5, Panel A). By early 2015, continued weakening demand (especially in China and Europe) and a strengthening U.S. dollar deepened the downturn, pushing oil prices about 70% below their mid-2014 peak.[14]

This sharp collapse came faster and more severely than most market participants anticipated, creating a shock that was largely unrelated to the fundamentals of non-oil companies. Indeed, while energy sector stocks declined by roughly 9% in 2014, the broader equity market (S&P 500) remained relatively stable through early 2016 (Figure 5, Panel B). In contrast, the leveraged loan market was severely affected: secondary market prices declined over 10% (Panel C), driven by a larger than 20% drop in oil and gas loans (Panel D). Collateralized

[14]Since oil is predominantly priced in U.S. dollars, an appreciating dollar further dampens global demand.

loan obligations (CLOs)—major investors in institutional term loans (TLB)—were hit especially hard: new CLO issuance fell nearly 60% from mid-2014 to early 2016 (Figure 6, Panel A). Many of these CLOs held substantial exposures to oil and gas firms, prompting investors to avoid CLOs (and thereby the institutional loan tranches they purchase). Consequently, TLB originations shrank in the primary market (Panel B), whereas bank-provided term loans and credit lines remained comparatively stable or even rose slightly.

Because CLOs account for a large share of TLB financing, their retrenchment had direct consequences for nonbank-dependent borrowers—even outside the oil sector. For firms financed by CLO managers heavily exposed to energy assets, the abrupt contraction in institutional loan supply was effectively unanticipated and disconnected from their own operational performance. By limiting our analysis to non-oil borrowers, we focus on how the oil price shock filtered through CLO balance sheets rather than borrower-specific fundamentals. This unique episode, thus, offers a plausibly exogenous setting to assess how banks respond when nonbank credit dries up—shedding light on whether (and how) banks reduce liquidity provisions in anticipation of heightened rollover risk among nonbank-funded firms.[15]

6.2 Credit Outcomes for Nonbank Dependent Borrowers

Our primary interest is to determine how a plausibly exogenous reduction in nonbank lending affects bank liquidity provision. In particular, we exploit the sharp drop in new CLO issuance during the oil price shock as a shock to nonbank term loans (TLBs). Specifically, certain CLOs had higher pre-shock exposure to oil and gas (O&G) firms, saw a correspondingly larger fall in portfolio value, and thus curtailed new TLB originations more sharply. At the borrower level, some firms happened to have loans held by these heavily O&G-exposed CLOs, while others had loans placed with comparatively unaffected CLOs. This differential forms the basis of our identification: indirect exposure to the oil shock—via the CLOs that

[15] Saunders et al. (2024) show in related work that the oil and gas shock is a supply shock to the nonbank sector that adversely effects secondary loan market prices of non-oil and gas firms and thereby reduces supply of lending by nonbank lenders for these firms also in primary loan markets.

hold a firm's debt—alters the firm's reliance on nonbank financing for reasons exogenous to its own fundamentals.

We compare loan outcomes of non-oil and gas borrowers held in CLOs that differ solely in the extent to which their investors were exposed to the shock. A shock to these investors (orthogonal to firm fundamentals and loan demand) can affect credit conditions for firms, e.g., because firms have a harder time getting new credit or renegotiating or rolling over their existing debt, as e.g. documented by Giannetti and Meisenzahl (2023). Consistently, Fleckenstein et al. (2024) document that frictions in the CLO sector can have real consequences for CLO-dependent borrowers.

Oil-gas Exposure. Our main variable of interest is the level of exposure to the oil price shock for each borrower. To measure this, we first calculate the share of each CLOs portfolio in oil and gas firms as of May 2014 (one month before the shock). Our sample has 687 CLOs with an average share of 3% of their portfolio in oil and gas firms.

As in Kundu (2023), a firm's exposure to the shock is constructed as the weighted averaged O&G exposure across the CLOs that hold the firm's loans (before the shock, i.e., as of May 2014).

CLO Fire Sales and Indirect Exposure. To illustrate how CLO behaviors diverged, Figure 7 shows the average sale prices of loans in CLO portfolios from January 2012 to December 2017. Panel A focuses on O&G firms; after mid-2014, loan prices fall well below par, with the drop being similar for CLOs with high or low O&G exposure, suggesting fundamental shock to oil and gas firms. What is interesting, however, is that in Panel B we see that the "high-exposure" CLO managers also discounted non-O&G firm loans more than low-exposure managers, possibly to meet liquidity or regulatory constraints.

Our empirical design excludes O&G borrowers outright, ensuring that any observed effects on a firm's funding derive only from indirect spillovers through CLO balance sheets, rather than the firm's own direct exposure to oil markets. Online Appendix Table OA8 compares characteristics of firms with high and low oil-gas exposure in our sample.

Rollover Risk and Borrower Heterogeneity. Some borrowers may be especially susceptible to cutbacks in nonbank financing if they need to roll over debt during the shock. Accordingly, we split the sample between maturing and active TLBs. *Maturing TLBs* are nonbank loans outstanding as of 2014Q1 with at least one nonbank loan maturity falling between 2014Q2 and 2015Q4 (the oil shock window). *Active TLBs* remain outstanding through 2016Q1, implying no immediate refinancing pressure. This separation parallels prior evidence that maturing debt during a crisis directly worsens firm outcomes (Almeida et al. 2011). Firms with non-maturing TLBs experience a reduction in further accumulation of nonbank credit, but do not face imminent rollover demands.[16]

To verify that the *Maturing TLBs* classification is not just picking up borrowers that in general have shorter loan maturity, and hence may be riskier borrowers, we compare the maturity of term loans and credit lines for *Active TLB* and *Maturing TLB* borrowers before the oil price shock in Online Appendix Figure OA10. Panel A plots the distribution of the maturity of TLBs for these borrowers while Panel B and C formally test the differences in their maturity structure. Panel B shows there is no significant difference in means, while Panel C suggests that the *Maturing TLB* group has slightly more observations in the left tail for TLB maturity, but more observations in the right tail for TLA and credit line maturity.

Descriptive exercise. We next verify that borrowers more exposed to the oil-driven CLO shock indeed lose access to nonbank loans, and then examine how they utilize and obtain bank credit lines. Formally, we estimate:

$$y_{i,t} = \alpha + \beta \text{High Oil-Gas Exposure}_i \times \mathbf{1}_t + \lambda_t + \delta_i + \epsilon_{i,t} \tag{2}$$

where $y_{i,t}$ is either the volume or spread of outstanding TLBs (nonbank) or credit lines (bank) for borrower i in quarter t. *High Oil-Gas Exposure* equals one if a firm's weighted

[16]For maturing TLB borrowers, the lack of new TLB issuance comes from lack of new CLO issuance (nearly all new loans are bought by new CLOs since exisiting CLOs cannot purchase new loans outside of their reinvestment period). If active and maturing TLB borrowers are otherwise similar, the fire sales should affect them both similarly, but the maturing TLB are, in addition, affected by lack of CLO issuance exacerbating the effect of the shock.

CLO exposure to oil and gas (as of 2014Q1) is above the sample median. We include borrower fixed effects, rating fixed effects, and two-digit SIC industry fixed effects, clustering standard errors by borrower. We also split borrowers by *maturity* of their nonbank loans and *credit rating*.

Panel A of Figure 8 shows that, for borrowers whose loans are held by highly O&G-exposed CLOs, the outstanding volume of TLBs flattens out and then declines significantly after 2014Q2, relative to its pre-shock trend. Even after overall issuance eventually recovers, these borrowers remain at persistently lower TLB levels—suggesting a "scarring" effect, whereby previously nonbank-dependent firms reduce their reliance on TLBs. This decline is most pronounced for *Maturing TLB* borrowers, who face imminent rollover during the shock window.

Panel B supports a *supply-driven* interpretation: TLB volume drops even as TLB spreads rise for these same borrowers. Firms with maturing TLBs are both less likely to obtain new nonbank loans and more likely to pay significantly higher spreads if they do. While borrower demand may also shift during turbulence, the simultaneous decline in quantity and increase in price is consistent with a contraction in nonbank credit supply linked to oil-exposed CLOs.

Turning to Panels C and D, we see differential effects on credit lines. Borrowers with *Active TLBs* (i.e., non-maturing) experience an uptick in credit line availability around the oil price shock (Panel C)—banks appear willing to step in, possibly anticipating these borrowers will not remain highly nonbank-reliant going forward. In contrast, *Maturing TLB* borrowers see a concurrent reduction in credit lines, suggesting that if a firm's nonbank debt must be refinanced mid-shock, banks are more reluctant to expand liquidity commitments.

Before the shock, the changes in credit lines for both groups hover near zero, reinforcing the view that the shock itself triggers the divergent paths. By the end of the sample, *Active TLB* borrowers from high-exposure CLOs obtain significantly more bank credit lines, consistent with banks substituting for nonbank outflows. However, *Maturing TLB* borrowers do not see this benefit—likely reflecting heightened uncertainty or adverse selection around

their refinancing needs.

Finally, we investigate changes in the pricing of outstanding and newly issued credit lines (Figure 8, Panel D). Before 2014Q1, the spreads that borrowers in highly O&G-exposed CLOs paid were statistically indistinguishable from those paid by less-exposed borrowers. After the shock, however, outcomes diverge. Among *Active TLB* borrowers—who do not face immediate rollover pressure—credit line spreads gradually fall, consistent with banks recognizing (and pricing in) the borrower's reduced nonbank reliance. By contrast, *Maturing TLB* borrowers see a rise in spreads, suggesting that forced refinancing of nonbank loans around the shock leads banks to charge more for liquidity commitments.

Overall, the evidence shows that (i) nonbank-financed borrowers who must refinance mid-shock experience persistent reductions in TLB usage and more expensive credit lines, while (ii) those without imminent maturities receive more favorable bank terms, apparently reflecting banks' willingness to lend once nonbank dependence subsides.

Empirical tests: Maturing vs. non-maturing loans. Table 5 quantifies how the oil-driven contraction in nonbank supply affects both nonbank term loans (Panel A) and bank credit lines (Panel B). We estimate:

$$y_{i,t} = \alpha + \beta \text{Oil-Gas Exposure}_i \times \text{Post}_t \times \text{Rollover Risk}_i + \lambda_t + \delta_i + \epsilon_{i,t} \tag{3}$$

where $y_{i,t}$ is the volume or spread of newly issued term loans or credit lines for borrower i in period t. *Post* is 1 for quarters after 2014Q1, and *Oil-Gas exposure* is the standardized measure of a borrower's indirect exposure, based on oil and gas loan investments of CLOs holding its TLBs (as of 2014Q1). $RolloverRisk_i$ flags whether the firm's TLB must mature during the shock window (the *Maturing* vs. *Active TLB* sample). All regressions include borrower, industry, rating, and year-quarter fixed effects, with standard errors clustered at the borrower level.

Column (1) of Table 5 show that borrowers with maturing nonbank loans in CLOs more exposed to the oil shock (i.e., one standard deviation above the mean) experience a significant

drop in new TLB issuance—on average 10.8 percentage points lower relative to less-exposed firms. Correspondingly, in Column (2), these borrowers face a 9.7 bps increase in their weighted-average TLB spreads. The fact that TLB quantity falls while prices rise aligns with a negative supply shock in nonbank lending relative to borrowers whose TLBs are not maturing, or whose CLO exposure is mild.

Similarly, Columns (3) and (4) show that borrowers with maturing nonbank loans in CLOs more exposed to the oil shock experience a drop in new bank term loan origination (TLA) - with volume reducing by 7.8 ppts and spreads increasing by 16.7 bps relative to less exposed firms. Overall, Column (5) suggests that total term loan issuance volume drops by 16.3 ppt for high exposure borrowers, leading to an increase in their nonbank dependence (Column 6)

Columns (7) and (8) of Panel B indicate that the same high-exposure borrowers with maturing TLBs who saw a concurrent increase in nonbank dependence also suffer reduced credit line issuance —7.4 ppt on average, rising to 10 ppt for those with imminent TLB rollover. Meanwhile, these distressed borrowers pay higher spreads on whatever credit lines that they do secure.

Together, these patterns reinforce our earlier narrative: if a firm's nonbank loans must be refinanced mid-shock, banks appear reluctant to provide offsetting credit lines, and do so only at a premium.

Robustness. To address the concern than borrowers may be able to shift to bonds, or that their rollover risk could be stemming from the bond market rather than the loan market, in Panel C, we focus on a set of borrowers that do not have access to public bond markets and find qualitatively similar results.

In Panel D, we restrict our sample to borrowers that had both bank and nonbank term loans outstanding as of 2014Q1. This helps address the concern that the observed decline in bank term loan and credit line lending is due to lack of bank relationships for these borrowers. By narrowing down on the set of borrowers that had a pre-existing relationship with banks,

we still see that the rollover risk stemming from nonbanks leads to banks reducing their credit supply.

One concern is that the Federal Reserve's 2013 leveraged lending guidelines, which constrain large banks' ability to lend to highly levered firms, might be driving the observed credit-line patterns. If firms in high oil-gas-exposure CLOs were also systematically riskier, they could be disproportionately affected by these guidelines rather than by a genuine nonbank supply shock.

However, Online Appendix Table OA8 suggests that while high-exposure borrowers differ in some pre-shock characteristics (e.g., leverage, cash holdings, credit ratings), the effect we document persists even after controlling for borrower-level risk. Moreover, following Kim et al. (2018), we split the sample by banks under "Large Institution Supervision Coordinating Committee" (LISCC) supervision (versus other banks) in Online Appendix Table OA9 and confirm that our main findings hold within each group over time.[17] This consistency implies that the decline in credit lines for highly exposed, maturing borrowers is not simply a byproduct of regulators tightening leverage rules for specific large banks.

In sum, the regression results confirm that when nonbank lenders retrench due to oil-driven CLO losses, firms with maturing TLBs face both sharply lower nonbank loan availability and less compensating credit from banks—unless they pay a higher spread.

6.3 Financial and Real Effects on Nonbank Dependent Borrowers

Credit Line Drawdowns and alternative funding sources. A key question is whether borrowers draw on their existing credit lines when nonbank funding (and potentially new bank credit) becomes scarce. Online Appendix Figure OA11 shows that in prior stress episodes, credit line usage rises most sharply among borrowers heavily reliant on nonbanks. Consistent with this, Column 1 of Table 6 reveals that firms facing greater rollover risk

[17] Currently, 8 U.S. banks are included in the program - Bank of America Corporation, The Bank of New York Mellon Corporation, Citigroup Inc., The Goldman Sachs Group, Inc., JP Morgan Chase & Co., Morgan Stanley, State Street Corporation, Wells Fargo & Company

through maturing nonbank loans are the ones that increase their credit line drawdowns the most. Hence, even though these firms struggle to secure new credit lines post-shock, they do tap existing lines to mitigate the nonbank financing shortfall.

Borrower Outcomes. Lastly, we examine how these liquidity constraints shape borrowers' financial and real outcomes. If a firm's nonbank funding contracts but it does not have to refinance immediately (i.e., no maturing TLB), then banks anticipate lower future nonbank dependence and offer more credit. By contrast, maturing TLB firms—especially those deemed riskier—remain more constrained and see less overall liquidity.

Using equation (3), we replace credit variables with firm-level outcomes in Table 6. The results indicate that those with greater exposure to oil-gas CLOs and fewer new credit lines ultimately fare worse during the shock. The increased drawdown in credit lines is not accompanied by an increase in cash holdings (Column 2). At the same time, their assets (Column 3) and capital decline (Column 4). This suggests that even constrained firms prioritize retaining some cash as rollover pressure intensifies. While they draw down some existing liquidity, it is insufficient to offset the broader tightening. In unreported results, we observe an economically but not statistically significant drop in stock returns.

Overall, these findings reinforce that nonbank-dependent borrowers with immediate rollover needs bear the brunt of a negative supply shock, experiencing weaker balance-sheet outcomes and fewer alternatives for replacement credit.

6.4 Can bank dependent borrowers smooth out shocks during stress periods?

The previous section documents the double whammy of borrowers financed by nonbanks (but focused on nonbanks only). An interesting question is whether bank dependent borrowers better able to smooth out shocks during stress periods. We use the same sample period around the oil price shock (2012Q1 to 2016Q4) and do a difference-in-difference test,

where the treatment group are nonbank dependent firms and control group firms are bank dependent firms. Our post (or treatment period) is again starting in 2014Q2.

Table 7 shows the results for various outcome variables. During the oil-gas shock, borrowers that were nonbank dependent before the oil price declined, did substantially worse compared to those that were more dependent on bank financing (bank provided term loans or credit lines). More precisely, they were less likely to issue new credit lines, had fewer credit lines outstanding, they decreased in size (driven by a decrease in inventory, cash and capital, all scaled by total assets) and they had to hold more cash as part of total liquidity. Taken together, these results are consistent with bank-dependent firms being better able to smooth out shocks during stress.

7 Lender Heterogeneity - Term Loans, Bonds, and Private Credit

In the previous sections, we defined nonbank dependence as borrower dependence on investors in the *syndicated term loan* market. Large U.S. firms, however, are frequently financed with a mix of bonds and loans, and in both instruments, nonbanks are the largest investor base. Smaller and middle-market firms (usually defined as those with EBITDA $<$ USD50mn (Chernenko et al. 2022) and increasingly also large firms are financed in part by private credit lenders. Importantly, firms dependent on either, bonds, syndicated loans or private credit, use their bank provided credit lines during stress periods (see, for example, Acharya and Steffen (2020) and Haque et al. (2024)). In this section, we test banks' response as to liquidity provisioning via credit lines to increasing dependence on nonbank finance from both bond markets and private credit lenders.[18] As the earlier literature on private credit,

[18]Despite its growth in the last decade, the private credit market is still substantially smaller compared to the bond market with outstanding volumes of USD 2 trillion (private credit) and USD 11 trillion (bond market). The direct lending market (which is part of private credit and the focus of our analysis) is even smaller with an estimated size of about USD 0.8 trillion.

we focus on Business Development Companies (BDCs) as one type of private credit lenders.

Descriptive analysis. We first investigate quarterly credit line drawdowns of firms in Figure 9. In Panel A, we focus on firms financed by TLB loans as well as bonds (*TLB + Bonds*), only TLBs (*TLB, No Bonds*) and those financed only with bonds (*Bonds, No TLB*). Drawdown rates differ both in levels as well as cyclicality. Firms financed only with TLB exhibit higher drawdown rates followed by firms financed with TLBs and bonds. Firms only financed through bonds show the lowest and the least cyclical drawdown rates. In Panel B, we focus on firms financed by TLB loans as well as BDCs (*TLB + BDC*), only TLBs (*TLB, No BDC*) and those financed only with BDC (*BDC, No TLB*). Again, drawdown rates exhibit differences in levels as well as in cyclicality. Firms financed only with TLB exhibit higher drawdown rates. Firms that are financed at least in part by BDCs exhibit lower quarterly drawdown rates. In a next step, we use similar categories of firms to investigate ex-ante implications for bank credit line provisions to these firms.

7.1 Term loans vs. bonds

Sample Overlap. We first identify the distribution of firms across rating categories for the various sub-samples we are interested in. Panel A of Table 8 shows that, on average, bond borrowers tend to have higher ratings than borrowers with nonbank syndicated term loans (TLBs). For example, in the investment grade buckets (AAA-A and BBB rated firms), a majority of firms have bonds, but no TLBs. However, below investment grade, likelihood of TLBs increase, with a third of the firms having TLBs but no bonds and a fifth of the firms having both bonds and TLBs. Online Appendix Figure OA12 presents the distribution of ratings for bond, nonbank, and bank borrowers. Given the different sets of firms that issue bonds relative to TLBs, we conduct our analysis of impact of nonbank dependence across the different sub-samples while controlling for the risk rating (among other characteristics) of the borrowers.

Results. We estimate equation (1) including two new measures, which should isolate the

effect of differential rollover risk between borrowers dependent on different forms of nonbank financing: (1) *Bond Dependence*, which is measured as total bonds outstanding as a share of total term loans and bonds outstanding, and (2) *TLB Share*, which is measured as the volume of nonbank term loans (Term Loans B-K) outstanding as a share of total term loans and bonds outstanding. The results are reported in Table 8. Panel B reports the results for the full sample. We include the same fixed effects as in our earlier tests. Note that the borrower fixed effects accounts for firms that have neither access to bonds or nonbank term loan lenders.

We find that firms with bond and TLB dependence have less access to liquidity insurance by banks relative to firms without nonbank dependence. They have fewer credit lines as part of their overall liquidity (including cash) and the effects are economically similar in magnitude. Notably, while a greater *TLB Share* is associated with higher revolver spreads and commitment fees, firms with elevated *Bond Dependence*, all else equal, obtain credit lines at lower spreads and fees relative to their bank-dependent peers. One plausible explanation is that bond-reliant companies may face comparatively less supply-side pressure as they have access to alternative short-term funding instruments (such as commercial paper), which reduces their demand for (potentially costlier) credit line borrowing. In other words, bond-dependent borrowers face lower rollover risk.

In Panel C, we focus on firms that have bonds but no TLB outstanding. As described above, these firms are usually less risky with predominantly investment-grade credit ratings. Consistently, while we also find less access to bank provided liquidity insurance, the effects are somewhat muted compared to Panel B. For example, the point estimate for *Bond Dependence* drops by half compared to the full sample. Our pricing variables load even more negatively on Bond Dependence, consistent with less bank credit line demand of safer firms.

Panel D focuses on firms that have only TLB outstanding. That is, we are focusing on the riskier parts of the credit spectrum as a vast majority is non-investment-grade rated. A higher *TLB Share* coincides with lower revolver availability and higher AISD and AISD. The

effects are larger compared to the full sample in Panel A and consistent with higher credit line drawdown rates shown in Figure 9. These results align with the our emphasis on how banks manage liquidity insurance for term-loan borrowers facing nonbank rollover risk.

We focus on the overlapping sample in Panel E, *i.e.*, those firms that have both bonds and TLB outstanding. Thus, we directly run a horse race between bond and TLB dependent firms. The economic magnitudes are similar for *Bond Dependence* and *TLB Share* but our pricing variables only load positively and significantly on *TLB Share*.[19]

Overall, our results suggest that banks react more strongly by reducing the supply of liquidity provision to firms financed by nonbanks in the term loan market compared to bond market borrowing.

