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

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Abstract

Greater reliance on nonbank financing makes firms fragile as it exposes them to rollover risk which leads banks to limit their access to credit lines. We demonstrate this result in panel tests, wherein the impact is stronger for forms of nonbank finance that are more vulnerable to rollover risk. We employ the 2014–16 oil-price collapse as an exogenous rollover risk for non-oil-sector firms financed 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.

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Over the past two decades, corporate credit markets have been transformed by the growth of nonbank financial intermediation. Institutional investors - most prominently collateralized loan obligations (CLOs), loan mutual funds, and other asset managers - now finance a large share of syndicated term loans to nonfinancial corporations (Irani et al. 2021, Saunders et al. 2025). In the corporate loan market, banks typically originate and distribute institutional term loan tranches that are then held predominantly by nonbank investors. As of 2024, nonbank funding represents 60% of all term loans, and for many borrowers, nonbank funding represents the majority of term debt; conditional on having nonbank term loans, the average firm obtains about 77% of its term loans from nonbanks.[1]

An important feature of this transformation is that it has unbundled two distinct functions of corporate credit – term loans and credit lines. These two types of financing serve fundamentally different functions. Term lending bridges financing needs over time, and therefore faces refinancing and rollover risk when maturities come due (Fleckenstein et al. 2024). Credit lines are typically issued by banks and provide liquidity insurance for borrowers across different states of the world: firms pay a fee for committed credit lines and can draw from them, at pre-arranged terms, when a shock materializes. Credit lines are, thus, an option for borrowers, and the option is most valuable precisely in bad states.[2] When many firms draw simultaneously, bank balance sheets can become encumbered by liquidity and capital needs (Acharya et al. 2024b). However, banks have a natural advantage in supplying this insurance, because they fund themselves with relatively stable liabilities and can access central bank liquidity (Kashyap et al. 2002, Gatev and Strahan 2006).[3]

A natural null hypothesis, therefore, is that the rise of nonbank term lending should be largely orthogonal to banks' ex-ante willingness to provide credit lines (see, for example, Berlin et al. (2020)). Under this view, banks can simply supply liquidity insurance regardless of whether a firm's term debt is held by banks or by institutional investors, and a firm's drawdown risk is determined by its own fundamentals rather than by the identity of its financiers. Under this hypothesis, even if banks are capital constrained in aggregate stress states, the borrower's liquidity risk does not change when term financing migrates from banks to nonbanks - so banks' ex-ante liquidity commitments should remain unchanged.

[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.

[3] A notable exception is when banks are themselves vulnerable to the risk of runs as in the Global Financial Crisis of 2007-08. See Acharya and Mora (2015).

Our starting point, however, is the alternative: the liquidity risks a bank insures through a credit line is shaped by the cyclicality of the borrower's term-financing providers. Nonbanks lack an insured deposit base and do not have direct access to a lender-of-last-resort backstop. As a result, their ability to refinance and expand term lending is more sensitive to market-wide or cyclical shocks. When refinancing conditions deteriorate, firms that rely on nonbank term debt have a stronger incentive to draw on committed bank lines, and they do so in the same aggregate states in which banks are themselves more constrained.[4] That is, reliance on nonbank term finance can raise both the level and the systematic component of drawdown risk on bank credit lines. As a result, banks may be less willing to provide ex-ante liquidity to nonbank-reliant firms.

This mechanism implies a "double whammy" for nonbank-dependent firms in stress periods: rollover risk rises in market-based term funding at the same time that bank-provided liquidity insurance becomes less available or more expensive. To preview our main results, we document that this effect is empirically of first-order importance. Firms with higher dependence on nonbank term loans receive smaller credit line commitments and face higher pricing on both the drawn and undrawn portions of their credit lines. To sharpen our identification, we use the 2014-2016 oil price collapse as a plausibly exogenous increase in rollover risk for non-oil firms, transmitted through CLO managers' pre-shock exposures to oil-sector loans and the resulting contraction in CLO issuances. Banks expand liquidity provision to borrowers who reduce their reliance on nonbanks only when these borrowers do not face immediate refinancing needs; for firms with looming institutional maturities, banks instead reduce credit line access and widen spreads.

A key implication of the framework is that lender heterogeneity matters. If a particular form of nonbank finance is better able to absorb aggregate shocks, the induced drawdown externality for banks should be weaker and so should the retrenchment in credit line supply. Consistent with this hypothesis, we find that the reduction in bank-provided liquidity is the strongest when firms rely on institutional loan-market investors such as CLOs but weaker for bond market dependent and private credit borrowers who face lower rollover risk.

Let us elaborate. This paper primarily focuses on syndicated loan originations to large, nonfinancial corporations—a market exceeding $2.9 trillion in outstanding volume as of 2022 ($5.9 trillion including committed credit lines).[5] We measure a firm's nonbank dependence as the volume of institutional financing divided by total term loans. To do this, we classify Term Loan A tranches as "bank" loans (retained on bank balance sheets) and Term Loans B–K as

[4] In Appendix Table OA2, we show that nonbank dependent firms have a higher likelihood to drawdown credit lines as well as higher credit line drawdown rates during the COVID-19 pandemic.

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

"nonbank" loans (placed predominantly with institutional investors).[6] Figure 1 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 and nonbank term loans plus committed credit 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 restricted 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, holding 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, 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 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, there was neither an aggregate downturn in the economy nor was there a meaningful threat to banking sector health during this period.

We construct a panel of firms from January 2012 through December 2017 to capture

[6] We discuss alternate classifications and robustness in Section 3.2.

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, 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-

[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. (2025). Giannetti and Meisenzahl (2023) use a similar identification strategy.

[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)

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 and find no significant differences, mitigating concerns related to borrower risk heterogeneity driving our results. We also conduct a placebo test looking at term loan credit line balances and spreads for firms with maturing nonbank loans relative to firms without maturing loans in 2012 (two years before the shock) and find no difference in lending to these two groups.

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.

Finally, our analysis recognizes that a growing share of corporate debt is held by nonbank investors across multiple instruments such as bonds and syndicated term loans. We revert to our panel tests and 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 (which we also document) – likely stemming from lower rollover risk.[9]

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. We show that this is consistent with overall lower credit line drawdown rates of borrowers financed via BDCs vis-a-vis those funded by TLB investors.

Overall, our paper contributes to important debates in both the corporate finance and financial intermediation literature. From a corporate finance perspective, our results add the financing source as an additional channel to firms' liquidity management. Existing work emphasizes that firms trade off cash holdings against bank credit lines as tools to manage liquidity risk, and that refinancing and rollover risk shape investment and real outcomes when shocks hit (see, for example, Acharya et al. (2013), Sufi (2009), He and Xiong (2012)). We show that it is not only about a firm's balance sheet per se, but also about the cyclicality of the institutions funding its term debt. Reliance on nonbank term lending increases exposure to aggregate funding conditions, which shifts firms toward more costly bank liquidity insurance and makes liquidity shortfalls more likely to translate into reductions in investment and balance-sheet adjustment when rollover risk materializes.

From a financial intermediation perspective, the paper highlights that bank and nonbank intermediation are linked through borrowers' contingent liquidity demand. The conventional separation - banks specialize in revolving liquidity insurance while institutional investors specialize in term lending - abstracts from the fact that nonbank fragility can endogenously raise the probability and correlation of bank credit line drawdowns. Our evidence shows that banks internalize this interaction when setting credit line quantities and prices: they ration liquidity commitments to borrowers whose market-based funding is more cyclically exposed, and they do so most strongly when refinancing needs make the drawdown option most likely to be exercised in bad aggregate states. This complements the work on banks as liquidity providers by demonstrating that the growth of shadow banking can tighten, rather than expand, firms' access to bank liquidity.

1 Literature Review

Our paper relates to serveral 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.

[9] Mota and Siani (2025), for example, argue the firms diversify bond issuances to reduce rollover risk.

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 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 contribute to this literature by showing 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 receive fewer credit lines and find it more expensive to borrow through credit lines.

Another set of papers focuses on 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 (see also, Ippolito et al. (2016), Carletti et al. (2025)). 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. 2024b, 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 contribute to this literature by showing 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 lending competition for banks from 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).[10]

In addition, 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 contribute to this literature by showing that banks ex-ante take into account the rollover risk of firms financed by nonbanks (including bond market, nonbank loan market investors and private credit lenders) when providing credit line commitments.

Finally, recent literature, e.g., Acharya et al. (2024a), 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.

2 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 distribute it to a syndicate of lenders. In this setting, banks and nonbank institutional investors play complementary roles. Banks typically retain revolving credit facilities and Term Loan A

[10] 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.

(TLA) tranches, 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 single deal often bundles several facilities. Despite being negotiated as one package, these facilities differ in amortization, pricing, maturity, and, most importantly for our purposes, who ultimately holds the exposure. This institutional segmentation is central to our analysis of how nonbank term funding interacts with banks' provision of liquidity insurance.

Deal structures. Panel A of Figure OA2 shows the evolution of syndicated loan deal structures over time. TLB has become the dominant form of term financing, with facility sizes that often comprise more than half of total term borrowing within a deal. Deal composition is also highly cyclical: bank financing (via TLA or credit lines) increases relative to TLB funding during periods of aggregate stress such as the global financial crisis, the oil and gas shock, and the COVID-19 pandemic (Fleckenstein et al. 2024).