7.2 Term loans vs. private credit

Over the last 10 years, private credit funds (including BDCs) have increasingly lent to nonfinancial firms in the US. While these lenders used to lend to smaller, so-called middle-market firms (outside of the syndicated loan market), the size of their commitments has increased and they are not also targeting firms that usually are borrowing in the syndicated loan market. They either lend directly or participate in (traded) syndicated loans.

We obtain information about private credit loans extended by BDCs quarterly over our sample period from LSEG BDC Collateral. This data source provides us information about borrower names, amount borrowed from BDCs, lender names and spreads (among others), quarterly for outstanding loans. We match the borrower names manually to borrower names from Dealscan and then require them having a gvkey to map them to Compustat/CRSP.[20]

[19]Online Appendix Figure OA13 shows this graphically also using the overlapping sample. In Panel A, we plot the average CL/(CL+Cash) on the *TLB Share* for three terciles of *Bond Dependence* (low, medium and high). The lines are downwards sloping consistent with fewer credit lines in overall liquidity when the *TLB Share* rises. The lines, however, are very close suggesting that this relationship is strong and persists for all levels of *Bond Dependence*. Consistently, Panel B shows an increase in the mean AISD for all levels of *Bond Dependence* when the *TLB Share* increases.

[20]Overall, we can match about 5% of our sample observations to BDC data in BDC Collateral. This is not a trivial number of observations as private credit lenders typically provide loans to small and mid-sized companies and we require that firms are publicly listed. Loans from First Brands Group, for example, are

The average loan size with BDC lenders is about USD 1.2 billion (compared to USD 527 million without a BDC lender) and firms' total assets is, on average, USD 25 billion (compared to USD 11 billion without BDC).

If BDCs lend to borrowers in multiple loans in a given quarter, we aggregate these loan amounts to obtain a quarterly loan amount outstanding for each firm that involves BDC lenders (*BDC Amount*). We estimate equation (1) including this new measure, a proxy for nonbank dependence in the private credit market. We scale lending by BDCs and nonbanks in the syndicated loan market by total loans outstanding to the borrower. That is, for each borrower, we calculate the level of term loans outstanding as a sum of TLA and TLB in the syndicated loan market plus the total amount of BDC loans outstanding.

The results are reported in Table 9. We focus on the same subsamples used in Figure 9, that is, BDC and TLB together (full sample) in Panel A, only BDCs but no TLBs (Panel B), and only TLBs but no BDCs (Panel C). Across all three Panels, and consistent with lower credit line drawdown rates of BDC funded borrowers (see Figure 9), we find that banks respond more strongly to nonbank dependence when term-loan investors are institutional, such as CLOs, compared to exposures arising from BDCs. The coefficients on *BDC Dependence* are typically economically small and statistically insignificant. Collectively, our evidence suggests that heavy reliance on nonbanks has increased borrower fragility to nonbank financing shocks and increasingly constraints their access to bank-provided liquidity.

8 Conclusion

This paper shows that the rise of nonbank financing—while expanding credit access—can subject borrowers to heightened rollover risk and liquidity pressures. Our evidence indicates that firms relying more heavily on nonbanks secure fewer and more expensive bank credit lines. In market-wide stress, these firms face a "double whammy": not only do nonbanks withdraw funding, but banks also limit liquidity insurance if they anticipate large future

among those matched to our sample.

drawdowns.

Using an exogenous CLO-driven contraction in term loans during the 2014–2016 oil price shock, we find that firms without imminent rollover needs reduce their nonbank dependence and receive expanded credit lines at lower spreads—ultimately improving balance-sheet outcomes. By contrast, borrowers forced to refinance mid-shock experience both curtailed TLB funding and higher-priced or smaller bank lines, with real effects on investment, capital, and overall financial health.

Future work could examine whether constrained firms significantly alter their operational decisions (e.g., R&D or employment) in response to reduced nonbank funding. Moreover, given the global expansion of nonbank lending, exploring how regulatory frameworks or bank–nonbank institutional arrangements differ across jurisdictions could yield valuable insights. Also, investigating how various central bank facilities (e.g., discount windows, repo programs) affect the interplay between banks and nonbanks in stress episodes remains largely unexplored. We leave these questions for future research.

Our paper has interesting policy implications. The shifting of credit from nonbanks to banks during crises highlights potential systemic spillovers. Nonbanks lack deposit insurance and central bank backstops, so sudden outflows can amplify volatility. Policymakers may consider coordination or expanded oversight to mitigate destabilizing drawdowns. Greater disclosure of nonbank exposures—such as CLO portfolios—could reduce uncertainty when shocks hit a specific sector (e.g., oil and gas) and improve market discipline. Finally, banks' reluctance to extend credit lines for highly nonbank-dependent firms suggests a need for more robust risk assessments and dynamic capital regulation that considers off-balance-sheet commitments.

Overall, while nonbank financing has become an important part of corporate funding, our findings show that reliance on nonbanks heightens firms' vulnerability to systemic shocks. Banks, in turn, provide only partial relief under these conditions, especially for riskier or rollover-constrained borrowers. Recognizing and managing this fragility is essential to sus-

taining corporate credit flows and financial stability in an era of expanding shadow banking.

References

Acharya, V. V., Almeida, H., Campello, M., 2013. Aggregate Risk and the Choice between Cash and Lines of Credit. The Journal of Finance 68, 2059–2116.

Acharya, V. V., Cetorelli, N., Tuckman, B., 2024. Where do banks end and nbfis begin? NBER Working Paper .

Acharya, V. V., Engle, R., Jager, M., Steffen, S., forthcoming. Why did bank stocks crash during covid-19? Review of Financial Studies .

Acharya, V. V., Gopal, M., Jager, M., Steffen, S., 2025. Shadow Always Touches the Feet: Implications of Bank Credit Lines to Non-Bank Financial Intermediaries. NBER Working Paper No. w33590 .

Acharya, V. V., Mora, N., 2015. A crisis of banks as liquidity providers. The Journal of Finance 70, 1–43.

Acharya, V. V., Steffen, S., 2020. The Risk of Being a Fallen Angel and the Corporate Dash for Cash in the Midst of COVID. The Review of Corporate Finance Studies 9, 430–471.

Almeida, H., Campello, M., Laranjeira, B., Weisbenner, S., 2011. Corporate debt maturity and the real effects of the 2007 credit crisis. Critical Finance Review 1.

Almeida, H., Campello, M., Laranjeira, B., Weisbenner, S., 2012. Corporate debt maturity and the real effects of the 2007 credit crisis. critical finance review, 1 (1), 3–58.

Benmelech, E., Dlugosz, J., Ivashina, V., 2012. Securitization Without Adverse Selection: The Case of CLOs. Journal of Financial Economics 106, 91–113.

Berg, T., Saunders, A., Steffen, S., 2016. The total cost of corporate borrowing in the loan market: Don't ignore the fees. The Journal of Finance 71, 1357–1392.

Berg, T., Saunders, A., Steffen, S., 2021. Trends in corporate borrowing. Annual Review of Financial Economics 13, 321–340.

Berlin, M., Nini, G., Yu, E. G., 2020. Concentration of control rights in leveraged loan syndicates. Journal of Financial Economics 137, 249–271.

Bhardwaj, A., Ge, S., Mukherjee, S., 2025. Does loan securitization expose borrowers to non-bank investor shocks?—evidence from insurers. Working Paper .

Blickle, K., Fleckenstein, Q., Hillenbrand, S., Saunders, A., 2020. The Myth of the Lead Arranger's Share. FRB of New York Staff Report .

Boot, A., Thakor, A. V., Udell, G. F., 1987. Competition, risk neutrality and loan commitments. Journal of Banking & Finance 11, 449–471.

Buchak, G., Matvos, G., Piskorski, T., Seru, A., 2018. Fintech, regulatory arbitrage, and the rise of shadow banks. Journal of Financial Economics 130, 453–483.

Buchak, G., Matvos, G., Piskorski, T., Seru, A., 2024. The secular decline of bank balance sheet lending. Tech. rep., National Bureau of Economic Research.

Carey, M., Post, M., Sharpe, S. A., 1998. Does Corporate Lending by Banks and Finance Companies Differ? Evidence on Specialization in Private Debt Contracting. The Journal of Finance 53, 845–878.

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

Chernenko, S., Erel, I., Prilmeier, R., 2022. Why Do Firms Borrow Directly from Nonbanks? The Review of Financial Studies 35, 4902–4947.

Chernenko, S., Ialenti, R., Scharfstein, D. S., 2025. Bank Capital and the Growth of Private Credit. Working Paper .

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

Choi, J., Hackbarth, D., Zechner, J., 2018. Corporate debt maturity profiles. Journal of financial economics 130, 484–502.

Christensen, H. B., Nikolaev, V. V., 2012. Capital Versus Performance Covenants in Debt Contracts. Journal of Accounting Research 50, 75–116.

Cordell, L., Roberts, M. R., Schwert, M., 2023. Clo performance. The Journal of Finance 78, 1235–1278.

Davydiuk, T., Marchuk, T., Rosen, S., 2023. Market discipline in the direct lending space. Review of Financial Studies .

Davydiuk, T., Marchuk, T., Rosen, S., 2024. Direct lenders in the u.s. middle market. Journal of Financial Economics .

Denis, D. J., Mihov, V. T., 2003. The choice among bank debt, non-bank private debt, and public debt: evidence from new corporate borrowings. Journal of financial Economics 70, 3–28.

Dick-Nielsen, J., Feldhütter, P., Lando, D., 2012. Corporate bond liquidity before and after the onset of the subprime crisis. Journal of Financial Economics 103, 471–492.

Disatnik, D., Duchin, R., Schmidt, B., 2013. Cash Flow Hedging and Liquidity Choices*. Review of Finance 18, 715–748.

Drucker, S., Puri, M., 2008. On Loan Sales, Loan Contracting, and Lending Relationships.

The Review of Financial Studies 22, 2835–2872.

Erel, I., Flanagan, T., Weisbach, M. S., 2024. Risk-adjusting the returns to private debt funds. NBER Working Paper .

Fleckenstein, Q., Gopal, M., Gutierrez, G., Hillenbrand, S., 2024. Nonbank Lending and Credit Cyclicality. Review of Financial Studies, forthcoming .

Friewald, N., Jankowitsch, R., Subrahmanyam, M. G., 2012. Illiquidity or credit deterioration: A study of liquidity in the us corporate bond market during financial crises. Journal of financial economics 105, 18–36.

Gatev, E., Strahan, P. E., 2006. Banks' advantage in hedging liquidity risk: Theory and evidence from the commercial paper market. The Journal of Finance 61, 867–892.

Giannetti, M., Jang, Y., 2024. Who lends before banking crises? evidence from the international syndicated loan market. Management Science .

Giannetti, M., Meisenzahl, R., 2023. Ownership concentration and performance of deteriorating syndicated loans. Working Paper .

Gopal, M., Schnabl, P., 2022. The Rise of Finance Companies and FinTech Lenders in Small Business Lending. The Review of Financial Studies 35, 4859–4901.

Greenwald, D. L., Krainer, J., Paul, P., 2023. The credit line channel. Forthcoming, Journal of Finance .

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

Haque, S., Mayer, S., Stefanescu, I., 2024. Private Debt versus Bank Debt in Corporate Borrowing. Working Paper .

He, Z., Xiong, W., 2012. Rollover risk and credit risk. The Journal of Finance 67, 391–430.

Irani, R. M., Iyer, R., Meisenzahl, R. R., Peydró, J.-L., 2021. The Rise of Shadow Banking: Evidence from Capital Regulation. The Review of Financial Studies 34, 2181–2235.

Ivashina, V., Scharfstein, D., 2010. Bank lending during the financial crisis of 2008. Journal of Financial economics 97, 319–338.

Ivashina, V., Sun, Z., 2011. Institutional demand pressure and the cost of corporate loans. Journal of Financial Economics 99, 500–522.

Ivashina, V., Vallee, B., 2020. Weak Credit Covenants. NBER Working Paper No. w27316 .

Jang, Y. S., 2024. Are direct lenders more like banks or arm's-length investors? Working Paper .

Kashyap, A., 2020. The dash for cash and the liquidity multiplier: Lessons from march 2020.

Speech at the LBS AQR Asset Management Institute Virtual Summit. .

Kashyap, A. K., Rajan, R., Stein, J. C., 2002. Banks as liquidity providers: An explanation for the coexistence of lending and deposit-taking. The Journal of Finance 57, 33–73.

Kim, S., Plosser, M. C., Santos, J. A., 2018. Macroprudential policy and the revolving door of risk: Lessons from leveraged lending guidance. Journal of Financial Intermediation 34, 17–31.

Kundu, S., 2023. The externalities of fire sales: Evidence from collateralized loan obligations. Working Paper .

Nadauld, T. D., Weisbach, M., 2012. Did securitization affect the cost of corporate debt? Journal of Financial Economics 105, 332–352.

Nagler, F., 2019. Yield spreads and the corporate bond rollover channel*. Review of Finance 24, 345–379.

Nini, G., 2008. How non-banks increased the supply of bank loans: Evidence from institutional term loans. Available at SSRN 1108818 .

Parise, G., 2018. Threat of entry and debt maturity: Evidence from airlines. Journal of Financial Economics 127, 226–247.

Saunders, A., Spina, A., Steffen, S., Streitz, D., 2024. Corporate loan spreads and economic activity. The Review of Financial Studies 38, 507–546.

Shockley, R. L., Thakor, A. V., 1997. Bank loan commitment contracts: Data, theory, and tests. Journal of Money, Credit, and Banking pp. 517–534.

Standard, Poors, 2020. Leveraged commentary and data (lcd): Leveraged loan primer.

Sufi, A., 2009. Bank lines of credit in corporate finance: An empirical analysis. The Review of Financial Studies 22, 1057–1088.

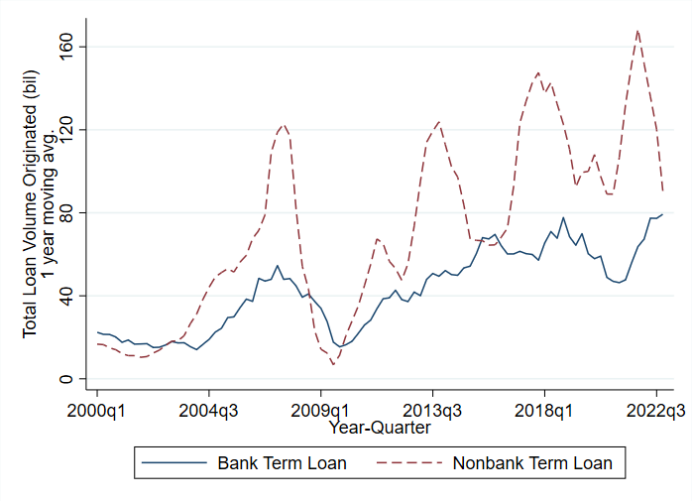
Thakor, A. V., Udell, G. F., 1987. An economic rationale for the pricing structure of bank loan commitments. Journal of Banking & Finance 11, 271–289.

Xu, Q., 2018. Kicking maturity down the road: early refinancing and maturity management in the corporate bond market. The Review of Financial Studies 31, 3061–3097.

Figure 1: Growth of Nonbank Lending and Credit Line Drawdowns

Panel A plots the quarterly origination volume of bank and nonbank term loans in billions of dollars. The sample spans the 2000 to 2022. period Loan origination data is from Dealscan. Term Loan As are classified as *Bank Term Loan*. Term Loan B-Ks are classified as *Nonbank Term Loans*.
Panel B plots the weighted average cumulative daily credit line utilization rate of bank and nonbank borrowers during COVID-19. The sample period is from March 1, 2020 to June 20,2020. Borrowers are classified as bank borrowers if they have no nonbank loan outstanding as of February 2020. For each day, we calculate the cumulative borrowing as the total credit line drawdown from March 1, 2020 upto the date. Credit line utilization is the cumulative borrowing scaled by the size of the total credit lines commitment to the borrower. We then calculate the average for each group as the weighted average utilization of borrowers in that group (weighted by each borrower's total credit line commitment). Credit line drawdowns and commitments are from S&P's Leverage Commentary & Data (LCD).

Panel A - Loan Volume by Loan Type



Panel B - Credit Line Drawdowns - COVID-19

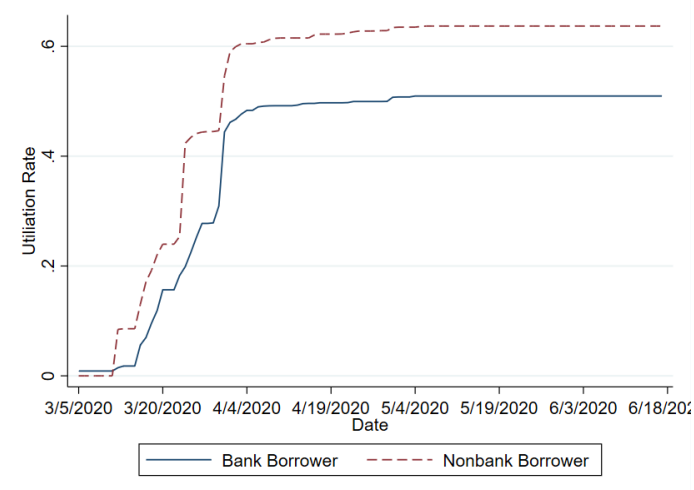
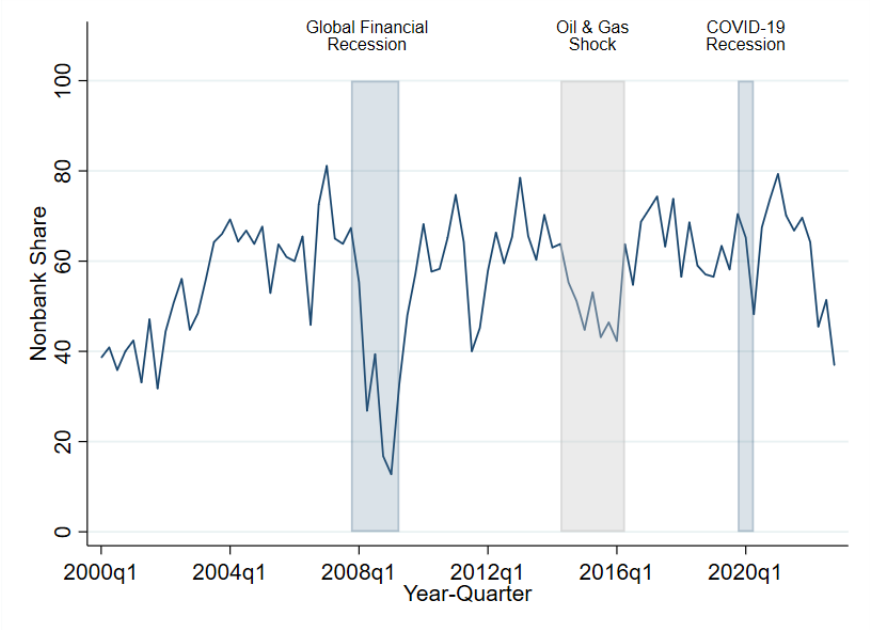


Figure 2: Nonbank Dependence

This figure plots our measure of Nonbank Share and Nonbank Dependence (defined as nonbank term loans divided by total term loans) over the 2000 to 2022 period. Shaded areas either define NBER recession periods or the oil & gas crisis. Data are from S&P's Leverage Commentary & Data (LCD).

Panel A - Nonbank Share based on DealScan originations



Panel B - Nonbank Dependence based on outstanding loans

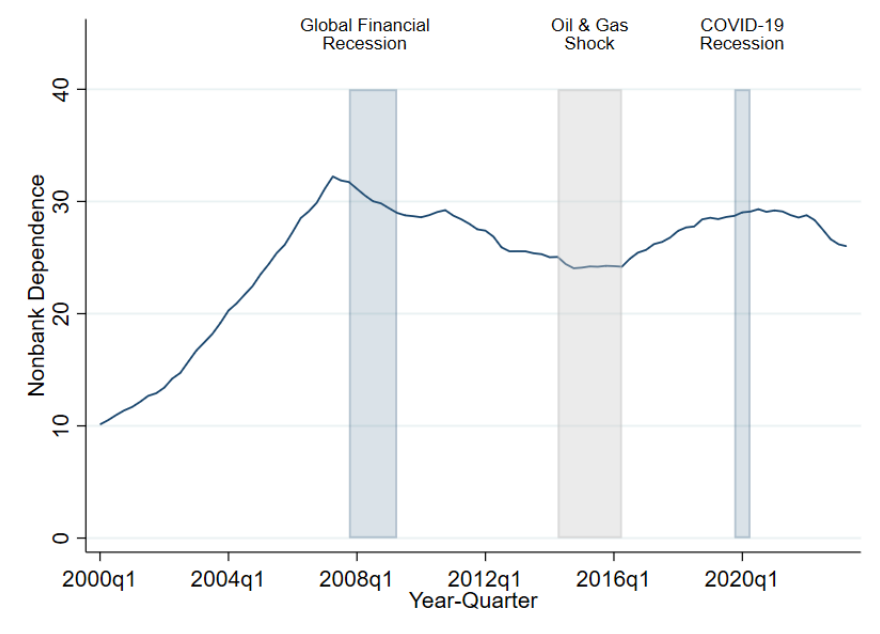
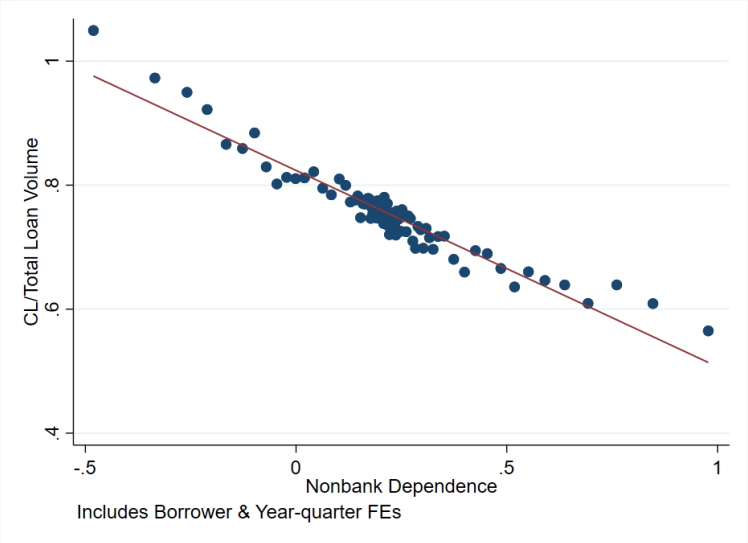


Figure 3: Volume of Credit Lines vs. Nonbank Dependence

This figure presents the binscatter plot of credit line access against nonbank dependence of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2022Q4. In Panel A, we measure credit line outstanding as a share of total loans outstanding to the borrower. In Panel B, we measure credit lines outstanding as a share of total liquidity (measured by cash plus credit lines). *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding in the current quarter for the borrower. We plot the residuals of the dependent and explanatory variables after controlling for borrower and year-quarter fixed effects.

Panel A - Credit Line Share of Total Lending



Panel B - Credit Line Share of Total Liquidity

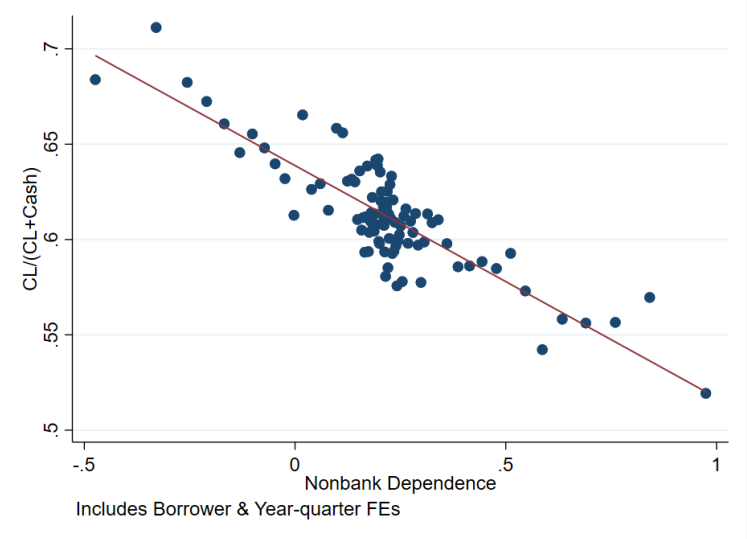
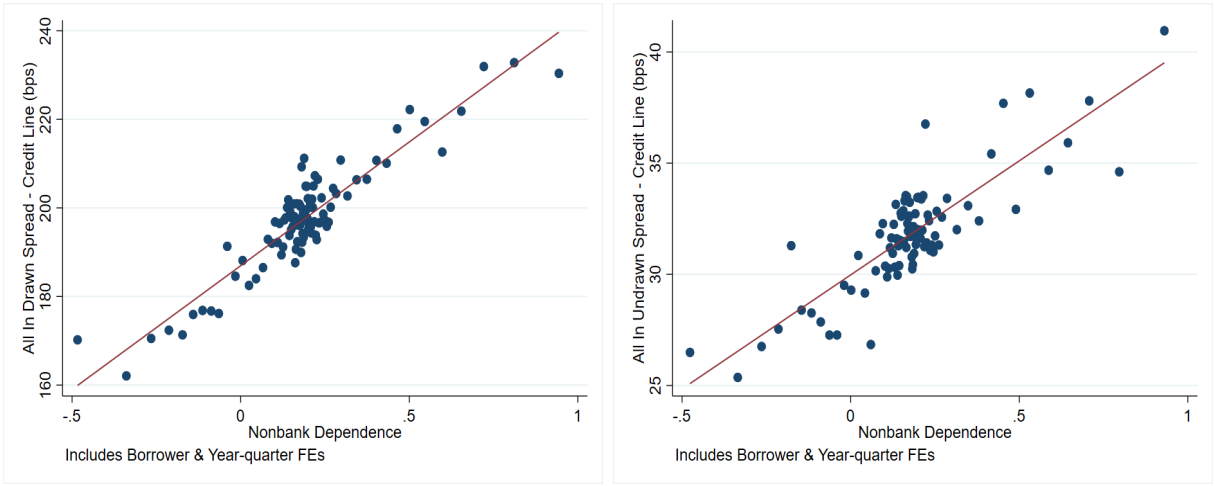


Figure 4: Cost of Credit Lines vs. Nonbank Dependence

This figure presents the binscatter plot of the cost of credit lines against nonbank dependence of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2022Q4. In Panel A, we measure the all-in-drawn and all-in-undrawn spreads of newly issued credit lines in the given quarter. In Panel B, we measure the all-in-drawn and all-in-undrawn spreads based on the weighted average of credit lines outstanding in the given quarter (weighted by loan amount). *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding in the current quarter for the borrower. We plot the residuals of the dependent and explanatory variables after controlling for borrower and year-quarter fixed effects.

Panel A - Cost of New Credit Lines



Panel B - Average Cost of Outstanding Credit Lines

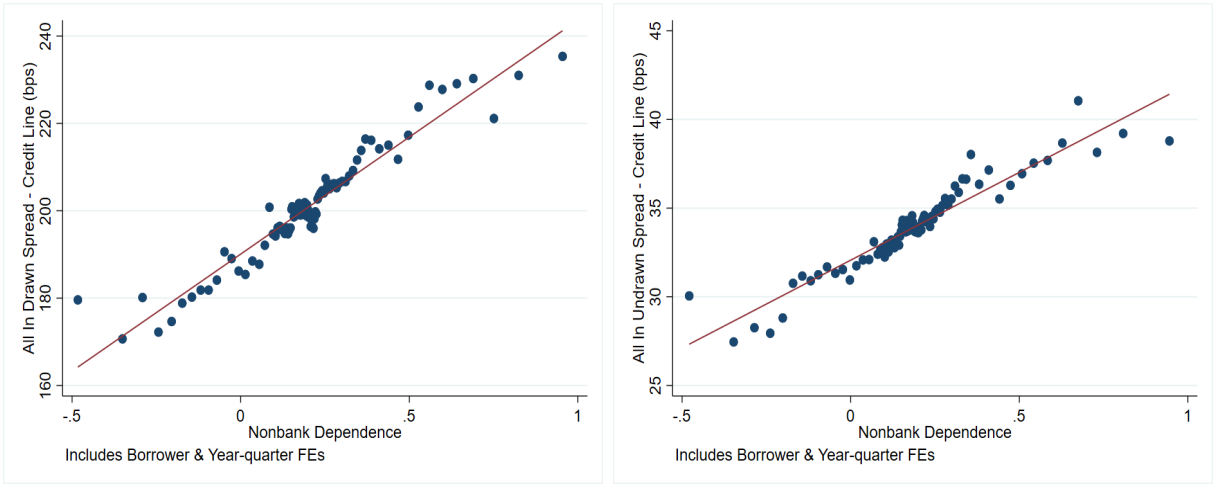
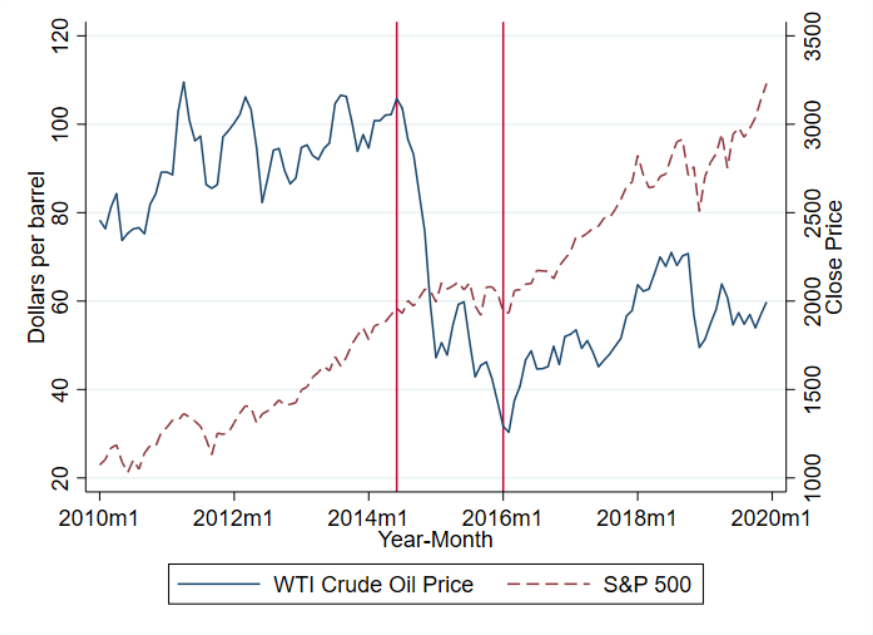


Figure 5: Price Movements during the 2014-16 Oil Price Shock

Panel A presents the level of oil prices of the West Texas Intermediate (WTI) and Panel B plots the S&P500 values from 2010 to 2020 .Panel C and Panel D shows the average quote on the leveraged loan market as reported by the Loan Syndications and Trading Association (LSTA) from 2010 to 2017. Panel D plots the secondary market loan prices from LSTA for oil and gas sector firms and all other firms separately. The two vertical bars mark June 2014 and January 2016 - the start and end of the drop in oil prices during the 2014-16 oil price shock.

Panel A - Oil Price and Stock Prices



Panel B - Loan Prices - Oil and Gas vs. Other Industries

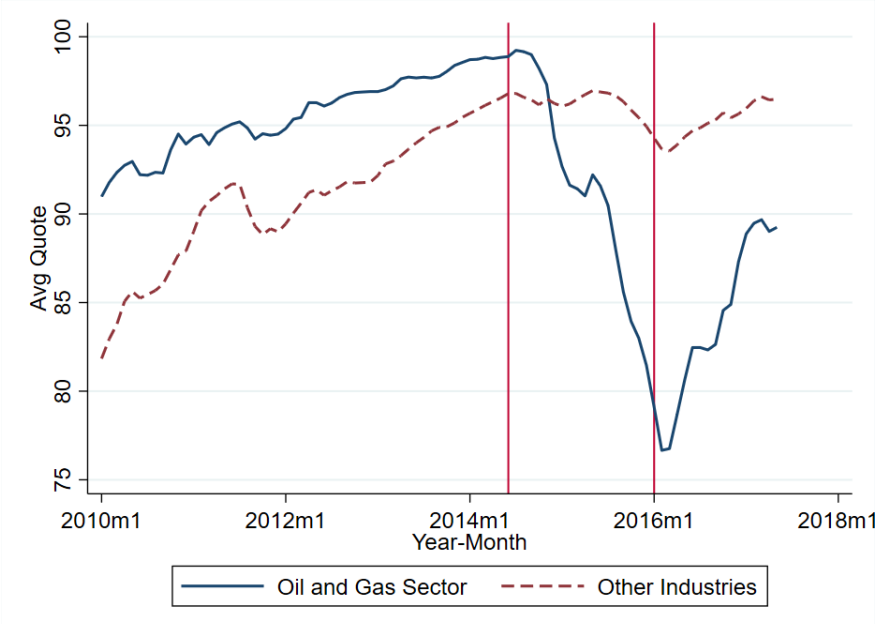
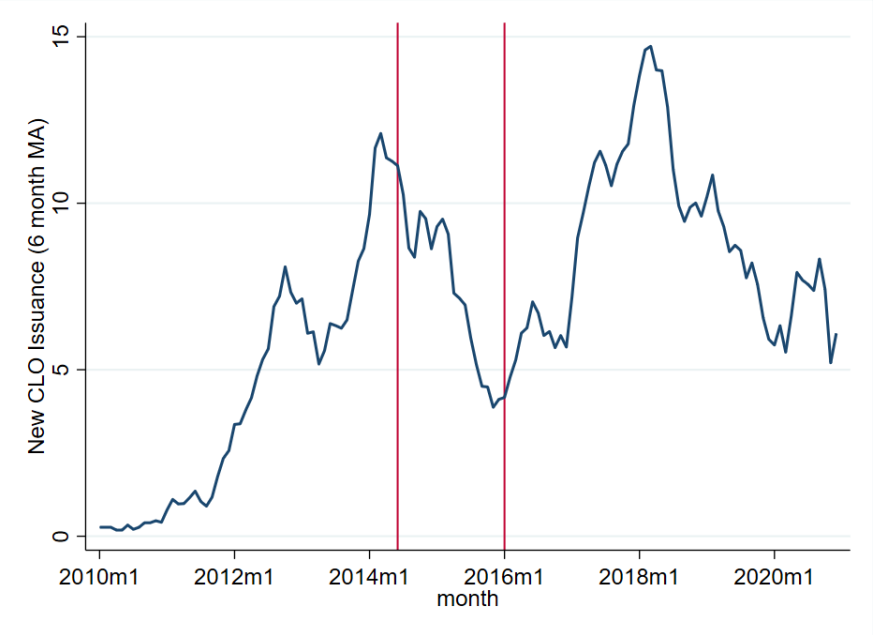


Figure 6: New CLO Issuance and Loan Originations

This figure plots new CLO issuance from Creditflux (Panel A) and new syndicated loan originations in DealScan (Panel B) between 2010 and 2020. The two vertical bars mark June 2014 and January 2016 the start and end of the drop in oil prices during the 2014-16 oil price shock.

Panel A - CLO Issuance Data - Creditflux; 6 month moving average



Panel B - DealScan originations

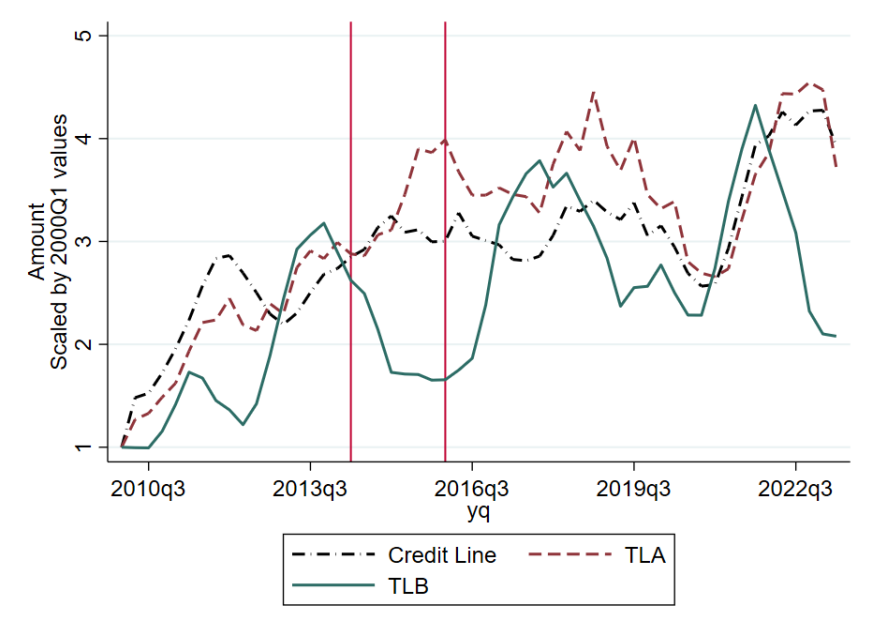
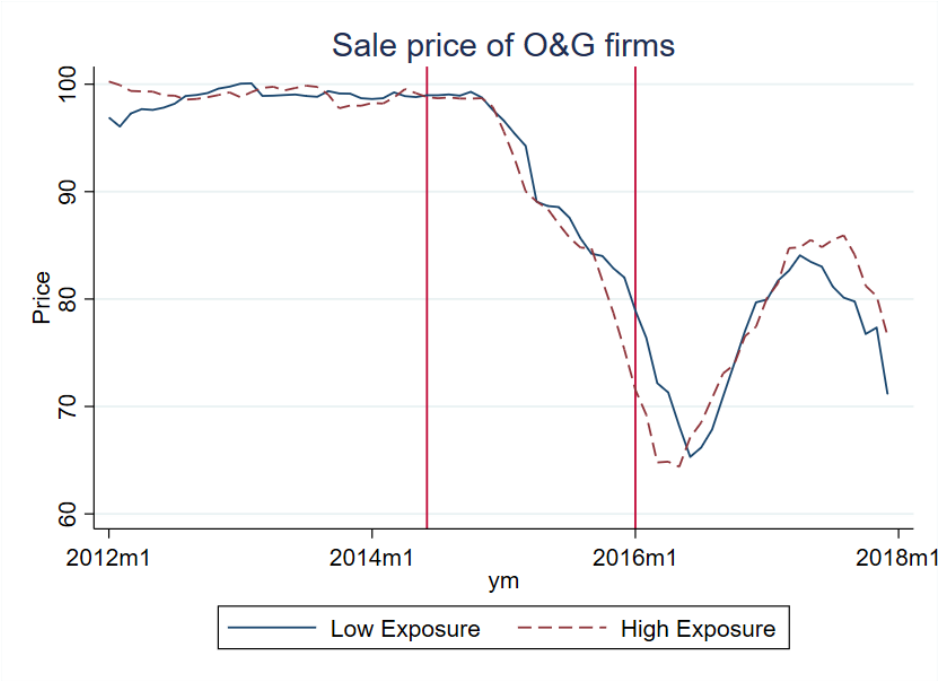


Figure 7: Oil Shock Exposure - Impact on CLOs

This figure plots the sale price of firms in the oil and gas sector (Panel A) and others (Panel B) between 2012 and 2017. The two vertical bars mark June 2014 and January 2016 the start and end of the drop in oil prices during the 2014-16 oil price shock.

Panel A - Sale Price



Panel B - Non - O&G firm sales

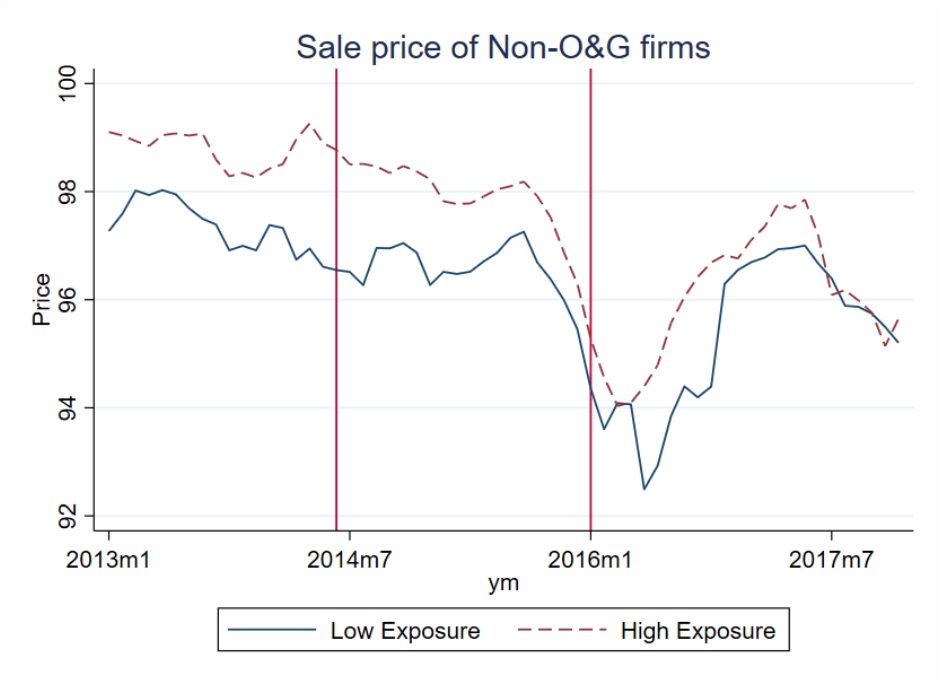


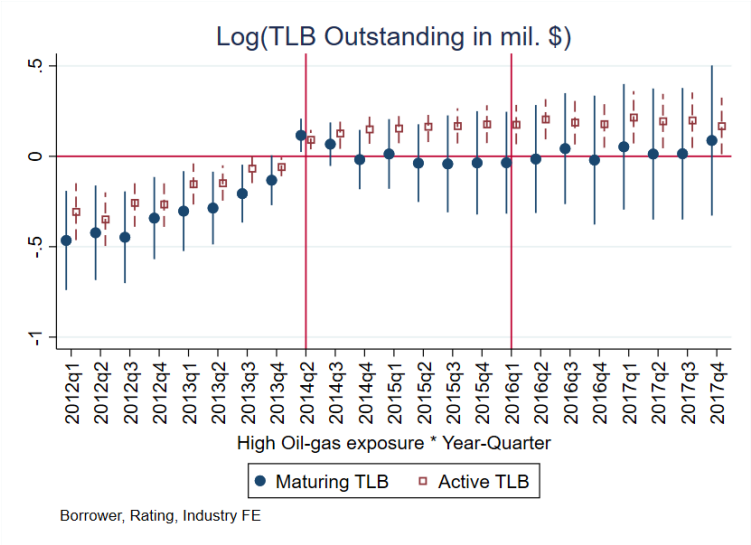
Figure 8: Borrower Term Loan and Credit Line Access Based on Loan Maturity

This figure plots the coefficients from the following regression around the oil price shock

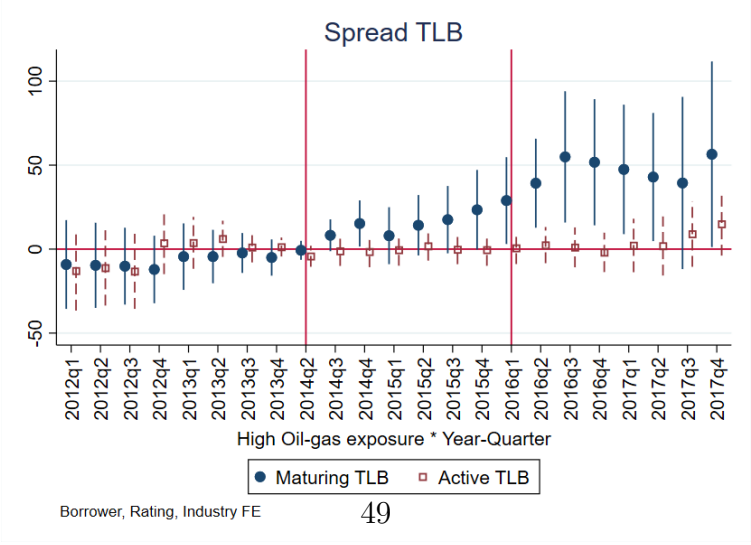
$$y_{i,t} = \alpha + \beta \text{High Oil-Gas Exposure}_i \times \mathbf{1}_t + \lambda_t + \delta_i + \epsilon_{i,t}$$

where $y_{i,t}$ is the volume of nonbank loans (Panel A), spreads on nonbank loans (Panel B), volume of credit lines outstanding (Panel C) and spreads on credit lines (Panel D) for each borrower i in quarter t. *High Oil-Gas Exposure* takes a value of one for firms with above median oil gas exposure. The *Oil-Gas Exposure* is the weighted average of a CLO's portfolio share in oil and gas firms with the weights corresponding to the share of the borrower's loans held by each CLO prior to 2014 Q1. Firms are classified as being *Active TLB* if they have an outstanding Term Loan B-K (TLB) as of 2014Q1 and their TLBs are not maturing during the oil price shock of 2014Q2-2016Q1. Coefficients plotted are relative to 2014Q1 (the quarter before the oil price shock). We include borrower fixed effects, rating × year-quarter fixed effects, and 2 digit SIC code × year-quarter fixed effects. Standard errors are clustered at the borrower level and bars denote 90% confidence intervals.