TLA tranches typically feature shorter maturities and amortizing repayment schedules, consistent with banks' internal risk management and regulatory constraints, and largely remain on bank balance sheets. In contrast, TLB tranches, often referred to as institutional tranches, usually have longer maturities and bullet repayment structures. While TLBs are originated by an underwriting bank (or group of banks), lead arrangers typically place these tranches with nonbank investors and sell them in the secondary market soon after origination, which frees up bank balance-sheet capacity. Nonbanks, not subject to the same regulatory constraints as banks, can finance riskier or higher-yielding corporate loans, but this arrangement also exposes borrowers to more volatile, market-based funding conditions (Fleckenstein et al. 2024).

Credit lines. Syndicated deals frequently include revolving credit facilities that provide liquidity insurance. Banks have a natural advantage in supplying these commitments because they fund themselves with relatively stable liabilities and can access central bank liquidity. Credit lines allow borrowers to draw at a pre-agreed spread when liquidity needs materialize, and they remain off bank balance sheets until a drawdown occurs (Kashyap et al., 2002; Gatev and Strahan, 2006). The key feature, however, is that the draw option is exercised precisely in bad states of the world. When market-wide risk spikes, drawdowns tend to be correlated across borrowers, turning committed but undrawn capacity into immediate balance-sheet usage and, potentially, binding constraints for banks (Acharya et al. 2024b).

In the next sections, we test whether nonbank term lending is orthogonal to banks' ex-ante credit line commitments (the null hypothesis) or whether the cyclicality of the borrower's term-financing providers increases the systematic drawdown risk banks are exposed to, leading to tighter and more expensive liquidity insurance (the alternative hypothesis).

3 Data and Summary Statistics

3.1 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, amended, and refinanced in the United States to non-financial companies between 2000Q1 and 2022Q4. Each origination and amendment is considered a new facility.[11] 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 and CapitalIQ 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 firm credit line drawdowns on a quarterly basis (daily 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 2005. All variables used in the paper are described in Online Appendix Table OA1.

3.2 Nonbank Dependence

We define *Nonbank Dependence* as the share of total term loans of the borrower that are financed by nonbanks (TLB) at a given point.[12]. 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"..."Term Loan K" 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

[11] This is in line with existing literature Fleckenstein et al. (2024) and the legacy DealScan.

[12] 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)

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 1. 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) 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 dependence 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.

3.3 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.[13]

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.

4 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).

4.1 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:

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

[13] If we focus on ratings at the time of issuance, TLBs have a much higher likelihood of being rated (either in the quarter of issuance or previous quarter) compared to bank loan borrowers (71% vs. 56%). The fraction increases if one looks at loan-level rather than firm-level ratings. This also lines up with conventional wisdom that CLOs require borrowers to have ratings to invest in their loans.

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 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.[14] Under the null hypothesis, where nonbank dependence does not affect the provision of bank credit lines to a firm, these coefficients should be zero. Our central hypothesis is that nonbank depenedence affects the rollover risk of firms, which banks take into account in their provision of credit lines to a firm, so 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 and loan-level variables ($\mathbf{X}_{i,t}$)—size, leverage, loan maturity, and deal purpose—to isolate the incremental impact of *Nonbank Dependence*. Standard errors are clustered at the borrower level.

4.2 Results

Descriptive analysis. We begin by exploring the relationship between credit line availability and nonbank funding in Figure 2. 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 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

[14] 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.

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.[15] 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 (0.36) reduces *CL/Total Loans* by 9 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-line volume and nonbank reliance, we now examine borrowing costs. Figure 3 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 (Column 5) 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). Column 6 and 7 and Online Appendix Figure OA4 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 (though

[15]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.

the cost of TLB is not statistically significantly different after including all controls).

4.3 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). Column 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. These include: 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.

4.4 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 credit lines. In Column 1 of 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 in Column 2 of Panel A, 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, in Columns 3 and 6 of 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 4 and 8. 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 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 OA5, 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 relation-

ship 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 OA6 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 OA7. 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 OA8 shows this is indeed the case.

5 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 like to 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.

5.1 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 4, 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.[16]

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 4, Panel A). In contrast, the leveraged loan market was severely affected: secondary market prices declined over 10%, driven by a larger than 20% drop in oil and gas loans (Panel B). Collateralized 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 5, 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, whereas bank-provided term loans and credit lines remained comparatively stable or even rose slightly (Panel B).

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.[17]

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

[17] Saunders et al. (2025) 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.

5.2 Credit Outcomes for Nonbank Dependent Borrowers

We are primarily interested in determining 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 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 6 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. Furthermore, 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 borrowers with 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.[18]

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 OA9. 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 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.

Panel A of Figure 7 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 lower TLB levels, whereby previously nonbank-dependent firms reduce their reliance on TLBs. This decline is most pronounced for *Maturing TLB* borrowers,

[18]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.

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 7, 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 and bank credit lines. 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.

Panel A of Table 5 compares lending to borrowers that were more or less affected by the oil price shock through CLOs. We see that overall lending to more exposed borrowers falls, both in term loans (Column 5) and credit lines (Column 7). In Panel B, we interact with the additional dimension of borrower rollover risk. Column (1) of Panel B of Table 5 show that borrowers with maturing nonbank loans in CLOs more exposed to the oil shock experience a significant drop in new TLB issuance. A firm with one standard deviation higher exposure sees a 10.8 percentage points lower volume of TLB issuance. 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. In Panel C, 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. Moreover, in Panel D, we document similar results

restricting our sample to firms that have positive EBITDA (Chernenko et al. 2022).

A possible additional concern could be 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.[19] These results suggest that the decline in bank credit line provisioning 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.

Finally, we perform a placebo test to show that rollover risk, for example, through an oil-price shock materializing for borrowers with maturing loans, is key in understanding the effects on bank liquidity provisioning. In Figure 8, we use the 2010Q1-2015Q4 sample period and the 2012Q2-2014Q1 as "shock period" for our placebo test – a period that arguably does not feature any stress. We show that firms with maturing TLBs do not face rollover risk as TLBs do not decline relative to firms without maturing TLBs (nor do these firms pay higher spreads), and we do not observe differences as to, for example, credit line amounts or spreads. Collectively, these results support our hypothesis that rollover risk of firms financed increasingly by nonbanks reduces firms' access to bank provided liquidity because of higher credit lines drawdowns when rollover risk materializes.

5.3 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 OA10 shows that in prior stress episodes, credit line usage rises most sharply among borrowers heavily reliant on nonbanks.

[19] 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

Consistent with this, Column 1 of Table 6 reveals that firms facing greater rollover risk 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.

5.4 Can bank-dependent borrowers smooth out shocks during stress?

The previous section documents the double whammy of borrowers financed by nonbanks. An interesting question is whether bank dependent borrowers are 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.

6 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.[20] Following the earlier literature on private credit, we focus on ne type of private credit lenders - Business Development Companies (BDCs).

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. These patterns suggest that the funding source influences the extent to which risks are transmitted to bank balance sheets through credit line commitments. In a next step, we use similar categories of firms to investigate ex-ante implications for bank credit line provisions to these firms.

[20]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.

6.1 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 Table OA10 compares characteristics of bond, bank, and nonbank borrowers while Online Appendix Figure OA11 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 (TLB) 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 are non-investment-grade. 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*.[21]

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, in line with the higher rollover risk and credit line utilization of these borrowers.

6.2 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 to have a gvkey to map them to Compustat/CRSP.[22] The average loan size with BDC lenders is about USD 1.2 billion (compared to USD 527 mil-

[21] Online Appendix Figure OA12 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.

[22] 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 among those matched to our sample.

lion 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).[23] 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.[24] 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.

7 Conclusion

Corporate credit markets have been transformed by the shift of term lending from banks to nonbank investors, while banks have remained the primary providers of revolving liquidity insurance. A natural hypothesis is the separability of both functions: if banks can diversify and price drawdown risk, the identity of a firm's term lenders should be largely orthogonal to banks' ex-ante willingness to provide credit lines. We reject this null. Firms that rely more heavily on institutional term loans obtain smaller credit line commitments and pay higher spreads on both the drawn and undrawn portions of their revolvers. The evidence is consistent with the alternative hypothesis that nonbank dependence increases both the level and the systematic component of future drawdown risk.

To sharpen identification, we exploit the 2014-2016 oil-price collapse as a plausibly exogenous increase in rollover risk in institutional term loan markets, transmitted through CLO managers' pre-shock exposures to oil-sector loans and the resulting contraction in CLO is-

[23] We do not have sufficient overlap in borrowers with TLB and BDC credit outstanding to conduct a horserace of these two measures.

[24] We do not have sufficient observations to perform tests on a subsample of overlapping borrowers, i.e., those firms with bonds TLBs and BDC funding.

suance. Among non-oil firms, banks expand liquidity provision to borrowers that reduce their reliance on nonbanks only when these borrowers do not face immediate refinancing needs. For firms with looming institutional maturities, banks instead reduce credit line access and widen spreads when nonbank funding pulls back. These differences have real consequences: borrowers forced to refinance during the shock experience weaker balance-sheet and real performance, despite drawing on existing lines.

A key takeaway is that investor heterogeneity matters for the interaction between nonbank term funding and bank liquidity insurance. The retrenchment in bank-provided liquidity is strongest when firms rely on institutional loan-market investors such as CLOs, weaker for bond financing, and muted for private credit lenders. This pattern supports the conjecture that what matters for banks is not a borrower's nonbank share per se, but the cyclicality and rollover risk embedded in its term-financing investor base. Composition, not just quantity, of market-based term funding shapes the fragility that spills over to banks' contingent liquidity exposures.

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 types of nonbank exposures 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 sustaining corporate credit flows and financial stability in an era of expanding shadow banking.