Panel A -TLB Outstanding

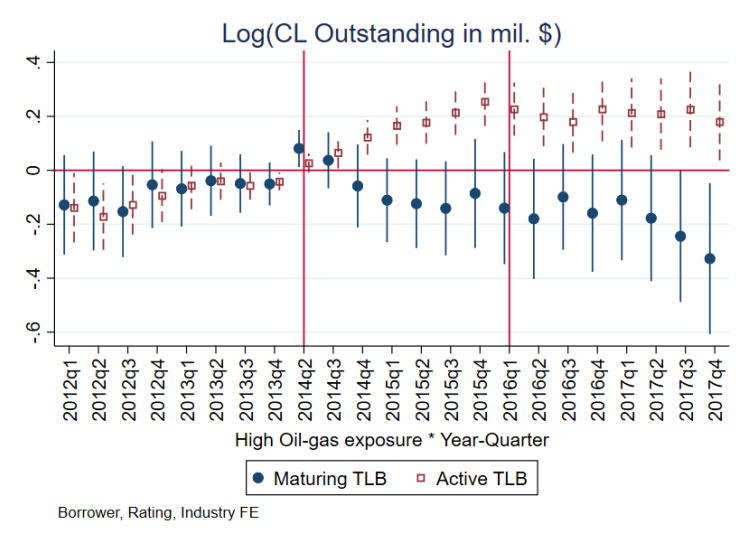


Panel B - TLB Spreads



Borrower Term Loan and Credit Line Access - continued

Panel C - Credit Line Outstanding



Panel D - Credit Line Spreads

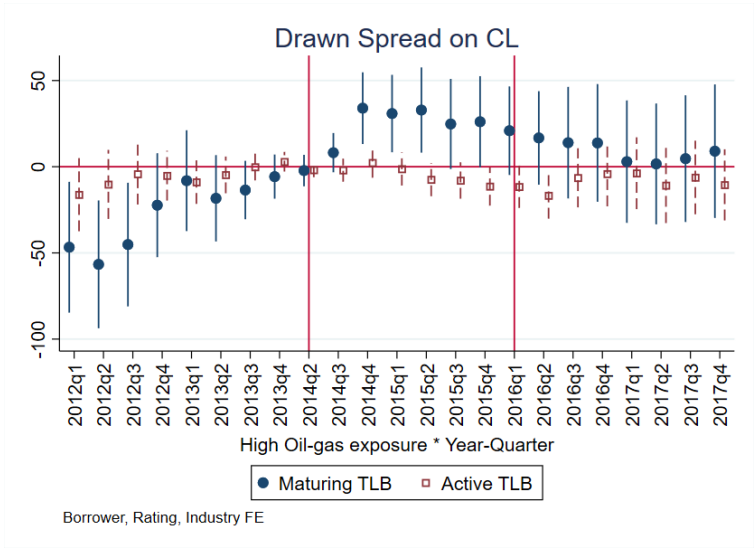
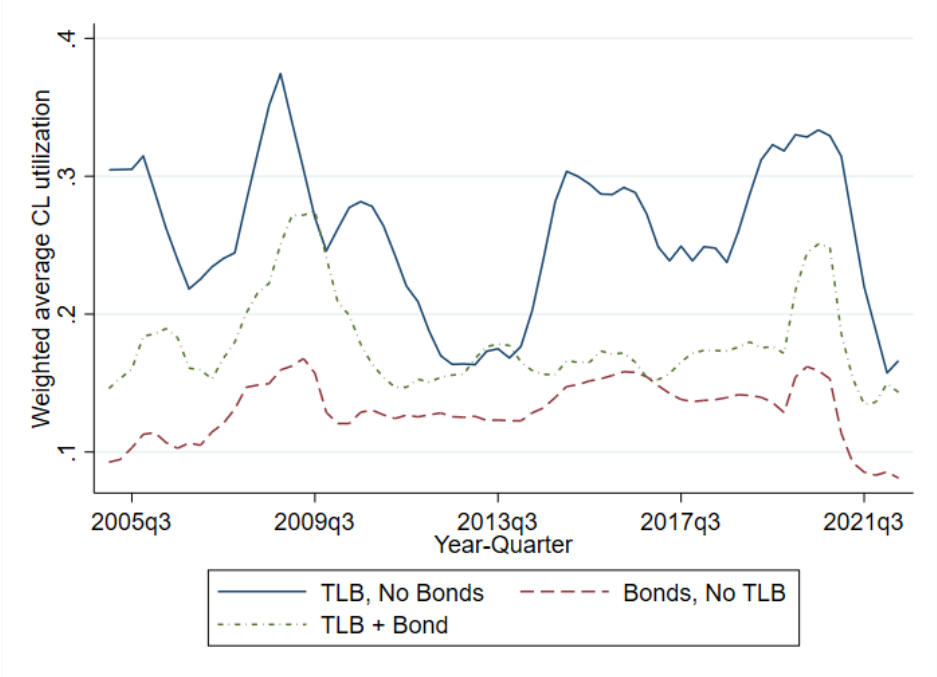


Figure 9: CL Drawdown by Nonbank Borrowers

This figure shows the average credit line utilization rate of nonbank borrowers in the syndicated loan market, the bond market, and private credit market over time. Firms are classified as being *TLB Borrowers* if they have an outstanding Term Loan B-K (TLB). *Bond Borrowers* borrowers are ones with bond outstanding. *BDC borrowers* borrowers are ones with BDC loans outstanding.

Panel A - TLB and Bond Borrowers



Panel B - TLB and BDC Borrowers

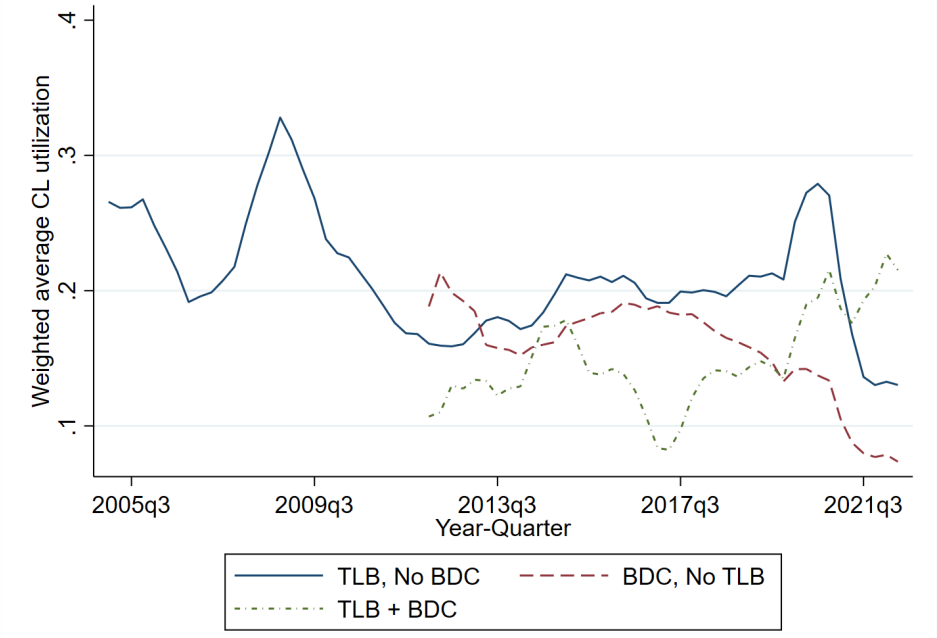


Table 1: Correlation between different measures of nonbank dependence

This table presents the correlation between our measure of nonbank dependence and potential alternate ways to measure nonbank dependence. We present correlation between three different measures - classifying unclassified term loans as TLAs, classifying unclassified term loans as TLBs, or using the pro-rata definition to classify the unclassified term loans.

Panel A - Borrower-quarter level

	TL=TLA	TL=TLB	TL based on pro-rata
TL=TLA	1		
TL=TLB	0.552	1	
TL based on pro-rata	0.962	0.568	1

Panel B - Quarterly level

	TL=TLA	TL=TLB	TL based on pro-rata
TL=TLA	1		
TL=TLB	0.596	1	
TL based on pro-rata	0.999	0.590	1

Table 2: Summary Statistics

This table presents the summary statistics for borrowers with syndicated loans that can be matched to Compustat financial information. The panel is at the borrower-year-quarter level. Panel A presents results for all borrowers. Panel B presents results separately for bank and nonbank borrowers. A borrowers is classified as a nonbank borrower if it has any nonbank term loans (Term Loans B-K) outstanding in the given quarter. A borrowers with only bank loans (Term Loan A or credit line) is classified as a bank borrower. *Nonbank Dependence* is the share of term loans to the borrower from nonbanks. *Assets* are the average firm asset size from Compustat. *Credit Line >0* takes a value of one if the firm has a credit line outstanding in the given quarter else it takes a value of zero. *Cash/Assets* is the amount of cash and cash equivalents at the firm scaled by firm assets. *Total Debt/Equity* is total firm debt to shareholders equity. *Total Debt/Assets* is total firm debt to assets. *Credit Line/Total Loans* is the amount of credit line outstanding as a share of total loans to the borrower. *Credit Line/(Credit Line+Cash)* is the amount of credit line outstanding as a share of total cash and credit lines outstanding to the borrower. *Drawn Spread - CL* and *Undrawn Spread - CL* are the average all-in-drawn-spread and all-in-undrawn-spread on credit lines outstanding to the borrower. *Drawn Credit Line* is the average volume of credit line drawndown by the firm in millions of dollars. *Credit Line Commitment* is the total volume of credit line available to the firm in millions of dollars. *Credit Line Utilization* is the average volume of credit line drawdown as a share of total credit line balance.

Panel A - All Borrowers

	Mean	Std. Dev
Nonbank Dependence	0.19	0.36
Assets ($ bil.)	8.93	62.90
Total Liabilities/Assets	0.62	0.29
Debt/Assets	0.34	0.24
Cash/Assets	0.10	0.13
Share unrated firms	0.56	0.50
Credit Line >0	0.95	0.21
Credit Line/Total Loans	0.75	0.33
Credit Line/(Credit Line + Cash)	0.70	0.30
Drawn Spread - CL (bps)	186.70	109.08
Undrawn Spread - CL (bps)	31.77	22.06
Drawn credit line ($ mil.)	94.20	225.34
Credit line commitment ($ mil.)	639.08	1,060.94
Credit line utilization	0.21	0.28
Observations	192041	

Summary Statistics - continued

Panel B - Comparing Bank and Nonbank Borrowers

	Bank Borrower		Nonbank Borrower		Difference
	Mean	Std. Dev.	Mean	Std. Dev.	Mean
Nonbank Dependence	0.00	0.00	0.77	0.27	-0.77***
Assets ($ bil.)	7.71	37.35	12.71	109.23	-5.00***
Total Liabilities/Assets	0.58	0.27	0.75	0.32	-0.18***
Debt/Assets	0.29	0.22	0.47	0.27	-0.18***
Cash/Assets	0.10	0.14	0.08	0.10	0.02***
Share unrated firms	0.61	0.49	0.40	0.49	0.20***
Credit Line >0	0.96	0.19	0.92	0.26	0.04***
Credit Line/Total Loans	0.87	0.26	0.38	0.26	0.48***
Credit Line/(Credit Line + Cash)	0.70	0.29	0.70	0.31	0.01***
Drawn Spread - CL (bps)	167.65	102.69	245.15	107.35	-77.51***
Undrawn Spread - CL (bps)	27.84	20.74	43.61	21.70	-15.77***
Drawn credit line ($ mil.)	92.31	214.77	99.62	253.08	-7.31***
Credit line commitment ($ mil.)	672.34	1083.97	541.39	983.73	130.95***
Credit line utilization	0.22	0.28	0.19	0.27	0.03***
Observations	144453		47588		192041

Panel C - Borrower Rating Distribution

Rating	Freq.	Percent
AAA	16	0.06
AA	220	0.79
A	3,119	11.27
BBB	2,937	10.61
BB	3,534	12.77
B	3,007	10.87
CCC	466	1.68
CC	114	0.41
Unrated	14,260	51.53
Total	27,673	100.00

Table 3: Effect of Nonbank Dependence on Credit Line Access

This table presents the results on how credit line access varies with nonbank dependence of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2022Q4.
In Panel A, we measure credit line shares at issuance. Columns 1 to 4 measure credit line as a share of total loans to the borrower. Columns 5-8 measure credit lines as a share of total liquidity (measured by cash plus credit lines).
In Panel B, we measure credit line spreads in basis points. Columns 1 to 4 present results for all-in-drawn-spread while Columns 5-8 present results for the all-in-undrawn-spread. *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding in the given quarter for the borrower.
In Panel C, we look at the correlation between occurrence of covenants in deals with credit lines and nonbank dependence of the borrower. *ICR* takes a value of one if the contract has an interest coverage ratio restriction (which is the minimum EBITDA to interest expenses that the firm has to maintain). *Capex* takes a value of one if a restriction on capital expenditures exists. *Cash Sweep* takes a value of one when a cash sweep is part of the credit agreement, and zero otherwise. Cash sweeps require cash proceeds from certain activities (e.g., asset sales) are used to repay debt. *Dividend Restriction* takes a value of one if there are any material restrictions in the contract. *Performance Based Covenant* takes a value of one if there are any performance (profitability) related covenants. The performance indicators include: debt service coverage ratio, fixed charge coverage ratio, interest coverage ratio, senior debt to cash flow (EBITDA) ratio, and total debt to cashflow (EBITDA) ratio. *Capital Ratio Based Covenant* takes a value of one if covenants are formulated in terms of capital ratio–based indicators. The list of capital indicators includes: leverage, debt to tangible net worth, and senior debt leverage ratio. We include loan size, all-in-drawn-spread, all-in-undrawn-spread, and loan maturity and firm asset size as controls in all columns along with rating × year-quarter fixed effects. We include borrower, borrower rating × year-quarter fixed effects, 2-digit SIC code × year-quarter fixed effects, and controls for firm size, debt-to-asset ratio, loan maturity and deal purpose. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A - Credit Line Shares

	CL/Total Loans at Issuance				CL/(CL+Cash) at Issuance			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nonbank Dependence	−0.251***	−0.248***	−0.178***	−0.176***	−0.057***	−0.054***	−0.028***	−0.035***
	(0.014)	(0.012)	(0.014)	(0.016)	(0.010)	(0.010)	(0.009)	(0.010)
Rating x Year-Quarter FE	N	Y	Y	Y	N	Y	Y	Y
Borrower FE	N	N	Y	Y	N	N	Y	Y
Industry x Year-Quarter FE	N	N	N	Y	N	N	N	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	0.72	0.72	0.71	0.71	0.65	0.65	0.65	0.65
Obs.	26,021	25,951	24,706	23,517	26,017	25,947	24,704	23,514
R^2	0.052	0.077	0.473	0.537	0.103	0.152	0.663	0.729

Panel B - Credit Line and Term Loan Costs

	Credit Line					TLA	TLB
	(1) AISD	(2) AISU	(3) Upfront fee	(4) Commitment fee	(5) TCB	(6) AISD	(7) AISD
Nonbank Dependence	48.493***	7.572***	1.900	1.240	8.111**	150.065***	−39.565
	(4.510)	(1.288)	(1.242)	(1.101)	(4.109)	(24.017)	(26.709)
Rating x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	187.88	30.06	70.92	17.80	107.27	274.82	330.87
Obs.	21,563	16,694	10,803	14,879	6,802	3,310	2,772
R^2	0.750	0.711	0.880	0.567	0.816	0.870	0.843

Panel C - Covenants on CL Deals

	(1) ICR	(2) Capex	(3) Cash Sweep	(4) Dividend Restriction	(5) Performance Based Covenant	(6) Capital Ratio Based Covenant
Nonbank Dependence	0.020	0.026*	0.112***	0.004	0.010	−0.025**
	(0.017)	(0.014)	(0.014)	(0.022)	(0.021)	(0.012)
Rating x Year-Quarter FE	Y	Y	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
Unconditional mean	0.16	0.11	0.09	0.38	0.31	0.09
Obs.	15,140	15,140	15,140	15,140	15,140	15,140
R^2	0.518	0.658	0.604	0.612	0.556	0.543

Table 4: Robustness Tests

This table presents robsutness tests on how credit line access varies with nonbank dependence of the borrower. In Panel A, we look at the impact of bank-borrower relationships. Data is at the bank-borrower-year-quarter level and the sample period is 2000Q1-2022Q4. *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding in the given quarter for the borrower. *Bank-Borrower Relationship* measures the share of total loans to a borrower over the last three years from the bank. In Columns 2 and 4, we restrict the sample to firms that have bank term loans outstanding. In Panel B, we study how credit line access varies with market betas of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2022Q4. Column 1 measures credit line as a share of total loans to the borrower. Column 2 measures credit lines as a share of total liquidity (measured by cash plus credit lines). Column 3 presents results for all-in-drawn-spread while Column 4 presents results for the all-in-undrawn-spread. *Market Beta* is a measure of the firm's market beta based on the regression of firm stock returns against the S&P500 returns. In Panels C and D, we study access to credit lines based on firm EBITDA. In Panel C, we look at credit lines as a share of total lending (Columns 1-3) and as a share of total liquidity (cash plus credit lines) (Columns 4-6). In Panel D, we look at the all-in-drawn (Columns 1-3) and all-in-undrawn (Columns 4-6) spreads on credit lines. *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding in the given quarter for the borrower. Controls for firm size, debt-to-asset ratio, loan maturity and deal purpose are included in all specifications. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A - Bank-Borrower Relationships

	CL/Total Loans at Issuance		All in drawn spread	
	(1)	(2)	(3)	(4)
Nonbank Dependence	−0.107***	−0.093***	29.088***	45.566***
	(0.009)	(0.022)	(3.405)	(7.207)
Bank-Borrower Relationship	−0.005	−0.010	1.305	3.105
	(0.004)	(0.009)	(1.338)	(2.497)
Rating x Year-Quarter FE	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y
Bank x Year-Quarter FE	Y	Y	Y	Y
Bank x Borrower FE	Y	Y	Y	Y
Sample		Has TLA		Has TLA
Obs.	113,553	38,700	108,156	37,268
R^2	0.780	0.859	0.879	0.925

Panel B - Systemic Risk

	(1) CL/Total Loans	(2) CL/(CL+Cash)	(3) AISD	(4) AISU
Nonbank Dependence	−0.223***	−0.029***	69.171***	10.309***
	(0.016)	(0.011)	(3.901)	(0.927)
Firm Market Beta	−0.002	−0.042***	17.510***	3.376***
	(0.008)	(0.005)	(2.020)	(0.538)
Rating x Year-Quarter FE	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y
Controls	Y	Y	Y	Y
Unconditional mean	0.71	0.64	192.24	30.76
Obs.	22,808	22,804	20,931	16,422
R^2	0.167	0.384	0.531	0.496

Panel C - Credit Line Shares by EBITDA

	CL/Total Volume			CL/(CL+Cash)		
	(1) All firms	(2) Positive EBITDA	(3) EBITDA>10 mil	(4) All firms	(5) Positive EBITDA	(6) EBITDA>10 mil
Nonbank Dependence	−0.176***	−0.071***	−0.066***	−0.035***	−0.023**	−0.030**
	(0.016)	(0.015)	(0.017)	(0.010)	(0.011)	(0.012)
Rating x Year-Quarter FE	Y	Y	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y
Obs.	23,517	18,912	16,346	23,514	18,907	16,345
R^2	0.537	0.578	0.576	0.729	0.731	0.726

Panel D - Credit Line Spreads by EBITDA

	All-in-drawn-spread			All-in-undrawn-spread		
	(1) All firms	(2) Positive EBITDA	(3) EBITDA>10 mil	(4) All firms	(5) Positive EBITDA	(6) EBITDA>10 mil
Nonbank Dependence	46.920***	10.262**	11.773**	7.751***	3.023**	2.582**
	(4.458)	(4.549)	(4.783)	(1.251)	(1.279)	(1.299)
Rating x Year-Quarter FE	Y	Y	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y
Obs.	21,470	17,317	14,975	16,601	13,533	11,814
R^2	0.761	0.768	0.763	0.725	0.740	0.738

Table 5: Borrower Credit Access - Oil Price Shock

The table presents the results from the following regression:

$$y_{i,t} = \alpha + \text{Oil-Gas Exposure}_i \times \text{Post}_t \times \text{Rollover Risk}_i + \lambda_t + \delta_i + \epsilon_{i,t}$$

where $y_{i,t}$ is the volume and spreads on nonbank term loans and credit lines for each borrower i in quarter t. The *Oil-Gas Exposure* is the weighted average of CLO's portfolio share in oil and gas firms with the weights corresponding to the share of the borrower's loans held by the CLO prior to 2014 Q1. Sample includes firms with a Term Loan B is the quarter prior to the oil price shock (2014Q1). We measure rollover risk based on loan maturity. Firms are classified as being *Maturing TLB* if they have an outstanding Term Loan B-K (TLB) as of 2014Q1 and at least one of their TLBs are maturing during the oil price shock of 2014Q2-2016Q1. The omitted group in the regression is 2014Q1 (the quarter before the oil price shock). We include borrower fixed effects, rating fixed effects, and 2 digit SIC code, and year quarter fixed effects. In Columns (1) (3) (5) and (7), we focus on the volume of new loans extended. In Columns (2) (4) and (8), we look at the weighted average spreads on all outstanding loans of a given type. Column (6) shows the nonbank dependence as defined in the text. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A- All Firms