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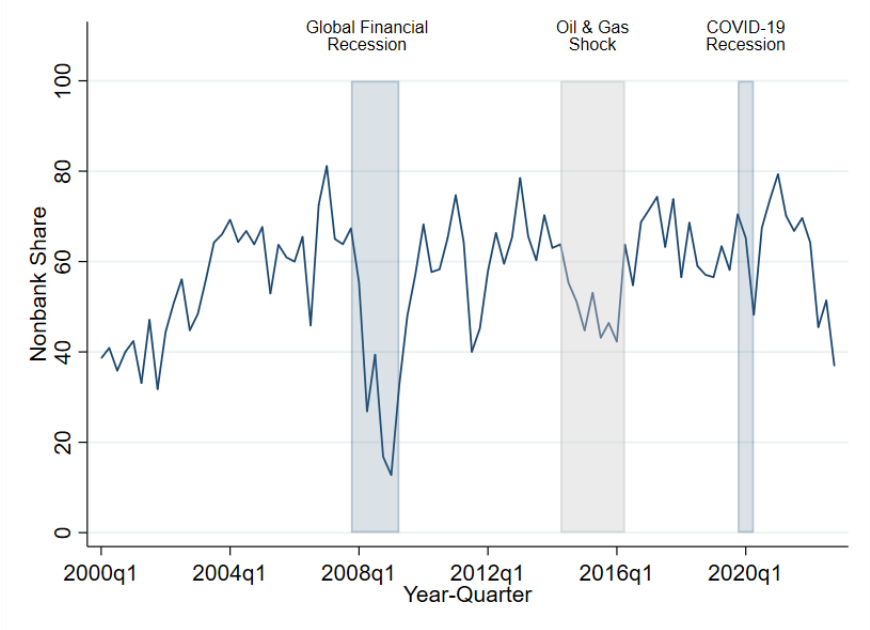
Figure 1: Nonbank Dependence

This figure plots Nonbank Share and Nonbank Dependence over the 2000 to 2022 period. *Nonbank Share* is the volume of nonbank term loans (TLB) originated as a share of total term loans originated in a given quarter. *Nonbank Dependence* is the volume of nonbank term loan outstanding as a share of total term loans outstanding. 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

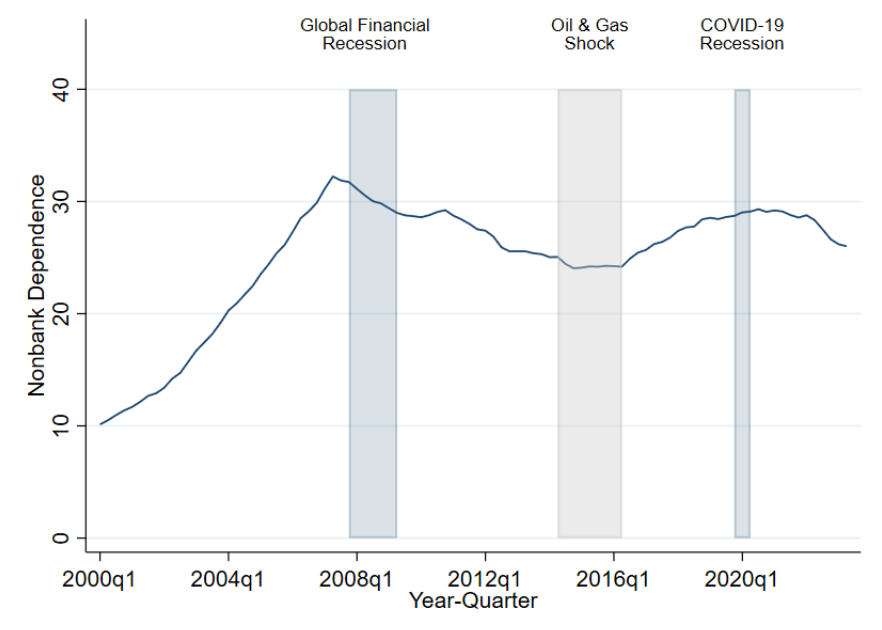
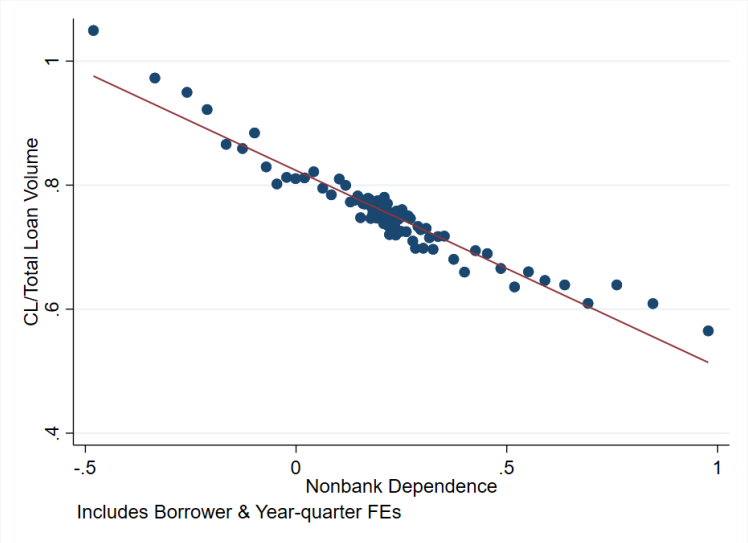


Figure 2: Volume of Credit Lines vs. Nonbank Dependence

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

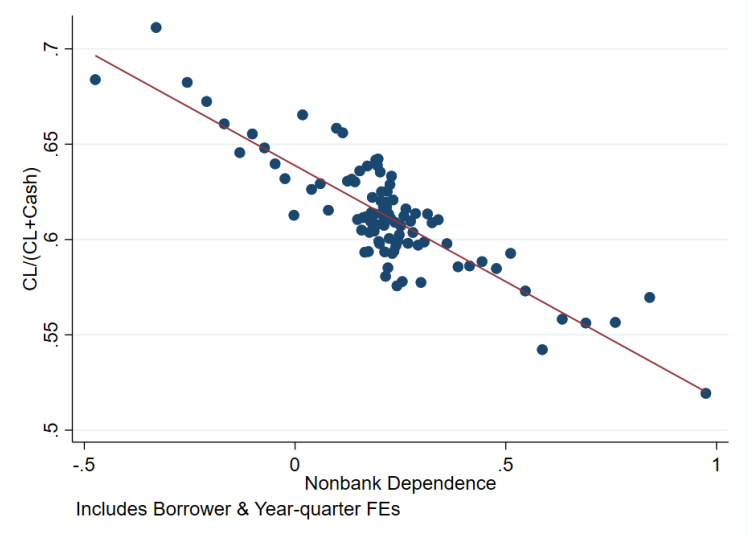
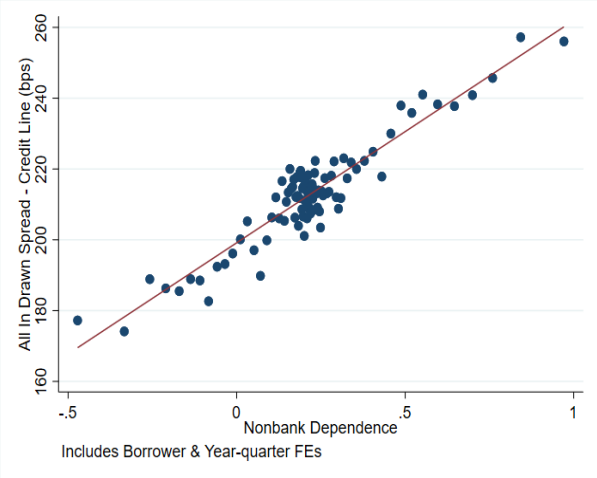
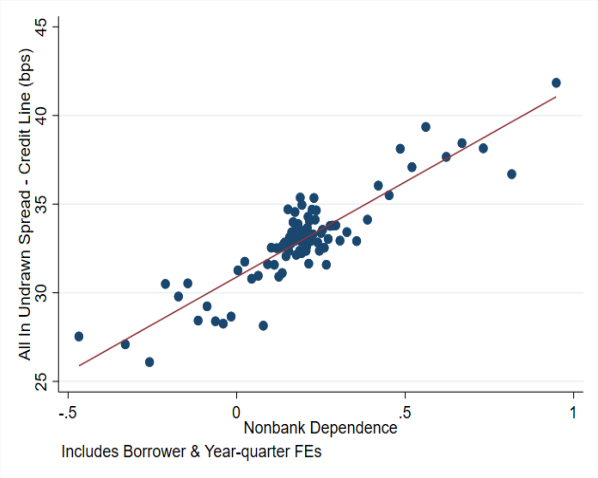


Figure 3: Cost of Credit Lines vs. Nonbank Dependence

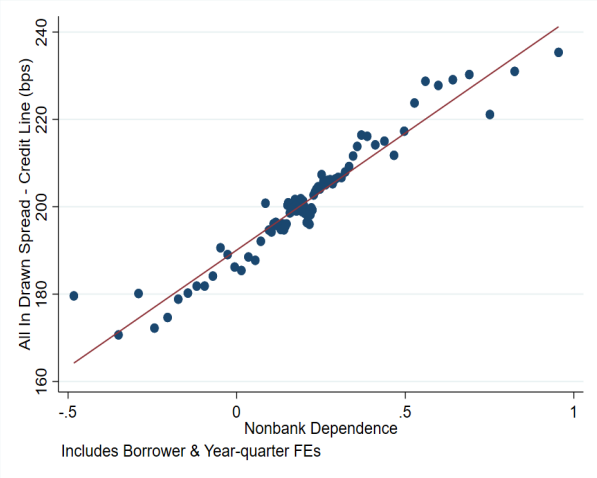
This figure presents the binscatter plot of the cost of credit lines against nonbank dependence of the borrower. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2022Q4. In Panel A, we measure the all-in-drawn and all-in-undrawn spreads of newly issued credit lines in the given 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



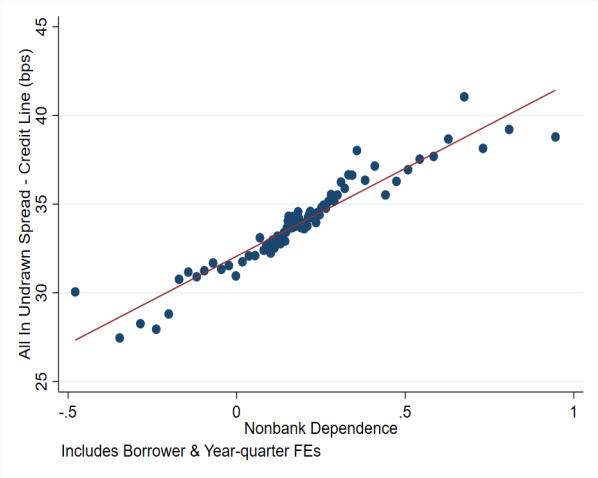
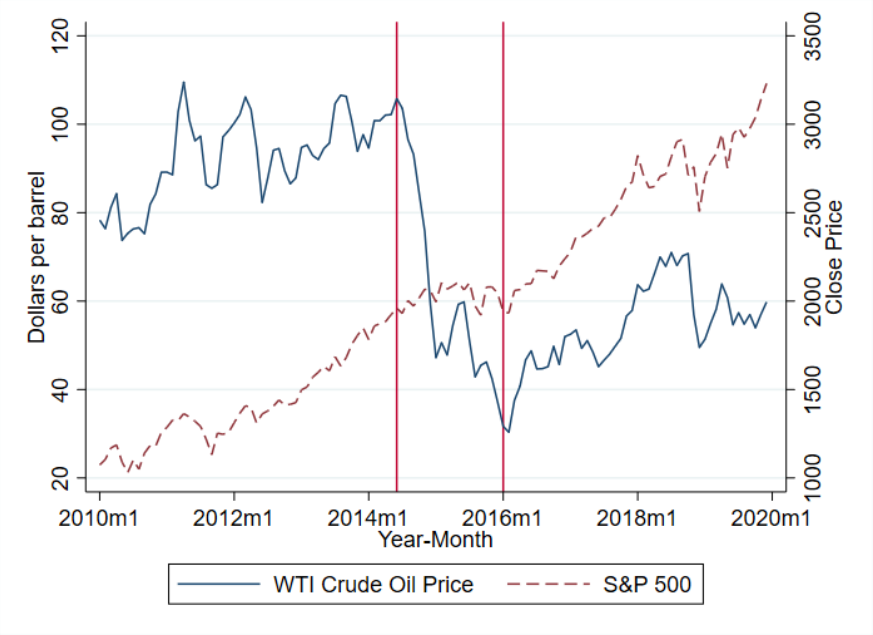


Figure 4: Price Movements during the 2014-16 Oil Price Shock

Panel A presents the level of oil prices of the West Texas Intermediate (WTI) and the S&P500 index values from 2010 to 2020. Panel B shows the average quote on the leveraged loan market as reported by the Loan Syndications and Trading Association (LSTA) from 2010 to 2017. We plot 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

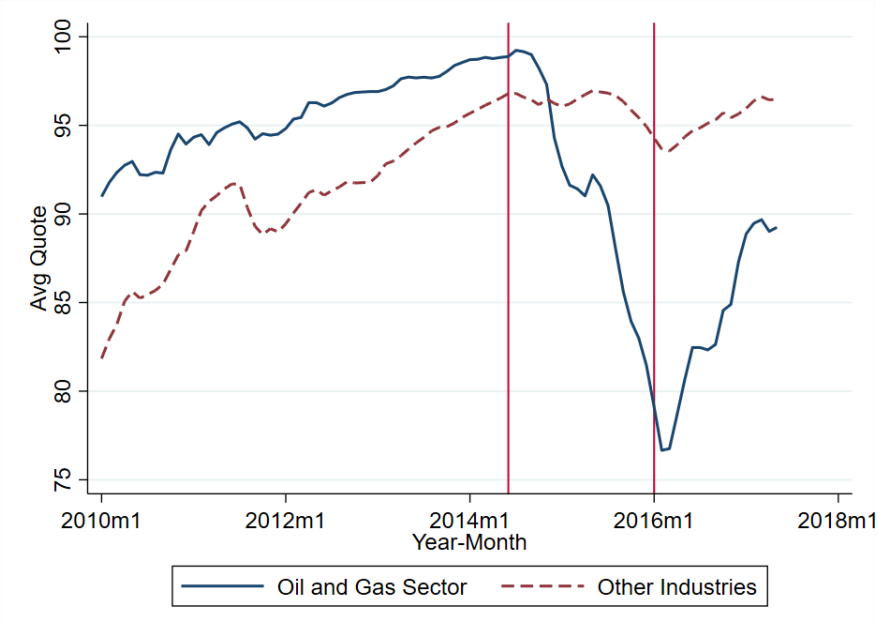
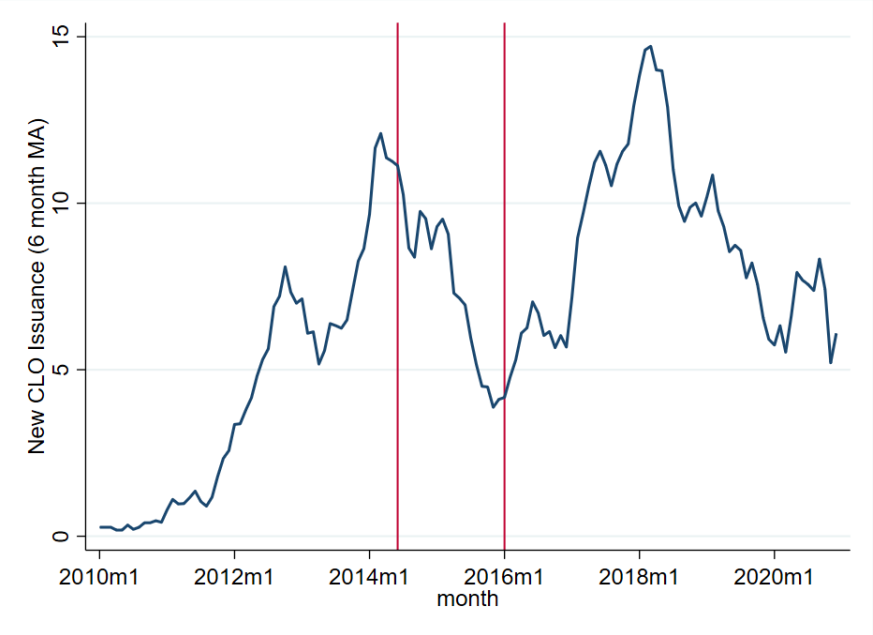


Figure 5: New CLO Issuance and Loan Originations

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

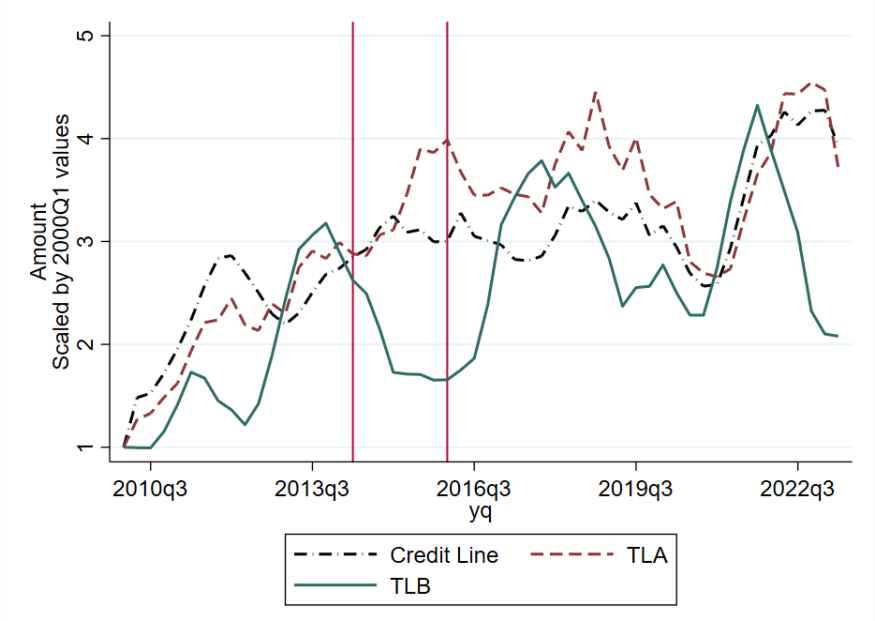
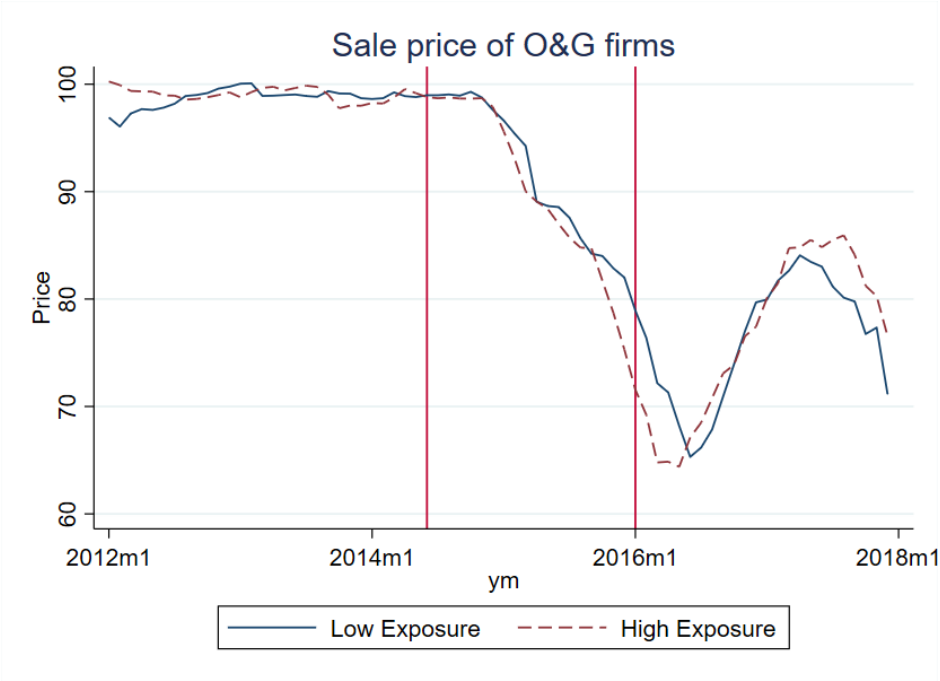