	TLB Vol.	Spread TLB	TLA Vol.	Spread TLA	Term Loans Vol.	NB Dep	CL Vol.	Spread CL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Oil shock exposure x Post	−0.047	6.520*	−0.038	3.826	−0.074*	−0.047***	−0.074**	4.727
	(0.037)	(3.656)	(0.027)	(7.145)	(0.041)	(0.009)	(0.029)	(4.038)
Borrower FE	Y	Y	Y	Y	Y	Y	Y	Y
Ind FE	Y	Y	Y	Y	Y	Y	Y	Y
Rating FE	Y	Y	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Obs.	9,516	7,631	9,516	4,461	9,516	9,516	9,516	8,117
R^2	0.144	0.870	0.111	0.901	0.130	0.664	0.082	0.807

Panel B - Maturing vs. Active TLB - Public Borrowers

	TLB Vol.	Spread TLB	TLA Vol.	Spread TLA	Term Loans Vol.	NB Dep	CL Vol.	Spread CL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Oil shock exposure x Post x	−0.108***	9.707**	−0.078**	16.743**	−0.163***	0.030*	−0.103***	10.007**
Maturing TLB	(0.040)	(4.557)	(0.031)	(7.220)	(0.045)	(0.016)	(0.038)	(4.484)
Borrower FE	Y	Y	Y	Y	Y	Y	Y	Y
Ind FE	Y	Y	Y	Y	Y	Y	Y	Y
Rating FE	Y	Y	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Obs.	9,516	7,631	9,516	4,461	9,516	9,516	9,516	8,117
R^2	0.144	0.870	0.111	0.902	0.130	0.679	0.082	0.807

Borrower Credit Access - Oil Price Shock

Panel C- Maturing vs. Active TLB - Unrated Public Borrowers

	TLB Vol.	Spread TLB	TLA Vol.	Spread TLA	Term Loans Vol.	NB Dep	CL Vol.	Spread CL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Oil shock exposure x Post x	−0.134**	11.525	−0.060*	12.577	−0.181***	0.008	−0.165***	5.942
Maturing TLB	(0.060)	(7.158)	(0.033)	(10.086)	(0.066)	(0.020)	(0.056)	(7.115)
Borrower FE	Y	Y	Y	Y	Y	Y	Y	Y
Ind FE	Y	Y	Y	Y	Y	Y	Y	Y
Rating FE	Y	Y	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Obs.	4,995	3,968	4,995	2,186	4,995	4,995	4,995	4,052
R^2	0.150	0.872	0.130	0.931	0.144	0.691	0.102	0.817

Panel D- Maturing vs. Active TLB - Borrowers with TLA and TLB

	TLB Vol.	Spread TLB	TLA Vol.	Spread TLA	Term Loans Vol.	NB Dep	CL Vol.	Spread CL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Oil shock exposure x Post x	−0.077	13.117**	−0.114**	13.012**	−0.182***	0.039**	−0.107**	9.425*
Maturing TLB	(0.048)	(5.553)	(0.049)	(6.392)	(0.062)	(0.019)	(0.054)	(5.013)
Borrower FE	Y	Y	Y	Y	Y	Y	Y	Y
Ind FE	Y	Y	Y	Y	Y	Y	Y	Y
Rating FE	Y	Y	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Obs.	5,143	4,209	5,143	3,963	5,143	5,143	5,143	4,776
R^2	0.157	0.856	0.103	0.894	0.134	0.735	0.081	0.846

Panel E- Positive EBITDA borrowers

	TLB Vol.	Spread TLB	TLA Vol.	Spread TLA	Term Loans Vol.	NB Dep	CL Vol.	Spread CL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Oil shock exposure x Post x	−0.103**	9.645**	−0.080**	17.588**	−0.160***	0.028*	−0.102**	9.855**
Maturing TLB	(0.041)	(4.792)	(0.032)	(7.350)	(0.046)	(0.016)	(0.040)	(4.600)
Borrower FE	Y	Y	Y	Y	Y	Y	Y	Y
Ind FE	Y	Y	Y	Y	Y	Y	Y	Y
Rating FE	Y	Y	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Obs.	8,874	7,196	8,874	4,229	8,874	8,874	8,874	7,625
R^2	0.147	0.864	0.112	0.897	0.132	0.688	0.081	0.802

Table 6: Borrower Financial and Real Outcomes - Oil Price Shock

The table presents the results from the following regression -

$$y_{i,t} = \alpha + \text{Oil-Gas Exposure}_i \times \text{Post}_t \times \text{Rollover Risk} + \lambda_t + \delta_i + \epsilon_{i,t}$$

where $y_{i,t}$ are the various financial outcomes of borrower i in quarter t. The *Oil-Gas Exposure* is the weighted average of CLO's portfolio share in oil and gas firms with the weights corresponding to the share of the borrower's loans held by the CLO prior to 2014 Q1. Sample includes firms with a Term Loan B is the quarter prior to the oil price shock (2014Q1). We measure rollover risk based on loan maturity. Firms are classified as being *Maturing TLB* if they have an outstanding Term Loan B-K (TLB) as of 2014Q1 and at least one of their TLBs are maturing during the oil price shock of 2014Q2-2016Q1. The omitted group in the regression is 2014Q1 (the quarter before the oil price shock). *Log(CL Drawdown)* is the log of drawn credit line balance in a given quarter. *Log(Cash)* is the log of cash and cash equivalents held by the firm in a given quarter. *Log(Assets)* is the log of firm size in millions of $s in a given quarter. *Capital/Assets* is the capital invested in a given quarter scaled by firm size as of 2014Q2. We include borrower fixed effects, rating fixed effects, and 2 digit SIC code, and year quarter fixed effects, and firm size controls. Standard errors are clustered at the borrower level. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

	Log(CL Drawdown)	Log(Cash)	Log(Assets)	Capital/Assets
	(1)	(2)	(3)	(4)
Oil shock exposure x Post x Maturing TLB	0.167*	−0.029	−0.024**	−0.025**
	(0.095)	(0.023)	(0.011)	(0.011)
Borrower FE	Y	Y	Y	Y
Ind FE	Y	Y	Y	Y
Rating FE	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y
Obs.	3,592	7,737	7,748	7,278
R^2	0.747	0.904	0.971	0.564

Table 7: Borrower Credit Access and Real Outcomes vs. Nonbank Dependence-Oil Price Shock

This table compares the access to credit a real outcomes for bank and nonbank dependent borrowers during the oil price shock. Sample period is from 2012Q1 - 2016Q4. *Pre-shock Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding for a borrower as of 2014Q1. *Post* takes a value of one after 2014Q2. *Log(New CL)* is the log of 1 + volume of new credit lines originated in a given quarter. *Log(CL outstanding)* is the log of credit lines outstanding for a borrower in a given quarter. *Log(Assets* is the log of size of the borrower. *LT Inv/ Assets* is long term investments of the borrower scaled by firm size. *Cash/Assets* is cash and cash equivalents as a share of total firm assets. *Capital/Assets* is the invested capital as a share of firm assets. *Log(Cash)* is the log of cash and cash equivalents at the firm. *Cash/Cash +CL* is share of cash in total liquidity available at the firm. We exclude borrowers in the oil and gas sector. We include borrower, industry, year-quarter, and rating fixed effects. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

	Log(New CL)	Log(CL Outstanding)	Log(Assets)	LT Inv/Assets	Cash/Assets	Capital/Assets	Log(Cash)	Cash/(Cash +CL)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pre-shock Nonbank Dependence x	−0.288***	−0.130***	−0.092***	−0.018***	−0.019***	−0.163**	−0.051	0.030**
Post	(0.044)	(0.048)	(0.023)	(0.005)	(0.006)	(0.077)	(0.041)	(0.013)
Borrower FE	Y	Y	Y	Y	Y	Y	Y	Y
Ind FE	Y	Y	Y	Y	Y	Y	Y	Y
Rating FE	Y	Y	Y	Y	Y	Y	Y	Y
Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Obs.	51,838	33,657	49,419	36,428	46,637	46,761	48,984	49,143
R^2	0.088	0.920	0.980	0.738	0.520	0.898	0.914	0.841

Table 8: Bond Dependence vs. Nonbank Dependence

This table looks at availability of bank liquidity based on two different measures of nonbank dependence of a borrower - the bond dependence and nonbank dependence through the syndicated loan market. We measure bond dependence as total bonds outstanding as a share of total syndicated term loans and bonds outstanding. *TLB Share* measures the nonbank dependence in the syndicated loan market and is based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term and bonds loans outstanding for a borrower. In Panel B, we have the sample of public borrowers with either a nonbank syndicated loan or bond outstanding. In Panel C, we restrict the sample to borrowers with bonds outstanding but no TLBs. In Panel D, we restrict the sample to borrowers with non-zero nonbank dependence in the syndicated loan market but have no bonds outstanding. In Panel E, we restrict the sample to borrowers with a non-zero reliance on both bonds and nonbanks in the syndicated loan market. All variables are standardized to have a mean of zero and standard deviation of one. We include borrower, industry-year-quarter, and rating-year-quarter. Controls include firm size and leverage. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A - Rating Summary Stats

Rating	No. of Firms	Share TLB, No Bonds	Share Bonds, No TLB	Share with TLB and Bonds
AAA-A	16,694	0.02	0.55	0.06
BBB	16,734	0.04	0.57	0.06
Non-IG	50,316	0.29	0.27	0.21
Unrated	105,975	0.15	0.16	0.03
Total	189,719	0.16	0.26	0.09

Panel B - Full Sample

	CL/(CL+Cash)	CL/Assets	AISD	AISU
	(1)	(2)	(3)	(4)
Bond Dependence	−0.043***	−0.059***	−10.103***	−1.457***
	(0.005)	(0.007)	(2.101)	(0.427)
TLB Share	−0.035***	−0.046***	7.378***	1.650***
	(0.005)	(0.008)	(2.100)	(0.437)
Rating x Year-Quarter FE	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y
Controls	Y	Y	Y	Y
Unconditional mean	0.69	0.29	195.64	33.34
Obs.	94,036	94,053	86,895	77,771
R^2	0.726	0.682	0.774	0.776

Panel C - Only Bonds, No TLB

	CL/(CL+Cash)	CL/Assets	AISD	AISU
	(1)	(2)	(3)	(4)
Bond Dependence	−0.017**	−0.022***	−13.059***	−1.948***
	(0.007)	(0.008)	(2.672)	(0.505)
Rating x Year-Quarter FE	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y
Controls	Y	Y	Y	Y
Unconditional mean	0.69	0.25	154.38	24.44
Obs.	48,674	48,674	45,710	40,845
R^2	0.774	0.701	0.801	0.816

Panel D - Only TLB, no Bonds

	CL/(CL+Cash)	CL/Assets	AISD	AISU
	(1)	(2)	(3)	(4)
TLB Share	−0.052***	−0.086***	7.815***	2.101***
	(0.008)	(0.014)	(2.908)	(0.607)
Rating x Year-Quarter FE	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y
Controls	Y	Y	Y	Y
Unconditional mean	0.74	0.38	247.73	45.32
Obs.	27,492	27,507	24,921	22,651
R^2	0.788	0.768	0.811	0.803

Panel E - Bonds and TLB

	CL/(CL+Cash)	CL/Assets	AISD	AISU
	(1)	(2)	(3)	(4)
Bond Dependence	−0.067***	−0.096***	4.266	0.880
	(0.009)	(0.013)	(3.576)	(0.642)
TLB Share	−0.047***	−0.083***	10.427***	2.334***
	(0.008)	(0.012)	(2.877)	(0.547)
Rating x Year-Quarter FE	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y
Controls	Y	Y	Y	Y
Unconditional mean	0.71	0.33	240.96	43.82
Obs.	38,173	38,187	34,955	31,586
R^2	0.774	0.759	0.763	0.768

Table 9: Effect of Nonbank Dependence on Credit Line Access - Private Credit Access

This table presents the results on how credit line access varies with nonbank dependence of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2022Q4. We focus on the sample of public firms. Column 1 measures credit line as a share of total liquidity (measured by cash plus credit lines). Column 2 measures credit lines as a share of total assets. Column 3 presents results for all-in-drawn-spread while Column 4 presents results for the all-in-undrawn-spread. *TLB Share* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total syndicated term loans and private BDC loans outstanding in the given quarter for the borrower, standardized to have a mean of zero and standard deviation of one. *BDC Dependence* is calculated as the volume of BDC credit outstanding for a given borrower in a quarter scaled by total syndicated term loans and private BDC loans outstanding, standardized to have a mean of zero and standard deviation of one. We include borrower, borrower rating × year-quarter fixed effects, 2-digit SIC code × year-quarter fixed effects, and controls for firm size and leverage. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A - Full Sample

	CL/(CL+Cash)	CL/Assets	AISD	AISU
	(1)	(2)	(3)	(4)
BDC Dependence	0.006**	−0.002	−0.523	0.467*
	(0.002)	(0.002)	(0.674)	(0.259)
TLB Share	−0.045***	−0.052***	8.346***	1.684***
	(0.007)	(0.010)	(2.616)	(0.493)
Rating x Year-Quarter FE	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y
Controls	Y	Y	Y	Y
Unconditional mean	0.70	0.32	233.68	41.08
Obs.	49,674	49,696	45,125	40,125
R^2	0.761	0.734	0.775	0.778

Panel B - Only BDC, No TLB

	CL/(CL+Cash)	CL/Assets	AISD	AISU
	(1)	(2)	(3)	(4)
BDC Dependence	0.004*	−0.001	−0.958**	0.138
	(0.002)	(0.002)	(0.475)	(0.097)
Rating x Year-Quarter FE	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y
Controls	Y	Y	Y	Y
Unconditional mean	0.70	0.24	161.75	22.05
Obs.	4,967	4,973	4,675	3,986
R^2	0.856	0.870	0.913	0.934

Panel C - Only TLB, no BDC

	CL/(CL+Cash)	CL/Assets	AISD	AISU
	(1)	(2)	(3)	(4)
TLB Share	−0.058***	−0.083***	8.638***	2.047***
	(0.008)	(0.012)	(2.875)	(0.540)
Rating x Year-Quarter FE	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y
Controls	Y	Y	Y	Y
Unconditional mean	0.70	0.33	241.61	43.57
Obs.	41,748	41,764	37,797	33,972
R^2	0.775	0.747	0.774	0.775

Online Appendix

Fragile Financing?
How Corporate Reliance on Shadow Banking Affects their Access to Bank Liquidity

Viral V. Acharya Manasa Gopal Sascha Steffen

This version: December 1, 2025

Table OA1: Variable Definitions

Name	Definition	Source
Bank Term Loan	Facility type - "Term Loan A" and "Term Loan"	DealScan
Nonbank Term Loan	Facility type - "Term Loan B-K"	DealScan
Bank borrower	Borrowers that only have bank term loans	DealScan
Nonbank borrower	Borrowers that have atleast one nonbank term loans	DealScan
Nonbank Dependence	Calculated based on outstanding loans for a borrower in a given quarter. Nonbank dependence is the amount of nonbank loans outstanding as a share of total term loans outstanding. We calculate three different measures of nonbank dependence using loan definitions in DealScan. Unclassified term loans are classified as TLA in our preferred specification. Alternatively, unclassified term loans are classified as TLB. Or, in our third classification, unclassified term loans that are "institutional" and do not have a pro-rata payment structure are classified as TLB, and loans that are not "institutional" but have a pro-rata payment structure are classified as TLB.	DealScan
Nonbank Share	Nonbank share is the amount of nonbank loans issued as a share of total term loans issued	DealScan
Credit Line Share	Credit lines at issuance (outstanding) as a share of total loan volume issued (outstanding)	DealScan
Total Loan Volume	Sum of all loans issued (outstanding) in a given quarter	DealScan
Term Loan Volume	Sum of all term loans issued (outstanding) in a given quarter	DealScan
Credit Line Utilization	One minus undrawn credit line balance divided by total credit line balance: 1-$\frac{undrawncrdtportionrevolvingcrdt}{outstandingbalrrevolvingcredit}$. We fill missing Q1 to Q3 values in one calendar year with Q4 values or missing Q1 values with Q2 values and missing Q3 values with Q4 values if available.	Capital IQ

Variable Definitions

Name	Definition	Source
Loan Size (mil.)	Size of loan facility in millions of dollars [*tranche_amount*]	DealScan
Drawn spreads / AISD	Spread on term loans or the drawn portion of credit lines - sum of spread plus facility fee (annual fee paid on the entire committed amount) [*all_in_spread_drawn_bps*]	DealScan
Undrawn spreads / AISU	Spread on the undrawn portion of credit lines - sum of commitment fee plus facility fee [*all_in_spread_drawn_bps*]	DealScan
Upfront fee	A fee paid by the borrower to lenders upon closing of a loan [*upfront_fee_bps*]	DealScan
Commitment Fee	The fee paid by borrowers on unused loan commitments [*commitment_fee_bps*]	DealScan
TCB	Total Cost of Borrowing accounting for spreads and fees as per **?**	DealScan + author calculations
Maturity (months)	Maturity of the loan at origination in months [*tenor_maturity*]	DealScan
Interest Coverage Ratio (ICR) covenant	Takes a value of one if the contract has an interest coverage ratio restriction (which is the minimum EBITDA to interest expenses that the firm has to maintain)	DealScan
Capex covenant	Takes a value of one if a restriction on capital expenditures exists	DealScan
Cash Sweep covenant	Takes a value of one when a cash sweep is part of the credit agreement, and zero otherwise. Cash sweeps require cash proceeds from certain activities (e.g., asset sales) are used to repay debt.	DealScan
Dividend Restriction covenant	Takes a value of one if there are any material restrictions in the contract	DealScan
Performance Based Covenant	Takes a value of one if there are any performance (profitability) related covenants. The performance indicators include: debt service coverage ratio, fixed charge coverage ratio, interest coverage ratio, senior debt to cash flow (EBITDA) ratio, and total debt to cashflow (EBITDA) ratio	DealScan
Capital Ratio Based Covenant	Takes a value of one if covenants are formulated in terms of capital ratio–based indicators. The list of capital indicators includes: leverage, debt to tangible net worth, and senior debt leverage ratio.	DealScan

Variable Definitions

Name	Definition	Source
GFC	Takes a value of 1 between 2007Q2 and 2009Q2	-
COVID-19	Takes a value of 1 in 2020Q1	-
Oil Price Shock	Takes a value of 1 between 2014Q2 and 2016Q1	-
Assets	Firm asset size	Compustat
Cash/Assets	Amount of cash and cash equivalents at the firm scaled by firm assets	Compustat
Total Debt/Equity	Total firm debt to shareholders equity	Compustat
Total Debt/Assets	Total firm debt to assets	Compustat
Credit Line/(Credit Line+Cash)	is the amount of credit line outstanding as a share of total cash and credit lines outstanding to the borrower	Compustat
Rating and Share Unrated	Group classification based on long-term issuer rating with separate groups for ratings from AAA to C and unrated borrowers. Share unrated are the share of borrowers without a risk rating	Compustat
Bank-borrower relationship	Share of total loans to a borrower over the last three years from a given bank	DealScan
Oil shock exposure	Calculated for each CLO as the share of their portfolio holdings in oil & gas firms as of 2014 May. At the borrower level, we calculate a weighted average of CLO oil& gas exposure based on share of TLBs of the borrower held by each CLO	LCD, DealScan, Creditflux
Maturing and Active TLBs	Firms are classified as being *Maturing TLB* if they have an outstanding Term Loan B-K (TLB) as of 2014Q1 and at least one of their TLBs are maturing during the oil price shock of 2014Q2-2016Q1. *Active TLB* borrowers have an outstanding Term Loan B-K (TLB) as of 2014Q1 and none of their TLBs are maturing during the oil price shock of 2014Q2-2016Q1.	DealScan

Variable Definitions

Name	Definition	Source
Bond Borrower	Borrowers with non-zero bonds outstanding in a given quarter. Bonds outstanding are calculated as sum of senior [*srbondsandnotes*] and subordinated [*subordinatedbondsandnotes*] bonds and notes	Capital IQ
Bond Dependence	Calculated based on the outstanding bonds for a borrower in a given quarter. Bond dependence is the amount of senior and subordinated bonds outstanding as a share of borrower assets	Compustat & CapitalIQ
BDC Amount/Assets	Calculated based on the outstanding loan amount for a borrower from BDCs scaled by firm size.	Compustat & BDC 10Ks

OA1 Additional Figures and Tables

Figure OA1: Growth of Nonbank Lending

This figure plots the quarterly total book value of assets of bank and nonbank borrowers in trillions of dollars. The sample spans the 2000 to 2022. Loan origination data is from Dealscan, borrower asset size is from Compustat. Term Loan As are classified as *Bank Term Loan*. Term Loan B-Ks are classified as *Nonbank Term Loans*. *Nonbank Term Loan borrowers* are borrowers that have at least one nonbank term loan outstanding in a given quarter. All other borrowers are classified as *Bank Term Loan Borrowers*.