Figure 6: Oil Shock Exposure - Impact on CLOs

This figure plots the sale price of firms in the oil and gas sector (Panel A) and others (Panel B) between 2012 and 2017 for CLOs with high or low oil gas exposure. *High Exposure* takes a value of one for CLOs with above median oil gas exposure, which is based on the share of a CLO's portfolio in oil and gas firms as of 2014 Q1. 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 - Oil and gas firms



Panel B - Sale Price - Non- oil and gas firms

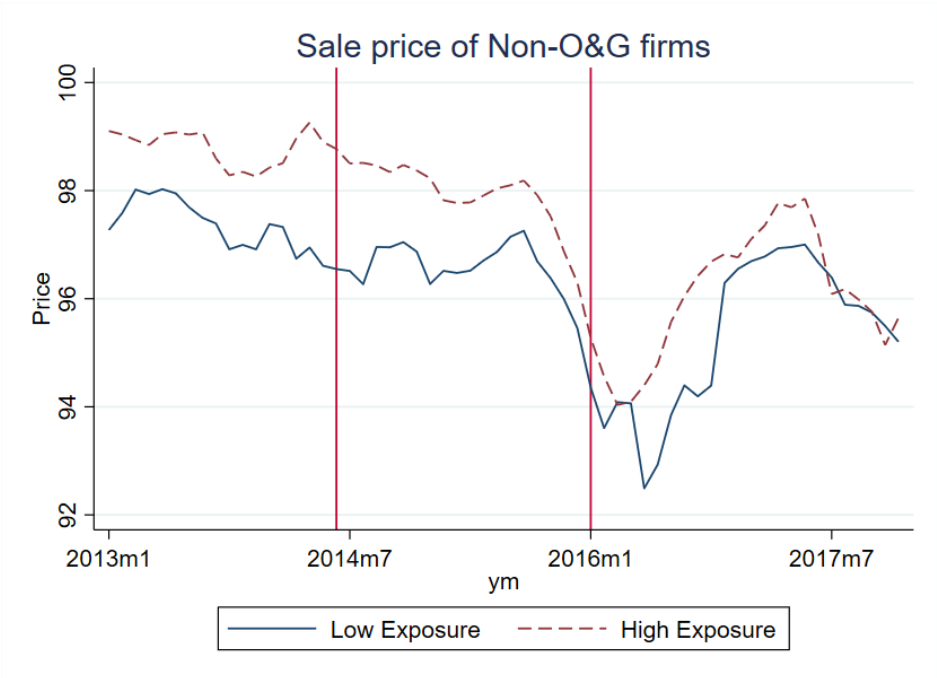


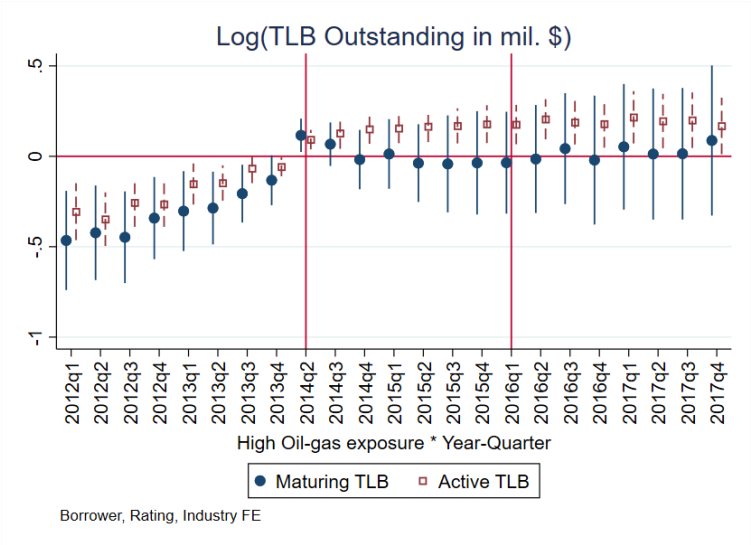
Figure 7: Borrower Term Loan and Credit Line Access Based on Loan Maturity

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

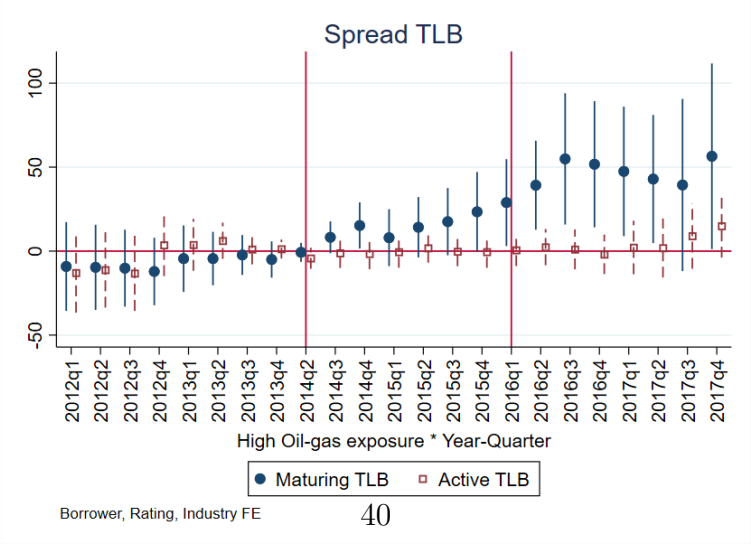
$$y_{i,t} = \alpha + \beta \text{High Oil-Gas Exposure}_i \times \mathbf{1}_t + \lambda_t + \delta_i + \epsilon_{i,t}$$

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 nonbank term loan (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 two-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