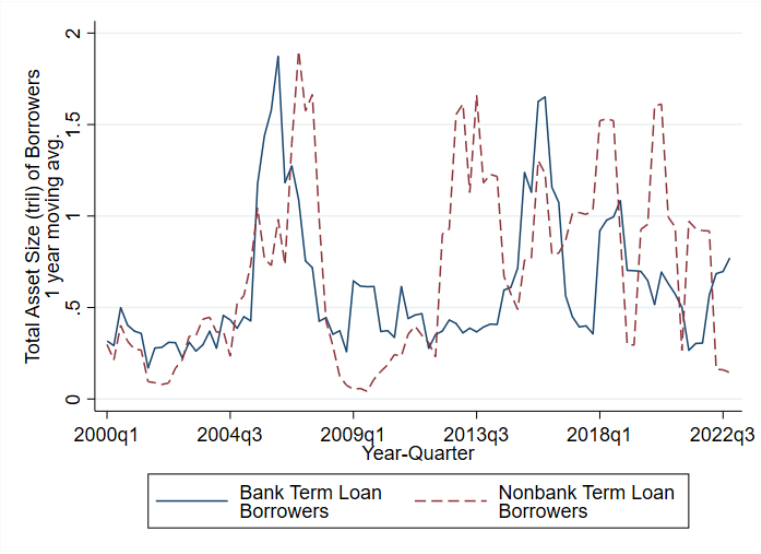
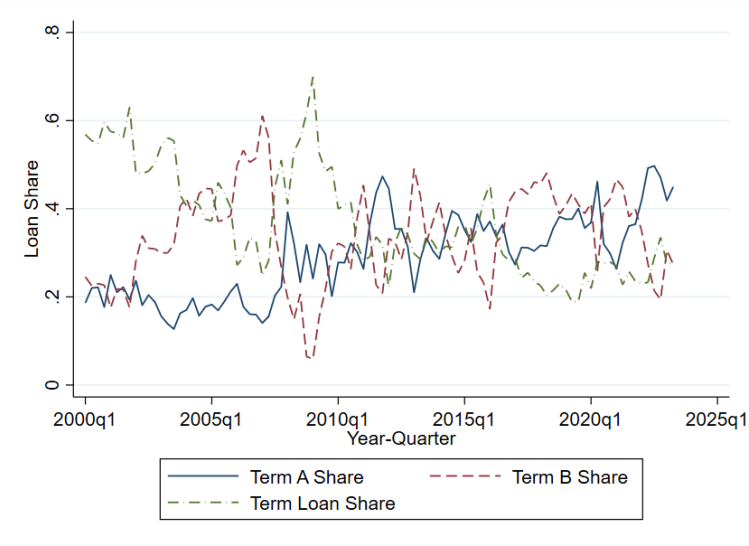


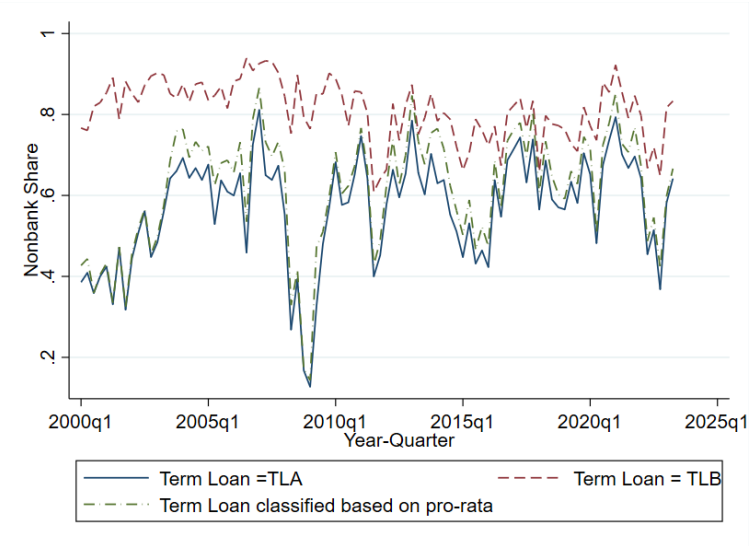
Figure OA2: Alternate Measures of Nonbank Dependence

This figure presents the time-series variation in various loan categories and nonbank dependence. In Panel A, we plot the shares of loans that are classified as Term Loan A or Term Loan B or remain unclassified in DealScan. In Panel B, we calculate 3 different measures of nonbank dependence - classifying the unclassified term loans as TLA (our preferred specification), classifying the unclassified term loans as TLB, or classifying the unclassified term loans as TLA if pro-rata is one in DealScan and TLB if pro-rata is zero.

Panel A - Loan Shares



Panel B - Nonbank shares at origination using alternate definitions



Alternate Measures of Nonbank Dependence

Panel C - Nonbank dependence using alternate definitions

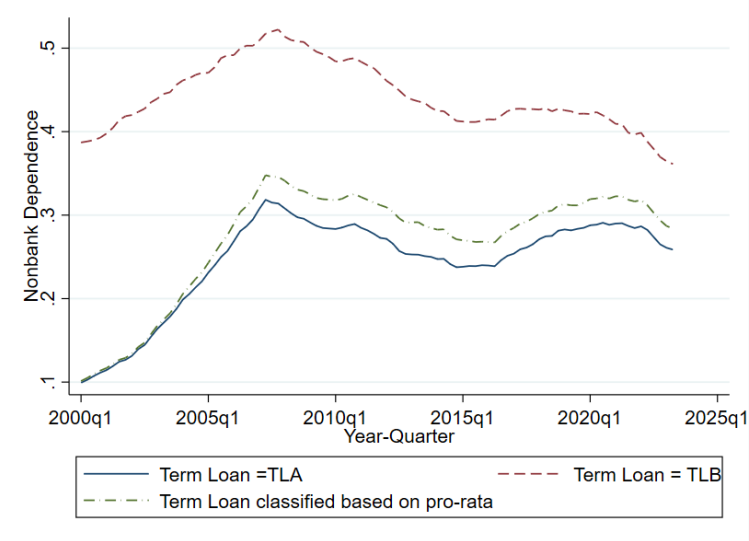


Figure OA3: Comparing loan spreads

This figure plots the difference between the spread on nonbank (TLB) and bank (TLA) term loans to a given borrower in the same package.

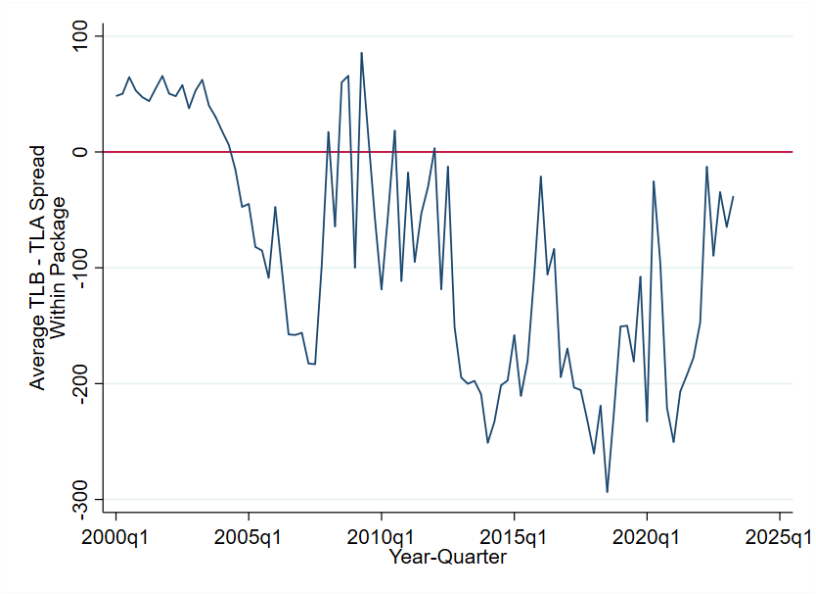
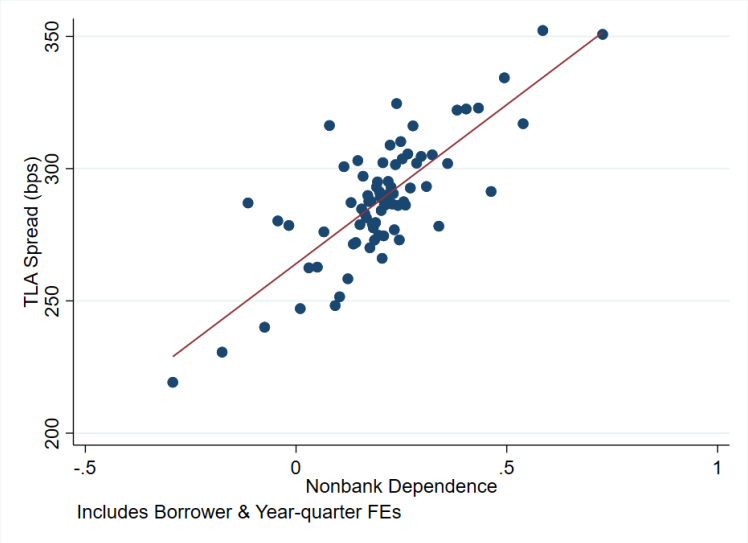


Figure OA4: Cost of Term Loans vs. Outstanding Nonbank Dependence

This figure presents the binscatter plot of term loan spreads against nonbank dependence of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2020Q4. In Panel A, we measure loan spreads of newly issued loans in the given quarter. In Panel B, we measure loan spreads based on the weighted average of credit lines outstanding in the given quarter. *Nonbank Dependence* based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding in the given quarter for the borrower. *TLA Spread* is the spread on bank loans and *TLB Spread* is the spread on nonbank loans. We include borrower and year-quarter fixed effects.

Panel A - Spread on Bank Loans (bps)



Panel B - Spread on Nonbank Loans (bps)

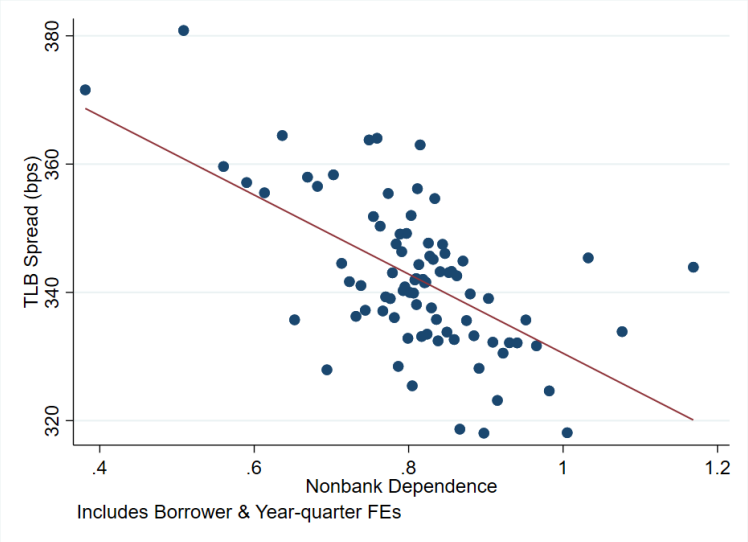


Figure OA5: Difference in cost of Term Loans vs. Outstanding Nonbank Dependence

This figure presents the binscatter plot of difference in term loan spreads within a deal against nonbank dependence of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2020Q4. *Nonbank Dependence* based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding in the given quarter for the borrower. *TLA Spread* is the spread on bank loans and *TLB Spread* is the spread on nonbank loans. We include borrower and year-quarter fixed effects.

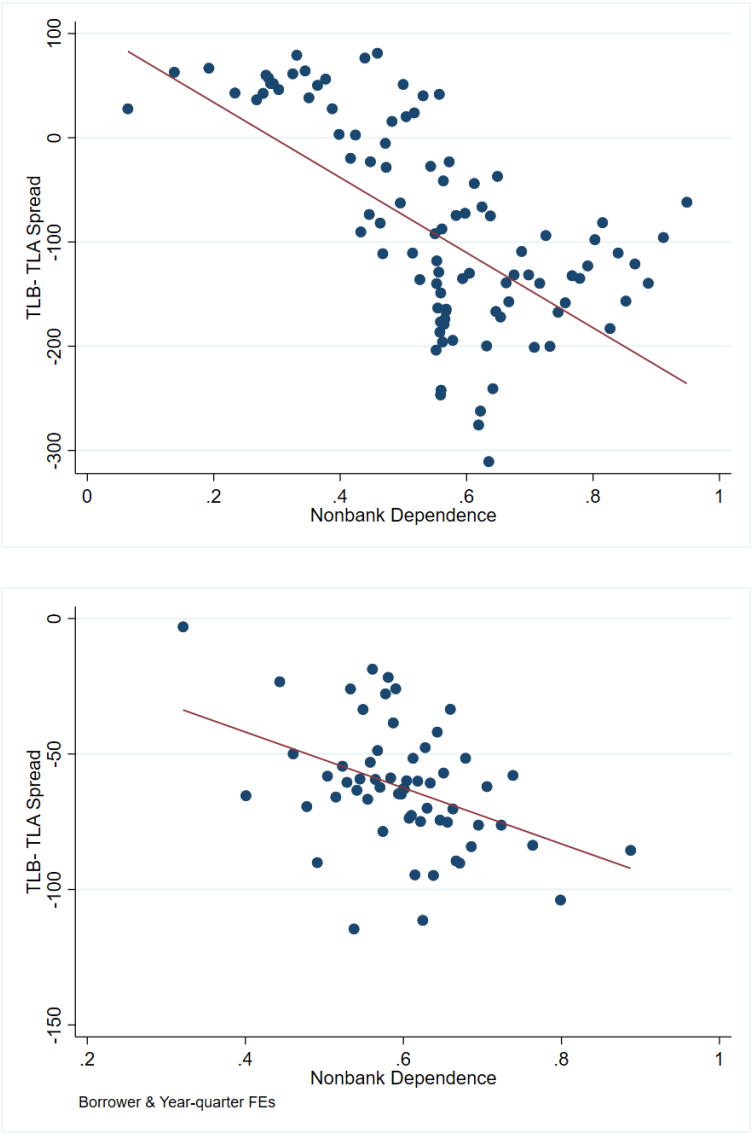
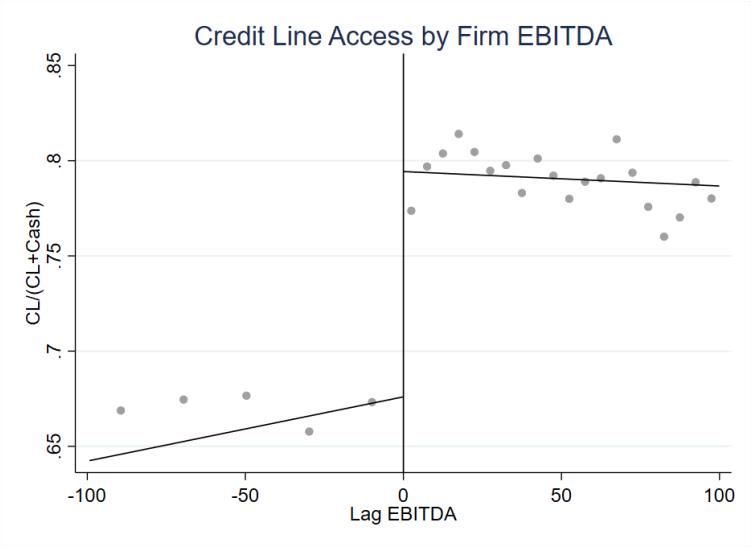


Figure OA6: Access to Bank Loans Based on Firm EBITDA

This figure presents regression discontinutity plots of bank credit access based on firm EBITDA. The zero EBITDA cut-off is the conventional limit below which banks are prohibited from making loans to firms. Panel A presents results on extension of credit lines measured as new credit lines issued as a share of total liquidity (cash plus credit lines). Panel B presents results on extension of bank term loans as a share of total term loans of the borrower. *Lag EBITDA* is the firm's EBITDA one quarter before the loan is originated.

Panel A - Bank Liquidity Provision



Panel B - Bank Term Loan Share

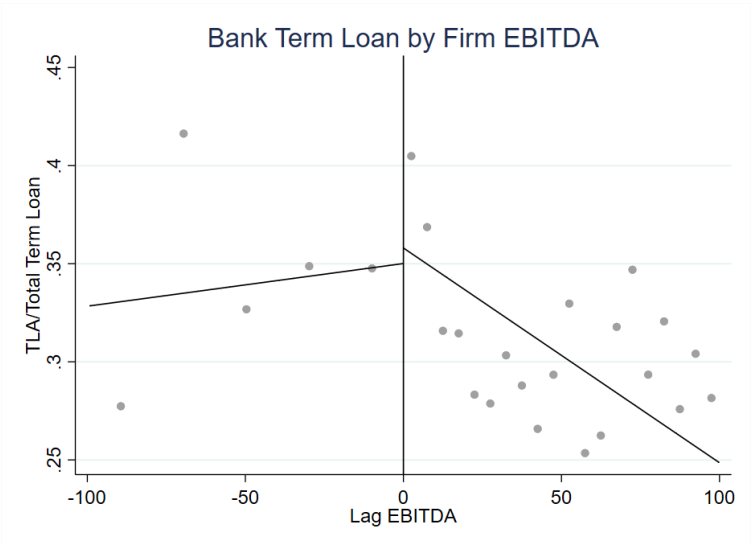


Figure OA7: CL Drawdown by Borrower Rating

This figure shows the average credit line utilization rate of nonbank borrowers by credit rating. Firms are classified as being *Nonbank Borrowers* if they have an outstanding Term Loan B-K (TLB). *Non-IG* borrowers are ones rated BB or below.

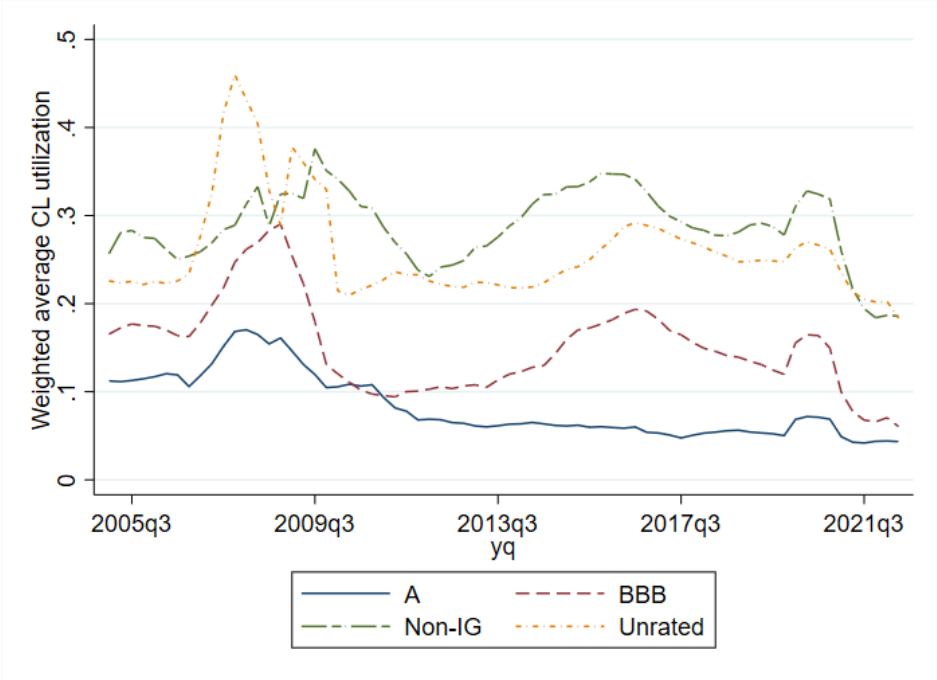


Figure OA8: Credit line issuance over time

This figures plots the quarterly issuance of credit lines to bank and nonbank borrowers. A firm is classified as a nonbank borrower if it has a Term Loan B outstanding. Sample period is from 2000 to 2020.

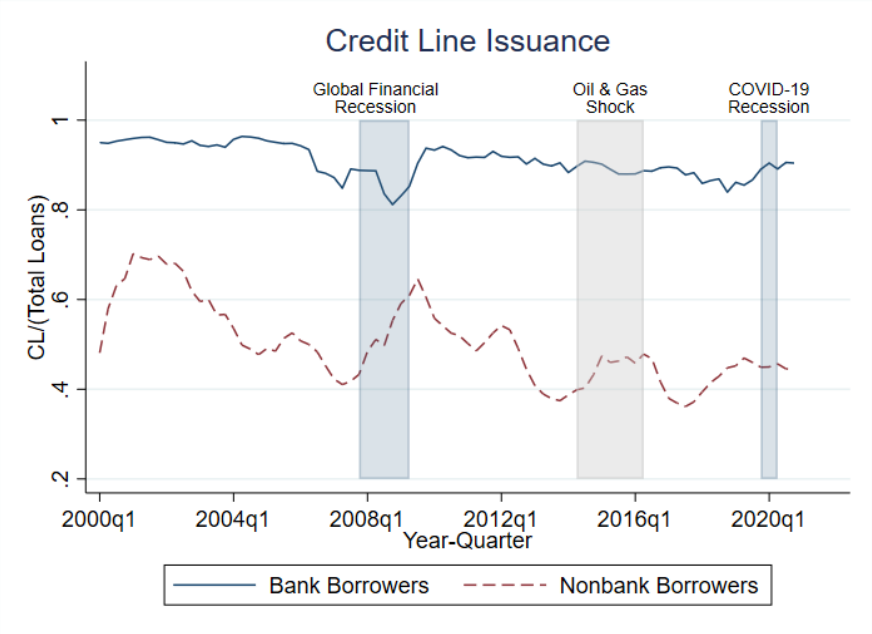
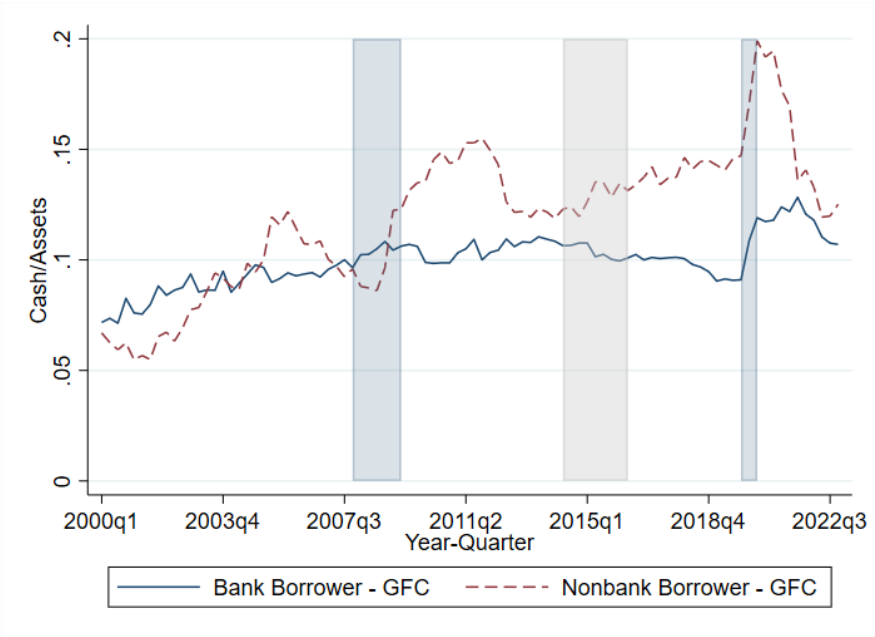


Figure OA9: Liquidity Buffers

This figures plots the quarterly level of cash to assets for bank and nonbank borrowers. A firm is classified as a nonbank borrower if it has a Term Loan B outstanding. Sample period is from 2000 to 2022.

Panel A - Time-series variation in cash level



Panel B - Based on reliance on nonbanks during GFC

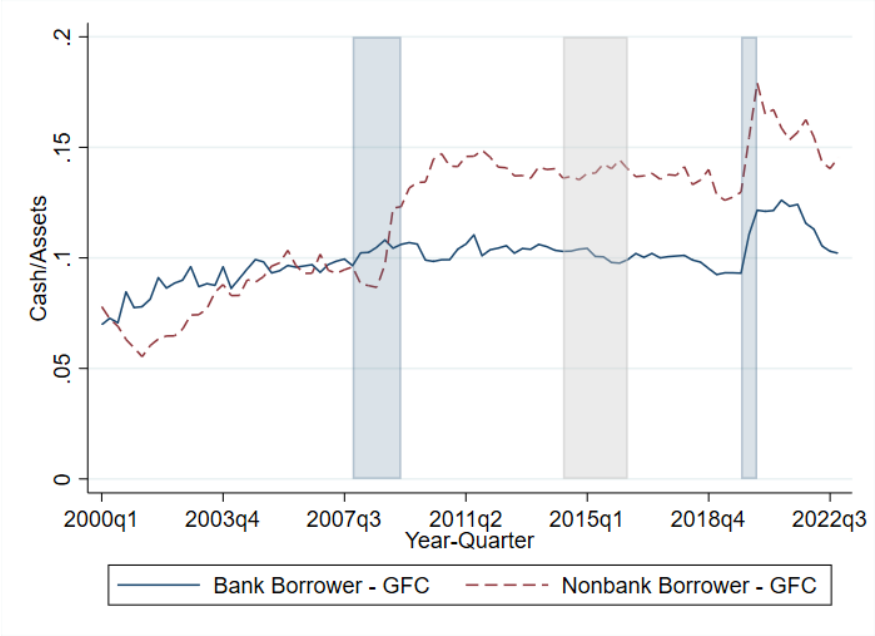
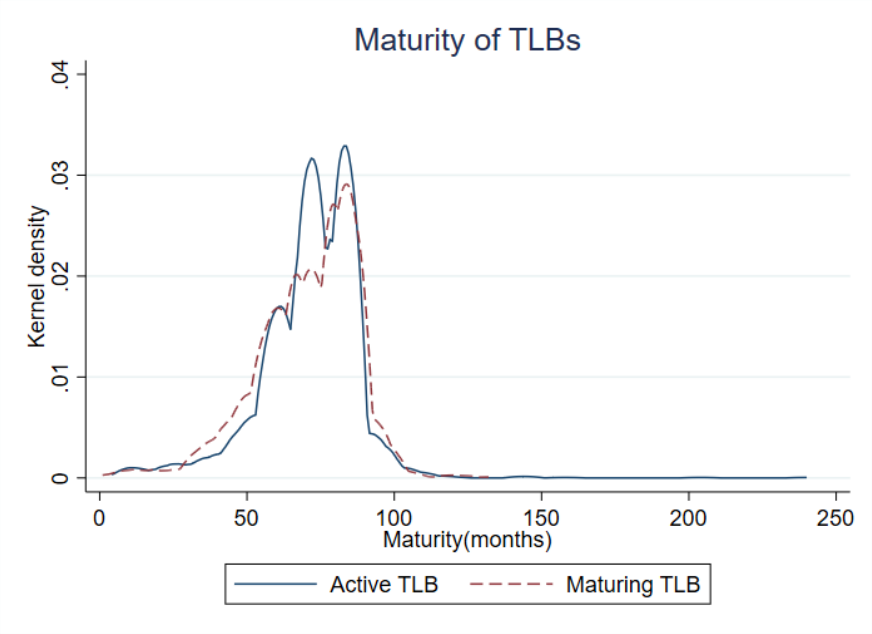


Figure OA10: Comparing the loan maturity of TLB borrowers

This figure presents the kernel density of loan maturity (in months) for TLB borrowers. Sample includes firms with a Term Loan B as of 2014Q1. Firms are classified as being *Maturing TLB* if they have an outstanding Term Loan B-K (TLB) as of 2014Q1 and at least one of their TLBs are maturing during the oil price shock of 2014Q2-2016Q1. If not, they are classified as *Active TLB*. We present maturity of loans for loans originated prior to 2014Q1. Panel B shows the mean maturity of bank and nonbank term loans and bank credit lines along with a ttest for the difference. Panel C shows the Kolmogorov–Smirnov test for difference in maturity of bank and nonbank term loans and bank credit lines. Group 0 refers to the Maturing TLB sample and group 1 is the Active TLB sample

Panel A - Distribution of maturity of TLB



Panel B -Test of equality of means

Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

	Maturing TLB	Active TLB	Difference
	Mean	Mean	Mean
TLB Maturity	70.63	71.64	-1.00
TLA Maturity	62.85	61.91	0.94
CL Maturity	50.79	50.06	0.73
Observations	1976	4947	6923

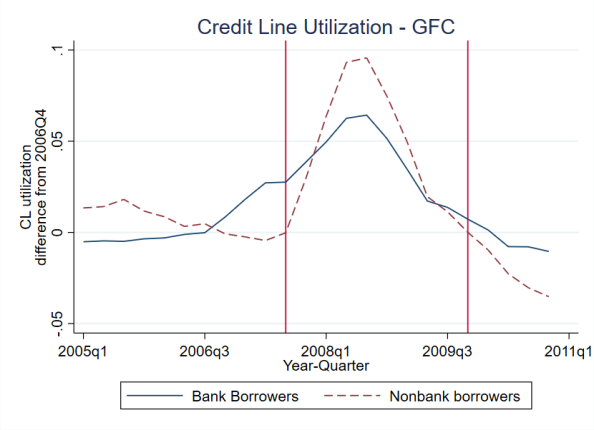
Panel C -Test of equality of distributions

	Maturity TLB		Maturity TLA		Maturity CL	
Smaller Group	D	p-value	D	p-value	D	p-value
0	0.0673	0.003	0.0279	0.514	0.0115	0.729
1	-0.0406	0.115	-0.0678	0.02	-0.0501	0.002
Combined K-S	0.0673	0.005	820.0678	0.04	0.0501	0.005

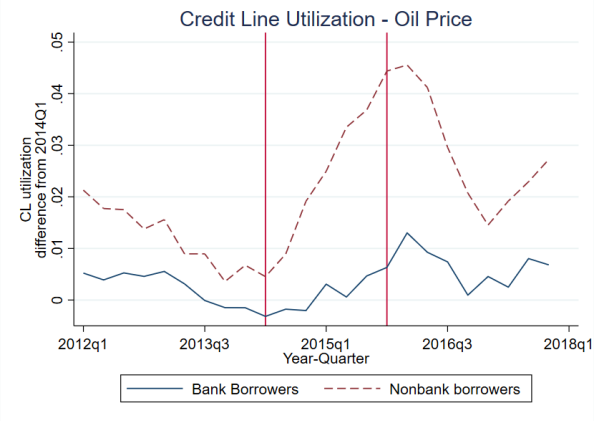
Figure OA11: Borrower Credit Line Drawdown During Market Stress

This figure shows the average credit line utilization rate of bank and nonbank borrowers during the Global Financial Crisis (Panel A), oil price shock (Panel B), and COVID-19 (Panel C).Firms are classified as being *Nonbank Borrowers* if they have an outstanding Term Loan B-K (TLB) as of the quarter before the shock.

Panel A - Global Financial Crisis



Panel B - Oil Price Shock



Panel C - COVID-19

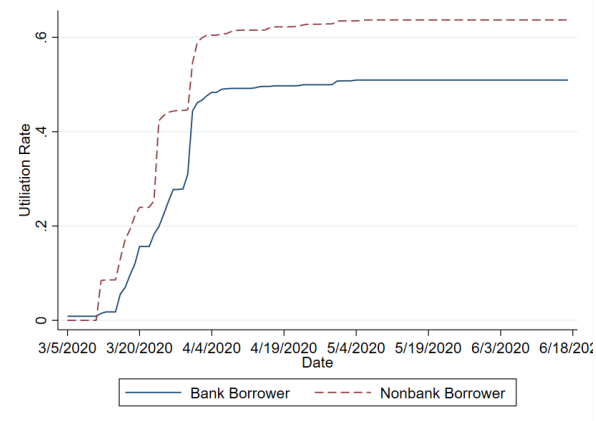
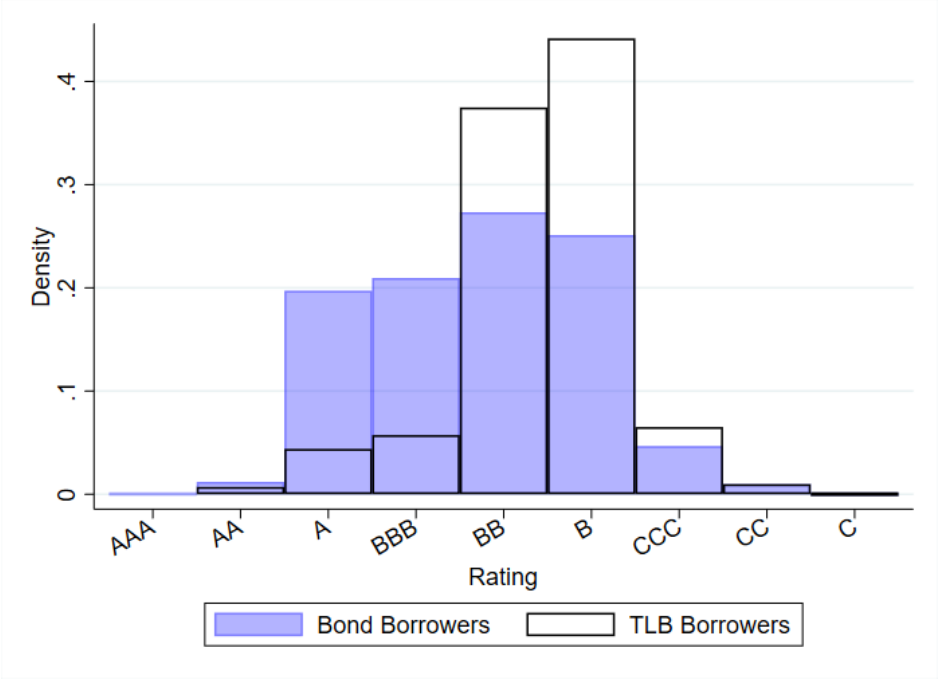


Figure OA12: Overlap - Bond and TLB Borrowers

The figure is the density plot showing the distribution of ratings for bond borrowers and TLB borrowers. *Bond Borrowers* are borrowers with an outstanding bond. *TLB borrowers* are borrowers with an outstanding Term Loan B-K (TLB). Bank borrowers are firms with a term loan or credit line but without any nonbank term loans.

Panel A - Overlap between bond and nonbank borrowers



Panel B - Overlap between bond and bank borrowers

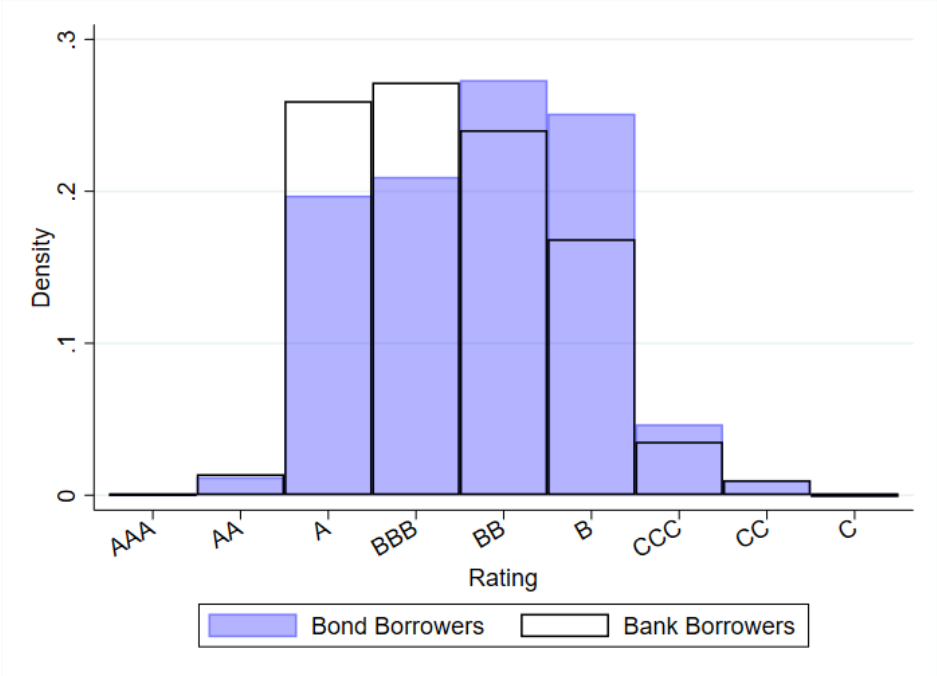
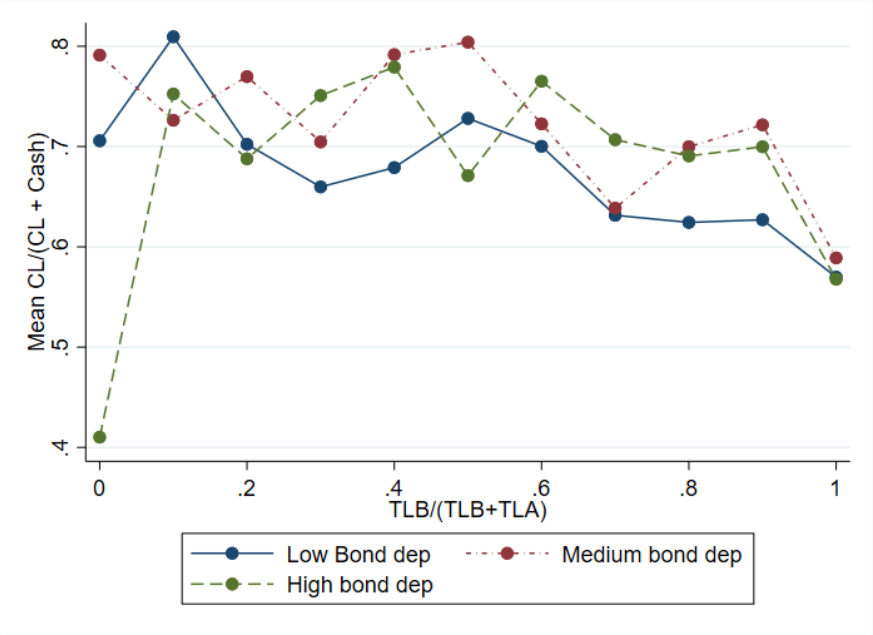


Figure OA13: Credit Line Access for Nonbank and Bond Borrowers

The figure plots the volume and cost of credit lines for borrowers with both bonds and nonbank term loan (Term Loan B-K (TLB)) outstanding. Borrowers are divided into three terciles based on the level of bond outstanding as a share of firm assets. The nonbank share is calculated as the volume of TLB-K as a share of total term loans. The value is rounded of to the closest 0.1 value. We then take the mean of credit line shares (Panel A) and spreads (Panel B) at each level of nonbank share and bond tercile.

Panel A - Average Volume



Panel B - Average Drawn Spread

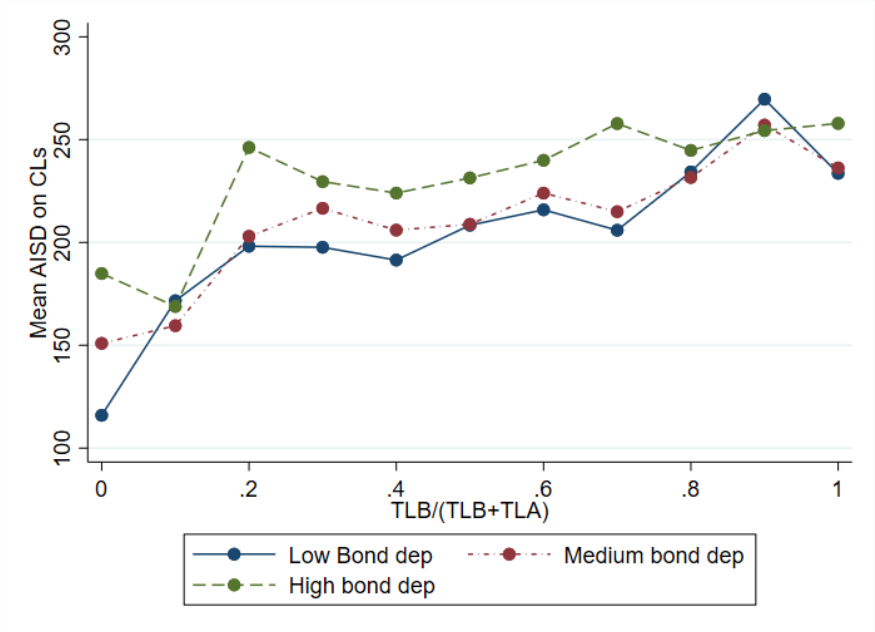


Table OA2: Credit Line Drawdowns

This table presents results on credit line drawdowns during COVID-19. Data is at the borrower-level. Sample is based on drawdowns between March 1, 2020 and June 20, 2020. *Drawdown >0* takes a value of one if the firm drawsdown on its credit line during the sample period. *Utilization* is the increase total credit lines drawndown to total credit line commitment during the sample period. *Nonbank Dependence* is the share of term loans outstanding to a borrower from nonbanks as of 2019 Q4. Borrower conrtrols include the contemporaneous log of asset size, cash-to-asset ratio, and book leverage. Heteroskedastic robust standard errors are reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

	Drawdown>0	Utilization		
	(1)	(2)	(3)	(4)
Nonbank Dependence	0.079***	0.044***	0.056***	0.102*
	(0.009)	(0.006)	(0.012)	(0.055)
Conditional on drawdown	N	N	N	Y
Borrower Controls	N	N	Y	Y
Obs.	4,705	4,705	1,550	206
R^2	0.021	0.019	0.020	0.047

Table OA3: Effect of Nonbank Dependence on Credit Line Access - Robustness to alternate measures

This table presents the results on how credit line access varies with nonbank dependence of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2022Q4. In Panel A, we measure credit line shares at issuance. Columns 1 to 4 measure credit line as a share of total loans to the borrower. Columns 5-8 measure credit lines as a share of total liquidity (measured by cash plus credit lines). In Panel B, we measure credit line spreads in basis points. Columns 1 to 4 present results for all-in-drawn-spread while Columns 5-8 present results for the all-in-undrawn-spread. *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding in the given quarter for the borrower. Here, loans are classified as TLA or TLB based on the pro-rata definition in DealScan (Panel A and B) or by classifying all unclassified term loans as TLB (Panel C and D). In Panel E and F, we calculate TLA outstanding amounts based on a amortization schedule and create nonbank depdendence using outstanding balances on all term loans. We include borrower, borrower rating × year-quarter fixed effects, 2-digit SIC code × year-quarter fixed effects, and controls for firm size, debt-to-asset ratio, loan maturity and deal purpose. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A - Credit Line Shares

	CL/Total Loans at Issuance				CL/(CL+Cash) at Issuance			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nonbank Dependence	−0.232***	−0.229***	−0.166***	−0.165***	−0.052***	−0.048***	−0.029***	−0.036***
	(0.014)	(0.012)	(0.014)	(0.015)	(0.010)	(0.010)	(0.009)	(0.009)
Rating x Year-Quarter FE	N	Y	Y	Y	N	Y	Y	Y
Borrower FE	N	N	Y	Y	N	N	Y	Y
Industry x Year-Quarter FE	N	N	N	Y	N	N	N	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	0.72	0.72	0.71	0.71	0.65	0.65	0.65	0.65
Obs.	26,021	25,951	24,706	23,517	26,017	25,947	24,704	23,514
R^2	0.051	0.076	0.473	0.537	0.103	0.152	0.664	0.729

Panel B - Credit Line and Term Loan Costs

	Credit Line					TLA	TLB
	(1) AISD	(2) AISU	(3) Upfront fee	(4) Commitment fee	(5) TCB	(6) AISD	(7) AISD
Nonbank Dependence	46.651***	7.134***	2.486**	1.553	8.782**	171.296***	−27.190
	(4.436)	(1.177)	(1.218)	(1.047)	(3.897)	(21.212)	(27.160)
Rating x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	187.88	30.06	70.92	17.80	107.27	274.82	330.87
Obs.	21,563	16,694	10,803	14,879	6,802	3,310	2,772
R^2	0.750	0.711	0.880	0.567	0.816	0.874	0.843

Effect of Nonbank Dependence on Credit Line Access - Robustness to alternate measures

Panel C - Credit Line Shares

	CL/Total Loans at Issuance				CL/(CL+Cash) at Issuance			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nonbank Dependence	−0.172***	−0.169***	−0.108***	−0.095***	−0.036***	−0.034***	−0.006	−0.011*
	(0.012)	(0.012)	(0.009)	(0.013)	(0.007)	(0.007)	(0.006)	(0.006)
Rating x Year-Quarter FE	N	Y	Y	Y	N	Y	Y	Y
Borrower FE	N	N	Y	Y	N	N	Y	Y
Industry x Year-Quarter FE	N	N	N	Y	N	N	N	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	0.72	0.72	0.71	0.71	0.65	0.65	0.65	0.65
Obs.	26,021	25,951	24,706	23,517	26,017	25,947	24,704	23,514
R^2	0.049	0.076	0.472	0.536	0.102	0.151	0.663	0.728