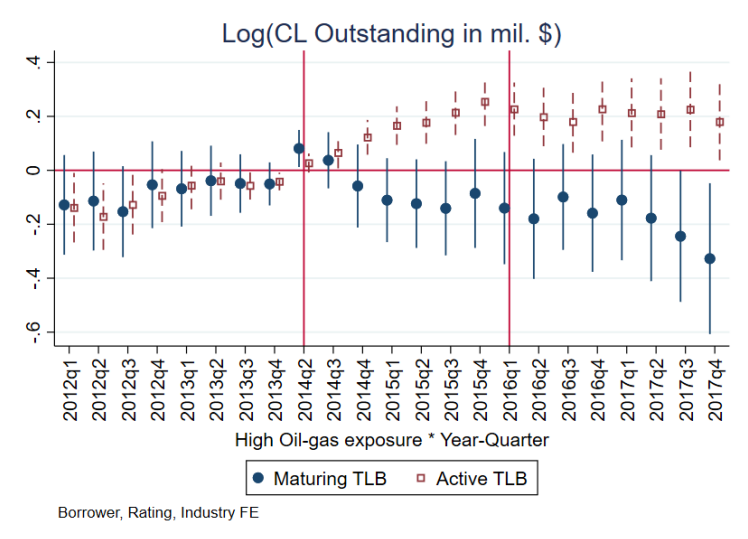


Panel B - TLB Spreads



Borrower Term Loan and Credit Line Access - continued

Panel C - Credit Line Outstanding



Panel D - Credit Line Spreads

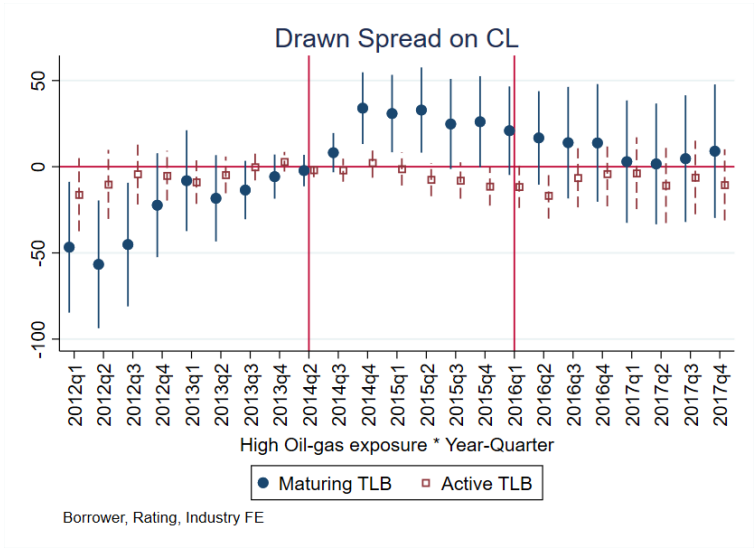


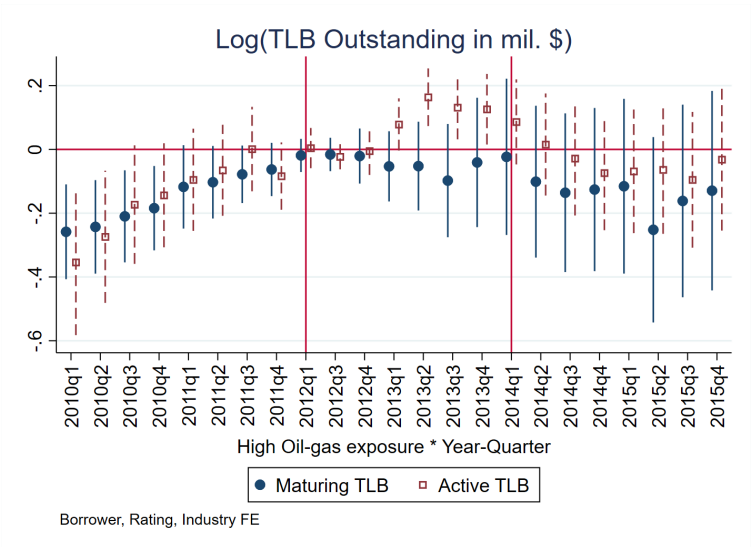
Figure 8: Borrower Term Loan and Credit Line Access Based on Loan Maturity - Placebo Sample

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

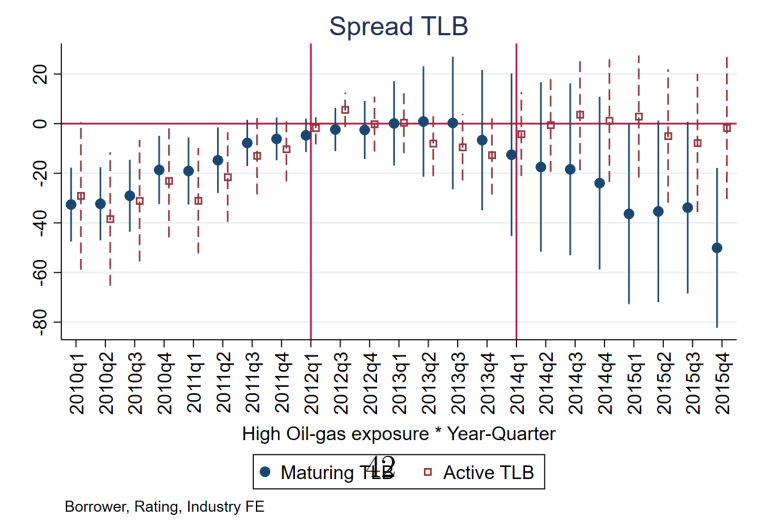
$$y_{i,t} = \alpha + \beta \text{High Oil-Gas Exposure}_i \times \mathbf{1}_t + \lambda_t + \delta_i + \epsilon_{i,t}$$

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 2012 Q1. Firms are classified as being *Active TLB* if they have an outstanding nonbank term loan (TLB) as of 2012Q1 and their TLBs are not maturing during the oil price shock of 2012Q2-2014Q1. Coefficients plotted are relative to 2012Q1 (the quarter before the oil price shock). We include borrower fixed effects, rating × year-quarter fixed effects, and two-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

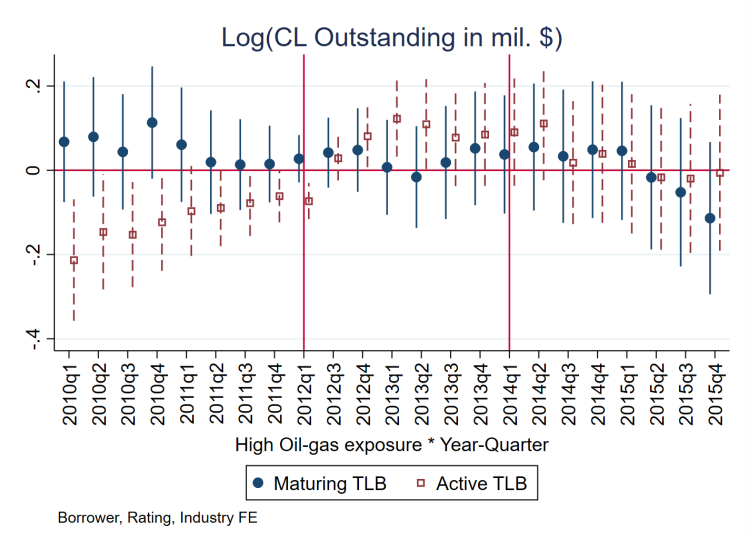


Panel B - TLB Spreads



Borrower Term Loan and Credit Line Access - Placebo Sample - continued

Panel C - Credit Line Outstanding



Panel D - Credit Line Spreads

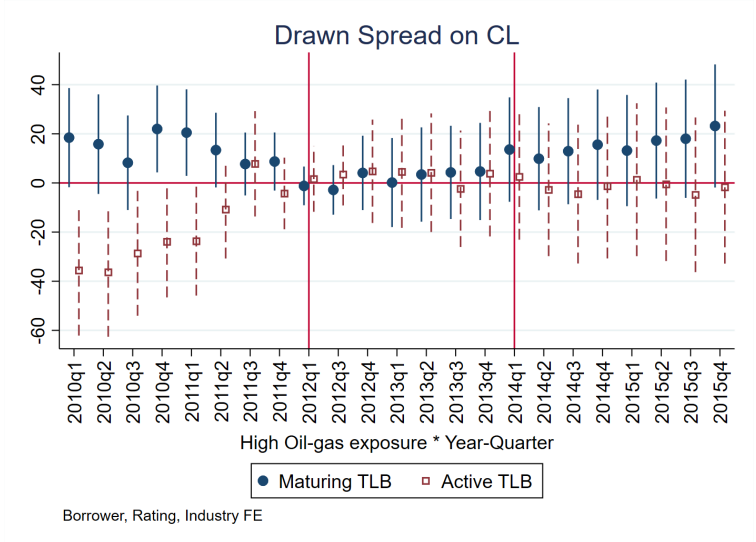
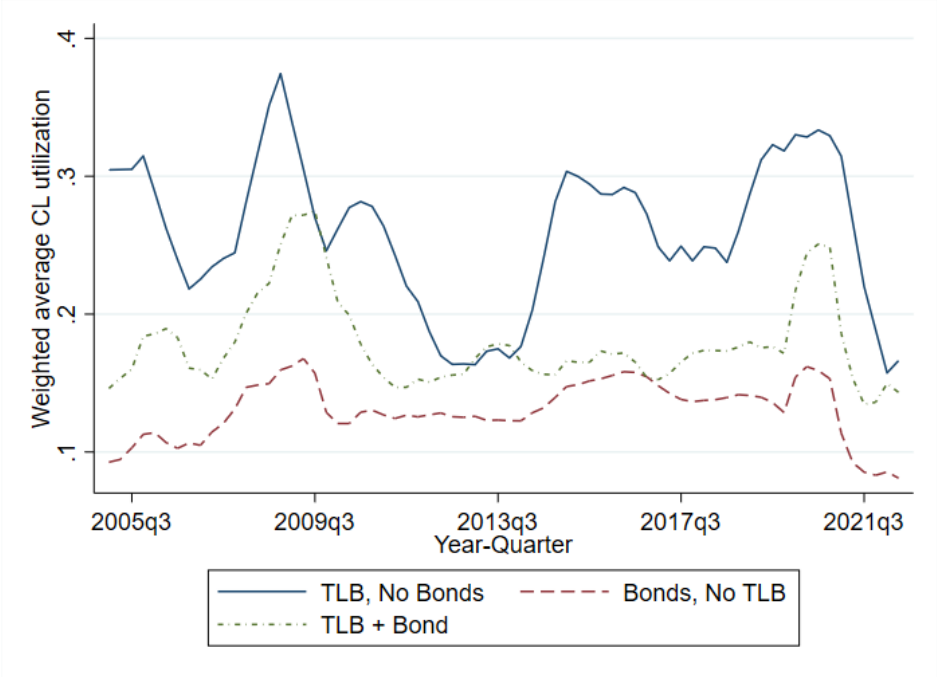