Panel D - Credit Line and Term Loan Costs

	Credit Line					TLA	TLB
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	AISD	AISU	Upfront fee	Commitment fee	TCB	AISD	AISD
Nonbank Dependence	29.450***	3.399***	0.942	1.154*	2.012	62.554***	29.632
	(2.607)	(0.577)	(0.763)	(0.668)	(2.939)	(15.689)	(28.444)
Rating x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	187.88	30.06	70.92	17.80	107.27	274.82	330.87
Obs.	21,563	16,694	10,803	14,879	6,802	3,310	2,772
R^2	0.749	0.710	0.880	0.567	0.816	0.866	0.843

Effect of Nonbank Dependence on Credit Line Access - Robustness to alternate measures

Panel E - Credit Line Shares

	CL/Total Loans at Issuance				CL/(CL+Cash) at Issuance			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
share$_t lb_o utstanding$	−0.245***	−0.243***	−0.172***	−0.171***	−0.055***	−0.051***	−0.026***	−0.033***
	(0.014)	(0.012)	(0.014)	(0.015)	(0.010)	(0.010)	(0.009)	(0.010)
Rating x Year-Quarter FE	N	Y	Y	Y	N	Y	Y	Y
Borrower FE	N	N	Y	Y	N	N	Y	Y
Industry x Year-Quarter FE	N	N	N	Y	N	N	N	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	0.72	0.72	0.71	0.71	0.65	0.65	0.65	0.65
Obs.	26,020	25,950	24,705	23,517	26,016	25,946	24,703	23,514
R^2	0.052	0.077	0.473	0.537	0.103	0.152	0.663	0.729

Panel F - Credit Line and Term Loan Costs

	Credit Line					TLA	TLB
	(1) AISD	(2) AISU	(3) Upfront fee	(4) Commitment fee	(5) TCB	(6) AISD	(7) AISD
share$_t lb_o utstanding$	47.472***	7.197***	1.833	1.133	7.709*	147.654***	−29.239
	(4.347)	(1.190)	(1.206)	(1.057)	(3.947)	(23.570)	(28.998)
Rating x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	187.88	30.06	70.92	17.80	107.27	274.82	330.87
Obs.	21,563	16,694	10,803	14,879	6,802	3,310	2,772
R^2	0.750	0.711	0.880	0.567	0.816	0.870	0.843

Table OA4: Effect of Nonbank Dependence on Credit Line Access - Unrated Borrowers

This table presents the results on how credit line access varies with nonbank dependence of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2022Q4. Sample is restricted to public unrated borrowers. In Panel A, we measure credit line shares at issuance. Columns 1 to 4 measure credit line as a share of total loans to the borrower. Columns 5-8 measure credit lines as a share of total liquidity (measured by cash plus credit lines). In Panel B, we measure credit line spreads in basis points. Columns 1 to 4 present results for all-in-drawn-spread while Columns 5-8 present results for the all-in-undrawn-spread. *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding in the given quarter for the borrower. We include borrower, borrower rating × year-quarter fixed effects, 2-digit SIC code × year-quarter fixed effects, and controls for firm size, debt-to-asset ratio, loan maturity and deal purpose. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A - Credit Line Shares

	CL/Total Loans at Issuance				CL/(CL+Cash) at Issuance			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nonbank Dependence	−0.243***	−0.256***	−0.195***	−0.182***	−0.052***	−0.046***	−0.037***	−0.039***
	(0.016)	(0.015)	(0.016)	(0.019)	(0.012)	(0.012)	(0.010)	(0.011)
Year-Quarter FE	N	Y	Y	N	N	Y	Y	N
Borrower FE	N	N	Y	Y	N	N	Y	Y
Industry x Year-Quarter FE	N	N	N	Y	N	N	N	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	0.72	0.72	0.72	0.71	0.66	0.66	0.66	0.66
Obs.	20,859	20,859	19,825	18,592	20,854	20,854	19,822	18,589
R^2	0.043	0.055	0.466	0.543	0.100	0.119	0.655	0.724

Panel B - Credit Line and Term Loan Costs

	Credit Line					TLA	TLB
	(1) AISD	(2) AISU	(3) Upfront fee	(4) Commitment fee	(5) TCB	(6) AISD	(7) AISD
Nonbank Dependence	61.472***	10.154***	3.757**	2.468**	16.196***	143.246***	−85.488**
	(5.211)	(1.646)	(1.497)	(1.253)	(5.024)	(24.635)	(33.312)
Borrower FE	Y	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	189.28	30.19	71.31	17.79	111.03	274.46	330.28
Obs.	17,007	13,021	8,444	11,512	5,192	2,710	1,876
R^2	0.746	0.693	0.882	0.549	0.803	0.862	0.819

Table OA5: Effect of Nonbank Dependence on Credit Line Access - Term Loan Borrowers

This table presents the results on how credit line access varies with nonbank dependence of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2022Q4. Sample is restricted to borrowers that have either a bank or nonbank term loan. That is, firms with only credit lines are dropped. In Panel A, we measure credit line shares at issuance. Columns 1 to 4 measure credit line as a share of total loans to the borrower. Columns 5-8 measure credit lines as a share of total liquidity (measured by cash plus credit lines). In Panel B, we measure credit line spreads in basis points. Columns 1 to 4 present results for all-in-drawn-spread while Columns 5-8 present results for the all-in-undrawn-spread. *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding in the given quarter for the borrower. We include borrower, borrower rating × year-quarter fixed effects, 2-digit SIC code × year-quarter fixed effects, and controls for firm size, debt-to-asset ratio, loan maturity and deal purpose. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A - Credit Line Shares

	CL/Total Loans at Issuance				CL/(CL+Cash) at Issuance			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nonbank Dependence	−0.125***	−0.139***	−0.097***	−0.086***	−0.044***	−0.038***	−0.041***	−0.036**
	(0.012)	(0.012)	(0.018)	(0.021)	(0.011)	(0.011)	(0.013)	(0.014)
Year-Quarter FE	N	Y	Y	N	N	Y	Y	N
Borrower FE	N	N	Y	Y	N	N	Y	Y
Industry x Year-Quarter FE	N	N	N	Y	N	N	N	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	0.59	0.59	0.59	0.58	0.65	0.65	0.64	0.64
Obs.	12,473	12,473	11,669	10,467	12,472	12,472	11,670	10,467
R^2	0.121	0.149	0.478	0.613	0.119	0.141	0.662	0.753

Panel B - Credit Line and Term Loan Costs

	Credit Line					TLA	TLB
	(1) AISD	(2) AISU	(3) Upfront fee	(4) Commitment fee	(5) TCB	(6) AISD	(7) AISD
Nonbank Dependence	43.004***	8.658***	5.201***	−1.123	12.216	127.638***	−52.211**
	(7.317)	(2.498)	(1.922)	(1.646)	(7.504)	(21.301)	(25.797)
Borrower FE	Y	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	228.78	37.59	73.68	21.57	122.17	274.98	331.28
Obs.	9,542	6,694	5,092	6,854	2,868	3,326	2,824
R^2	0.734	0.706	0.888	0.569	0.876	0.852	0.828

Table OA6: Effect of Nonbank Dependence on Credit Line Access - Non-crisis periods

This table presents the results on how credit line access varies with nonbank dependence of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2022Q4 excluding the GFC, COVID-19, and oil shock periods. In Panel A, we measure credit line shares at issuance. Columns 1 to 4 measure credit line as a share of total loans to the borrower. Columns 5-8 measure credit lines as a share of total liquidity (measured by cash plus credit lines). In Panel B, we measure credit line spreads in basis points. Columns 1 to 4 present results for all-in-drawn-spread while Columns 5-8 present results for the all-in-undrawn-spread. *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding in the given quarter for the borrower. We include borrower, borrower rating × year-quarter fixed effects, 2-digit SIC code × year-quarter fixed effects, and controls for firm size, debt-to-asset ratio, loan maturity and deal purpose. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A - Credit Line Shares

	CL/Total Loans at Issuance				CL/(CL+Cash) at Issuance			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nonbank Dependence	−0.263***	−0.259***	−0.183***	−0.194***	−0.062***	−0.054***	−0.021**	−0.030***
	(0.016)	(0.013)	(0.015)	(0.017)	(0.010)	(0.011)	(0.010)	(0.011)
Rating x Year-Quarter FE	N	Y	Y	Y	N	Y	Y	Y
Borrower FE	N	N	Y	Y	N	N	Y	Y
Industry x Year-Quarter FE	N	N	N	Y	N	N	N	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	0.72	0.72	0.71	0.71	0.65	0.65	0.65	0.65
Obs.	20,543	20,490	19,263	18,331	20,539	20,486	19,259	18,327
R^2	0.047	0.068	0.477	0.539	0.108	0.152	0.672	0.737

Panel B - Credit Line and Term Loan Costs

	Credit Line					TLA	TLB
	(1) AISD	(2) AISU	(3) Upfront fee	(4) Commitment fee	(5) TCB	(6) AISD	(7) AISD
Nonbank Dependence	50.840***	9.123***	2.486*	1.430	14.367***	101.408***	−53.986*
	(5.027)	(1.681)	(1.382)	(1.114)	(5.123)	(25.071)	(30.389)
Borrower FE	Y	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	185.55	30.07	71.43	17.80	105.44	277.36	323.61
Obs.	16,759	12,990	7,799	11,193	4,905	2,270	2,301
R^2	0.749	0.707	0.886	0.582	0.823	0.855	0.831

Table OA7: Effect of Nonbank Dependence on Credit Line Access - By Borrower Rating

This table presents the results on how credit line access varies with nonbank dependence of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2022Q4. In Panel A, we measure credit line shares at issuance. Columns 1 to 4 measure credit line as a share of total loans to the borrower. Columns 5-8 measure credit lines as a share of total liquidity (measured by cash plus credit lines). In Panel B, we measure credit line spreads in basis points. Columns 1 to 4 present results for all-in-drawn-spread while Columns 5-8 present results for the all-in-undrawn-spread. *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (Term Loan B-K) outstanding as a share of total term loans outstanding in the given quarter for the borrower. We include 2-digit SIC code × year-quarter fixed effects, and controls for firm size, debt-to-asset ratio, loan maturity and deal purpose. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A - Credit Line Shares

	CL/Total Loans at Issuance					CL/(CL+Cash) at Issuance				
	(1) AAA-A	(2) BBB	(3) BB	(4) Below B	(5) Unrated	(6) AAA-A	(7) BBB	(8) BB	(9) Below B	(10) Unrated
Nonbank Dependence	−0.001	−0.191***	−0.143**	−0.190***	−0.171***	−0.016	−0.023	−0.100***	−0.025	−0.056***
	(0.084)	(0.061)	(0.059)	(0.061)	(0.033)	(0.074)	(0.066)	(0.037)	(0.037)	(0.018)
Borrower FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	0.77	0.74	0.57	0.56	0.72	0.58	0.63	0.63	0.65	0.68
Obs.	2,627	2,077	2,250	2,022	10,499	2,627	2,076	2,250	1,980	10,497
R^2	0.622	0.645	0.734	0.714	0.593	0.820	0.779	0.858	0.844	0.789

Panel B - Credit Line Costs

	All in Drawn Spread					All in Undrawn Spread				
	(1) AAA-A	(2) BBB	(3) BB	(4) Below B	(5) Unrated	(6) AAA-A	(7) BBB	(8) BB	(9) Below B	(10) Unrated
Nonbank Dependence	27.169	24.306	28.288***	11.910	62.289***	2.407	1.154	2.863	16.055**	10.078***
	(19.710)	(18.804)	(10.934)	(19.113)	(8.371)	(2.614)	(4.933)	(3.125)	(7.703)	(2.293)
Borrower FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	96.82	122.46	210.62	298.16	194.92	12.92	18.75	37.17	54.60	31.50
Obs.	2,240	1,900	2,009	1,715	9,562	2,028	1,504	1,235	837	6,957
R^2	0.783	0.801	0.762	0.751	0.802	0.826	0.795	0.923	0.711	0.743

Table OA8: Firm characteristics - By CLO Oil Exposure

This table presents the summary statistics for borrowers with a nonbank loan (Term Loans B-K) outstanding as of 2014Q1. The panel is at the borrower level and information is presented as of 2014Q1 (pre oil price shock). We present results separately for borrowers with low and high exposure to the oil-gas shock based on CLO holdings. The *Oil-Gas Exposure* is the weighted average of CLO's portfolio share in oil and gas firms with the weights corresponding to the share of the borrower's loans held by the CLO prior to 2014 Q1. *Nonbank Dependence* is the share of term loans to the borrower from nonbanks. *Assets* are the average firm asset size from Compustat. *Total Debt/Assets* is total firm debt to assets. *Cash/Assets* is the amount of cash and cash equivalents at the firm scaled by firm assets. *Log(CL Outstanding)* is the log of total volume of credit line available to the firm in millions of dollars. *Avg. Drawn Spread on Outstanding CL* is the average all-in-drawn-spread on credit lines outstanding to the borrower in bps. *Log(TLB Outstanding)* is the log of total volume of nonbank loans available to the firm in millions of dollars. *Avg. Drawn Spread on Outstanding TLB* is the average all-in-drawn-spread on nonbank loans outstanding to the borrower in bps. In Panel A, above median oil-gas exposure firms are classified as *High Oil-Gas Exposure*. In Panel B, borrowers with TLB maturing during the oil price shock between 2014Q2 and 2015Q4 are classified as *Maturing TLB*.

Panel A- Borrower characteristics by oil-gas exposure

	Low Oil-Gas Exposure			High Oil-Gas Exposure			Difference
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean
Oil-gas exposure	0.00	0.00	0.00	0.04	0.04	0.01	-0.04***
Nonbank Dependence	0.59	0.71	0.43	0.81	0.94	0.26	-0.23***
Assets ($ bil.)	8.59	2.31	38.85	20.11	2.41	146.15	-11.52
Total Debt/Assets	0.37	0.34	0.30	0.49	0.45	0.29	-0.12***
Cash/Assets	0.11	0.07	0.14	0.07	0.05	0.08	0.04***
Share unrated firms	0.76	1.00	0.43	0.62	1.00	0.48	0.14***
Log(CL Outstanding)	5.26	5.36	1.57	5.52	5.53	1.46	-0.26*
Avg. Drawn Spread on Outstanding CL (bps)	317.43	300.00	141.32	344.21	325.00	135.07	-26.78*
Log(TLB Outstanding)	5.91	5.90	1.40	6.68	6.56	1.11	-0.76***
Avg. Spread on Outstanding TLB (bps)	413.48	400.00	140.99	408.35	382.56	125.94	5.13
Observations	486			484			970

Panel B- Borrower characteristics by TLB maturity

	Active TLB			Maturing TLB			Difference
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean
Oil-gas exposure	0.02	0.02	0.02	0.02	0.00	0.02	0.00**
Nonbank Dependence	0.66	0.82	0.40	0.82	0.92	0.23	-0.16***
Assets ($ bil.)	15.19	2.15	125.17	15.30	3.29	66.38	-0.11
Total Debt/Assets	0.43	0.40	0.30	0.47	0.45	0.28	-0.04
Cash/Assets	0.09	0.05	0.11	0.08	0.04	0.11	0.01
Share unrated firms	0.69	1.00	0.46	0.69	1.00	0.46	-0.00
Log(CL Outstanding)	5.30	5.39	1.46	5.74	5.86	1.60	-0.44***
Avg. Drawn Spread on Outstanding CL (bps)	332.98	319.48	139.03	333.09	312.28	136.40	-0.11
Log(TLB Outstanding)	6.24	6.19	1.21	6.62	6.72	1.46	-0.38***
Avg. Spread on Outstanding TLB (bps)	420.73	400.00	133.50	385.59	360.25	126.25	35.14***
Observations	731			239			970

Table OA9: Borrower Credit Access - Oil Price Shock - Bank Borrower Level

The table presents the results from the following regression:

$$y_{i,b,t} = \alpha + \text{Oil-Gas Exposure}_i \times \text{Post}_t \times \text{Rollover Risk}_i + \lambda_{b,t} + \delta_i + \epsilon_{i,t}$$

where $y_{i,t}$ is the volume and spreads on nonbank term loans and credit lines for each borrower i in quarter t from bank b. Banks are classified into 2 main groups - LISCC banks that were affected by stricter leveraged lending guidelines and non-LISCC banks. The *Oil-Gas Exposure* is the weighted average of CLO's portfolio share in oil and gas firms with the weights corresponding to the share of the borrower's loans held by the CLO prior to 2014 Q1. Sample includes firms with a Term Loan B is the quarter prior to the oil price shock (2014Q1). We measure rollover risk based on loan maturity. Firms are classified as being *Maturing TLB* if they have an outstanding Term Loan B-K (TLB) as of 2014Q1 and at least one of their TLBs are maturing during the oil price shock of 2014Q2-2016Q1. The omitted group in the regression is 2014Q1 (the quarter before the oil price shock). We include borrower fixed effects, rating fixed effects, aIn Columns (1) (3) (5) and (7), we focus on the volume of new loans extended. In Columns (2) (4) and (8), we look at the weighted average spreads on all outstanding loans of a given type. Column (6) shows the nonbank dependence as defined in the text. Standard errors are clustered at the borrower level and reported in parentheses below the coefficients. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

	TLB Vol.	Spread TLB	TLA Vol.	Spread TLA	Term Loans Vol.	NB Dep	CL Vol.	Spread CL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Oil shock exposure x Post x	−0.093***	9.380**	−0.063**	16.729**	−0.134***	0.025	−0.083**	10.642**
Maturing TLB	(0.035)	(4.659)	(0.026)	(7.628)	(0.040)	(0.016)	(0.034)	(4.450)
Borrower FE	Y	Y	Y	Y	Y	Y	Y	Y
Ind FE	Y	Y	Y	Y	Y	Y	Y	Y
Rating FE	Y	Y	Y	Y	Y	Y	Y	Y
LISCC x Year-Quarter FE	Y	Y	N	N	N	N	Y	Y
Obs.	18,716	13,782	18,716	8,845	18,716	17,812	18,716	15,531
R^2	0.133	0.831	0.105	0.900	0.122	0.733	0.081	0.784

Table OA10: Summary Statistics - Bond Borrowers

This table presents the summary statistics for borrowers with syndicated loans that can be matched to Compustat financial information. The panel is at the borrower-year-quarter level. Panel A presents results for all bond borrowers. Panel B presents results separately for bank, bond, and nonbank borrowers. A borrowers with only bank loans (Term Loan A or credit line) is classified as a bank borrower. A borrowers is classified as a nonbank borrower if it has any nonbank term loans (Term Loans B-K) outstanding in the given quarter. Bank and nonbank borrowers are restricted to firms without bonds outstadning. A borrower with bonds outstanding but no nonbank loans outstanding is classified as a bond borrower. *Nonbank Dependence* is the share of term loans to the borrower from nonbanks. *Bond/Assets* is the level of total bonds outstanding as a share of firm assets. *Bond/Total Debt* is the level of total bonds outstanding as a share of total firm debt. *Assets* are the average firm asset size from Compustat. *Credit Line >0* takes a value of one if the firm has a credit line outstanding in the given quarter else it takes a value of zero. *Cash/Assets* is the amount of cash and cash equivalents at the firm scaled by firm assets. *Total Debt/Equity* is total firm debt to shareholders equity. *Total Debt/Assets* is total firm debt to assets. *Credit Line/Total Loans* is the amount of credit line outstanding as a share of total loans to the borrower. *Credit Line/(Credit Line+Cash)* is the amount of credit line outstanding as a share of total cash and credit lines outstanding to the borrower. *Drawn Spread - CL* and *Undrawn Spread - CL* are the average all-in-drawn-spread and all-in-undrawn-spread on credit lines outstanding to the borrower. *Drawn Credit Line* is the average volume of credit line drawndown by the firm in millions of dollars. *Credit Line Commitment* is the total volume of credit line available to the firm in millions of dollars. *Credit Line Utilization* is the average volume of credit line drawdown as a share of total credit line balance.

Panel A - Bond Borrowers

	Mean	Std. Dev
Nonbank Dependence	0.19	0.36
Bond/ Assets	0.23	0.16
Bond/ Total Debt	0.37	0.22
Assets ($ bil.)	16.50	86.49
Total Liabilities/Assets	0.63	0.23
Debt/Assets	0.36	0.20
Cash/Assets	0.09	0.11
Share unrated firms	0.32	0.47
Credit Line >0	0.96	0.19
Credit Line/Total Loans	0.76	0.32
Credit Line/(Credit Line + Cash)	0.68	0.29
Drawn Spread - CL (bps)	173.18	100.05
Undrawn Spread - CL (bps)	28.11	19.37
Drawn credit line (*mil.*)	120.90	262.27
Credit line commitment (*mil.*)	960.32	1,279.22
Credit line utilization	0.18	0.26
Observations	67287	

Summary Statistics - continued

Panel B - Comparing Bank, Bond, and Nonbank Borrowers

	Bank Borrower		Bond Borrower		Nonbank Borrower	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Nonbank Dependence	0.00	0.00	0.00	0.00	0.76	0.27
Bond/ Assets	0.00	0.00	0.23	0.16	0.00	0.00
Bond/ Total Debt	0.00	0.00	0.37	0.22	0.00	0.00
Assets ($ bil.)	4.00	28.80	14.38	48.39	6.85	73.52
Total Liabilities/Assets	0.57	0.29	0.60	0.21	0.77	0.36
Debt/Assets	0.27	0.23	0.33	0.18	0.47	0.29
Cash/Assets	0.11	0.15	0.09	0.11	0.08	0.11
Share unrated firms	0.75	0.43	0.35	0.48	0.50	0.50
Credit Line >0	0.95	0.21	0.98	0.15	0.93	0.26
Credit Line/Total Loans	0.85	0.28	0.89	0.23	0.38	0.26
Credit Line/(Credit Line + Cash)	0.71	0.30	0.69	0.27	0.73	0.31
Drawn Spread - CL (bps)	174.86	108.99	154.95	89.13	251.86	105.22
Undrawn Spread - CL (bps)	29.81	22.23	24.49	17.43	45.36	22.03
Drawn credit line (*mil.*)	73.90	182.22	119.10	252.44	83.18	225.68
Credit line commitment (*mil.*)	388.27	758.70	1010.30	1295.33	341.87	700.63
Credit line utilization	0.25	0.30	0.18	0.26	0.21	0.28
Observations	93600		50853		31154	