Figure 9: CL Drawdown by Nonbank Borrowers

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

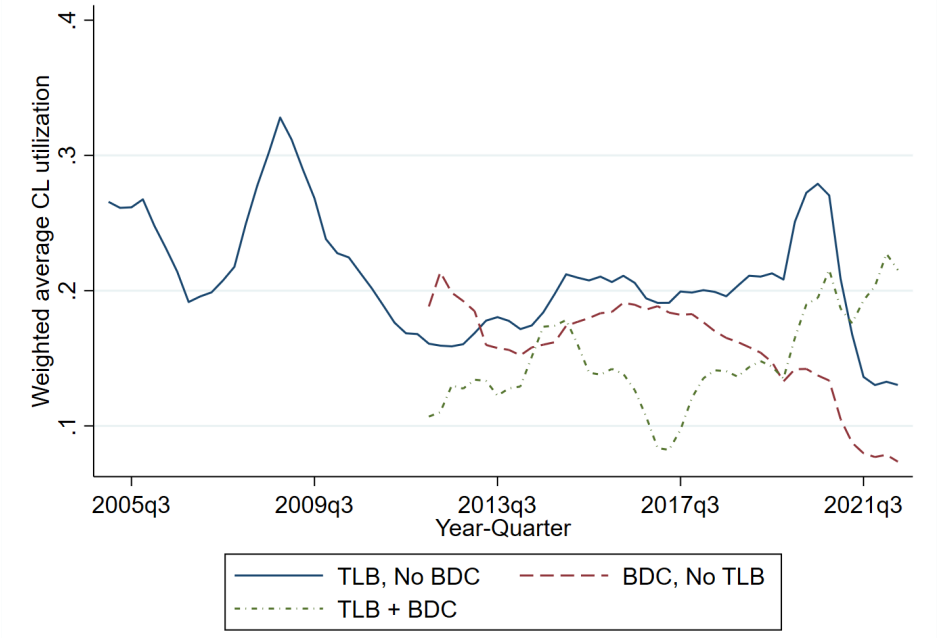


Table 1: Correlation between different measures of nonbank dependence

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 (our prefereed measure), 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 volume of nonbank term loans (TLB) outstanding as a share of total term loans outstanding to the borrower. *Assets* are the average firm asset size from Compustat. *Total Liabilities/Assets* is total firm liabilities to assets. *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. *Share unrated firms* is the share of all firms without ratings in CapitalIQ. *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. *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 C presents the distribution of ratings of firms in the sample.

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

	Bank borrower		Nonbank borrower	
Rating	Freq.	Percent	Freq.	Percent
AAA	63	0.03	96	0.11
AA	1,163	0.57	248	0.27
A	16,650	8.11	2,251	2.48
BBB	18,395	8.96	2,662	2.93
BB	16,289	7.94	14,086	15.52
B	13,315	6.49	23,092	25.43
CCC	4,414	2.15	4,835	5.33
CC	1,277	0.62	860	0.95
C	9	0	5	0.01
Unrated	133,680	65.13	42,654	46.98
Total	205,255	100	90,789	100

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. *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 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 loan spreads in basis points. Columns 1 to 5 present results for credit lines while Columns 6 and 7 present results for bank and nonbank term loans respectively.
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 of Panel C. We include borrower, borrower rating × year-quarter fixed effects, two-digit SIC code × year-quarter fixed effects, and controls for firm size, debt-to-asset ratio, loan maturity and deal purpose 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 - 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 robustness tests on how credit line access varies with nonbank dependence of the borrower. 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.
In Panel A and B, we look at the impact of bank-borrower relationships. *Bank-Borrower Relationship* measures the share of total bank loans (Panel A) or bank term loans (TLA, Panel B) to a borrower over the last three years from the bank. Columns 1 -4 measure credit lines as a share of total loans at issuance, and Columns 5-8 measure all-in-drawn-spread of credit lines. In Columns 4 and 8, we restrict the sample to firms that have bank term loans outstanding.
In Panel C, we study how credit line access varies with market betas of the borrower. 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 D and E, we study access to credit lines based on firm EBITDA. In Panel D, 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 E, we look at the all-in-drawn (Columns 1-3) and all-in-undrawn (Columns 4-6) spreads on credit lines.
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)	(5)	(6)	(7)	(8)
Nonbank Dependence	−0.137***	−0.136***	−0.108***	−0.094***	34.268***	34.065***	28.954***	45.578***
	(0.010)	(0.010)	(0.009)	(0.022)	(3.367)	(3.327)	(3.399)	(7.194)
Bank-Borrower Relationship	−0.033***	−0.034***	−0.015***	−0.038***	−1.578	−1.265	−2.271	0.011
	(0.004)	(0.004)	(0.004)	(0.009)	(1.078)	(1.117)	(1.434)	(2.569)
Rating x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Bank x Year-Quarter FE	N	Y	Y	Y	N	Y	Y	Y
Bank x Borrower FE	N	N	Y	Y	N	N	Y	Y
Sample				Has TLA				Has TLA
Obs.	128,111	128,028	113,553	38,700	122,694	122,605	108,156	37,268
R^2	0.721	0.730	0.780	0.859	0.842	0.848	0.879	0.925

Panel B - Bank-Borrower Relationships Based on TLAs

	CL/Total Loans at Issuance				All in drawn spread			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nonbank Dependence	−0.137***	−0.136***	−0.108***	−0.094***	34.268***	34.065***	28.954***	45.578***
	(0.010)	(0.010)	(0.009)	(0.022)	(3.367)	(3.327)	(3.399)	(7.194)
Bank-Borrower Relationship	−0.033***	−0.034***	−0.015***	−0.038***	−1.578	−1.265	−2.271	0.011
	(0.004)	(0.004)	(0.004)	(0.009)	(1.078)	(1.117)	(1.434)	(2.569)
Rating x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Bank x Year-Quarter FE	N	Y	Y	Y	N	Y	Y	Y
Bank x Borrower FE	N	N	Y	Y	N	N	Y	Y
Sample				Has TLA				Has TLA
Obs.	128,111	128,028	113,553	38,700	122,694	122,605	108,156	37,268
R^2	0.721	0.730	0.780	0.859	0.842	0.848	0.879	0.925

Panel C - Systematic 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 D - 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 E - 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 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 two-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	−0.051**	6.606**	−0.021	0.292	−0.064**	−0.052***	−0.050***	1.392
	(0.026)	(3.093)	(0.017)	(4.702)	(0.027)	(0.008)	(0.019)	(3.018)
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.	19,848	14,826	19,848	7,960	19,848	19,848	19,848	14,445
R^2	0.134	0.851	0.095	0.911	0.127	0.629	0.089	0.836

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 two-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 and 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, two-digit SIC code, 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 in two different markets - the bond market and the syndicated loan market. Data is at the borrower-year-quarter level and the sample period is 2000Q1-2022Q4. 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. 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. 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, two-digit SIC code × year-quarter fixed effects, and rating × year-quarter fixed effects. Controls include firm size and leverage. In Panel E, we also include controls for the weighted average remaining maturity of bonds outstanding for a firm in that given quarter. 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)	(5)	(6)	(7)	(8)
Bond Dependence	−0.067***	−0.071***	−0.096***	−0.089***	4.266	4.879	0.880	1.534*
	(0.009)	(0.011)	(0.013)	(0.016)	(3.576)	(4.377)	(0.642)	(0.831)
TLB Share	−0.047***	−0.052***	−0.083***	−0.068***	10.427***	10.361***	2.334***	3.124***
	(0.008)	(0.009)	(0.012)	(0.014)	(2.877)	(3.542)	(0.547)	(0.811)
Remaining Bond Maturity		0.001*		0.000		−0.341*		−0.090***
		(0.001)		(0.001)		(0.184)		(0.034)
Rating x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Borrower FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry x Year-Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Unconditional mean	0.71	0.72	0.33	0.30	240.96	234.25	43.82	43.65
Obs.	38,173	23,090	38,187	23,095	34,955	21,725	31,586	19,863
R^2	0.774	0.788	0.759	0.755	0.763	0.789	0.768	0.799

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

his table looks at availability of bank liquidity based on two different measures of nonbank dependence of a borrower in two different markets - the BDC middle market and the syndicated loan market. 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. In Panel A, we have the sample of public borrowers with either a nonbank syndicated loan or BDC loan outstanding. In Panel B, we restrict the sample to borrowers with BDC loans outstanding but no TLBs. In Panel C, we restrict the sample to borrowers with non-zero nonbank dependence in the syndicated loan market but have no BDC loans outstanding. 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

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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
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
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/ Total Loans	Credit lines as a share of total loan volume (sum of term loans and credit lines)	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
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

Variable Definitions

Name	Definition	Source
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 Berg et al. (2016)	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
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

Variable Definitions

Name	Definition	Source
Total Leverage/Assets	Total firm liabilities plus preferred stock minus deferred taxes and convertible debt to total firm assets	Compustat
Debt/Assets	Total firm short-term and long-term 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
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 total bonds and nonbank syndicated loans outstanding of the borrower	Compustat & CapitalIQ & DealScan
BDC Dependence	Calculated based on the outstanding BDC loans for a borrower in a given quarter. BDC dependence is the amount of BDC loans outstanding as a share of total BDC loans and nonbank syndicated loans outstanding of the borrower	DealScan and LSEG BDC Collateral

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 consists of term loan borrowers from 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*.

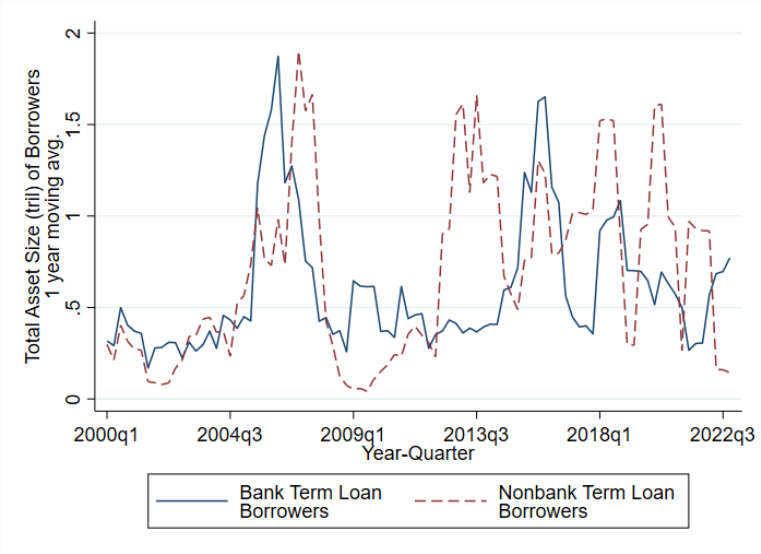
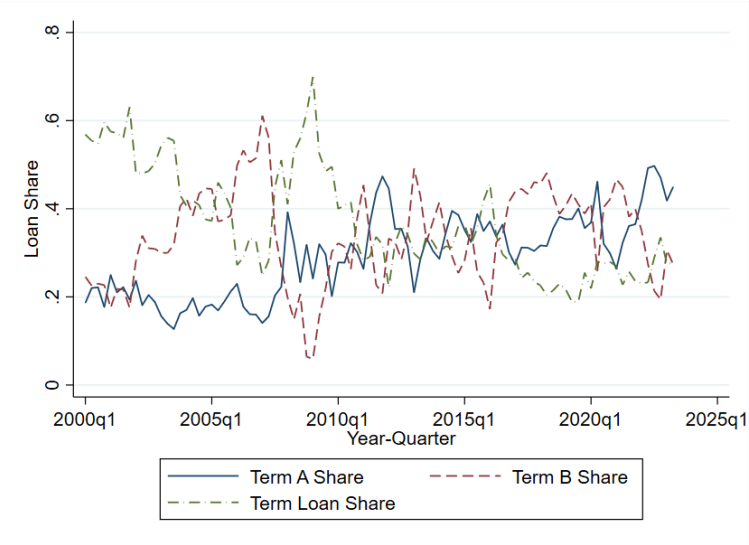


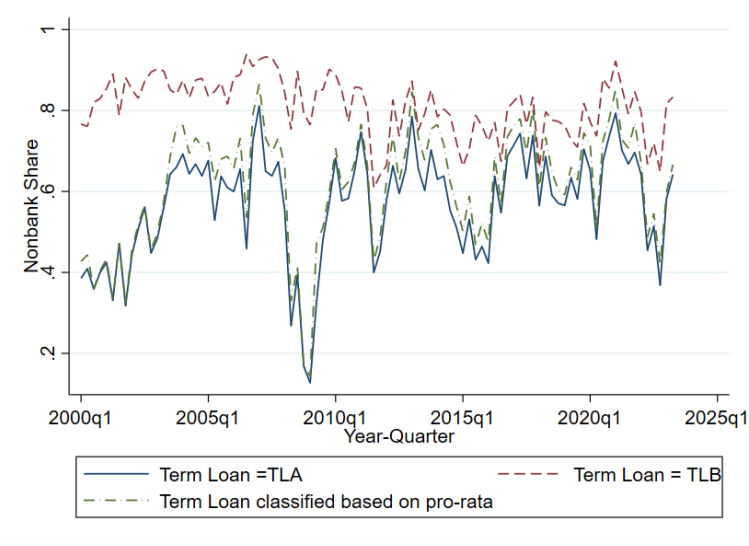
Figure OA2: Alternate Measures of Nonbank Dependence

This figure presents the time-series variation in various loan categories and nonbank dependence. In Panel A, we plot the shares of term loans that are classified as Term Loan A or Term Loan B or remain unclassified in DealScan. In Panel B and C, we show three different classification of nonbank loans - 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 B plots nonbank term loans (defined one of three ways) issued as share of total term loans at origination and Panel C plots nonbank term loans outstanding as a share of total term loans outstanding.

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

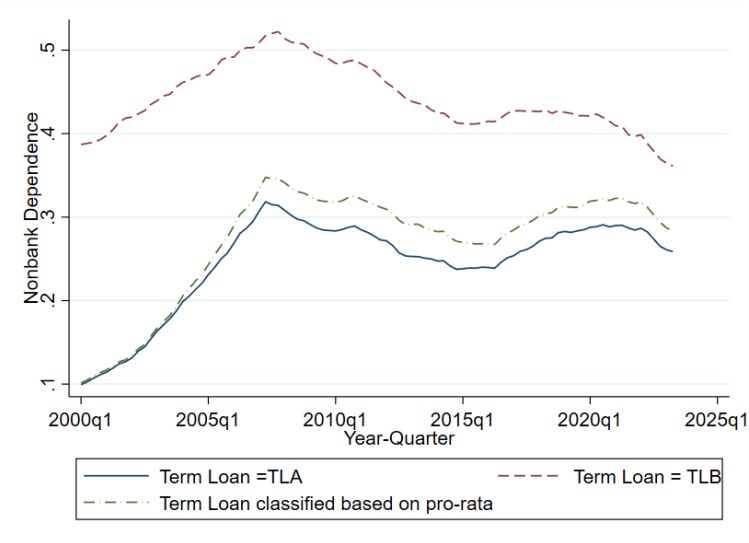


Figure OA3: Comparing loan spreads

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

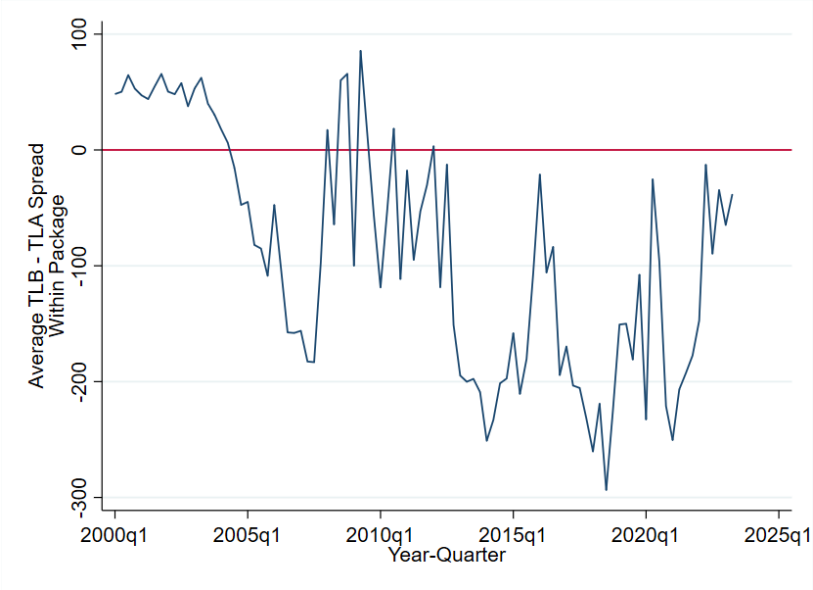
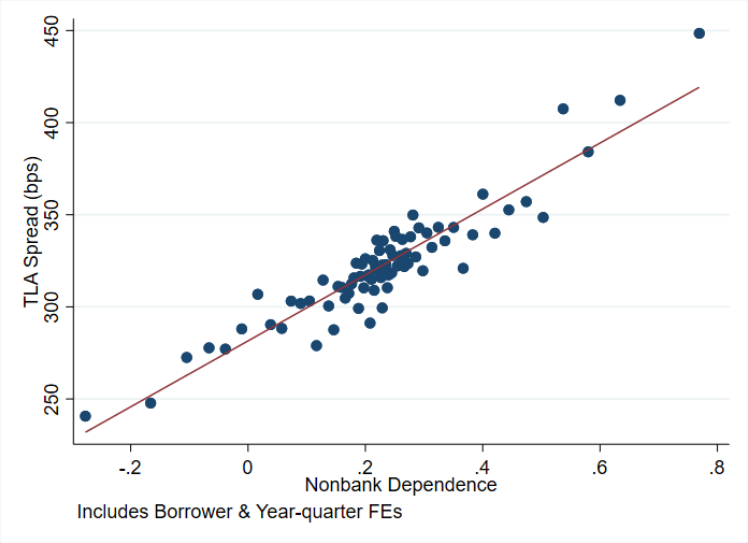


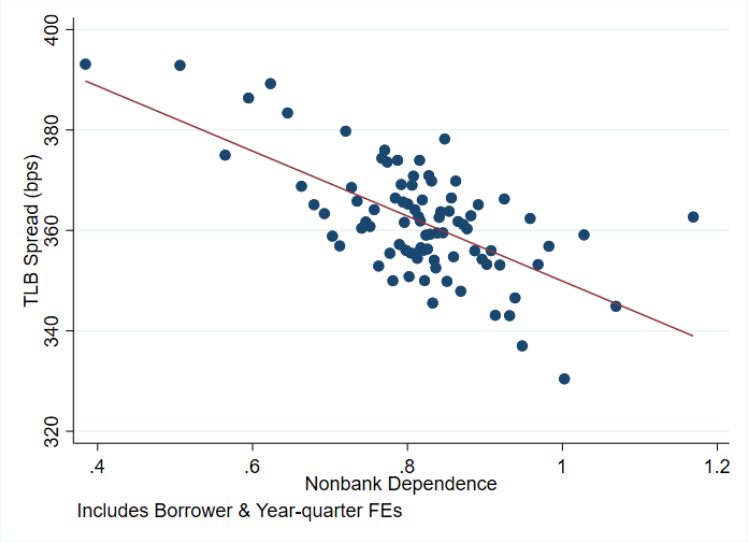
Figure OA4: Cost of Term Loans vs. Outstanding Nonbank Dependence

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. *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. In Panel A, we measure loan spreads of newly issued bank term loans (TLA). In Panel B, we measure loan spreads based on newly issued nonbank term loans (TLB). In Panel C, we plot of difference in term loan spreads within a deal against nonbank dependence of the borrower. We include borrower and year-quarter fixed effects.

Panel A - Spread on Bank Loans (bps)



Panel B - Spread on Nonbank Loans (bps)



Panel C - Difference in within deal spread on and nonbank and bank term loans)

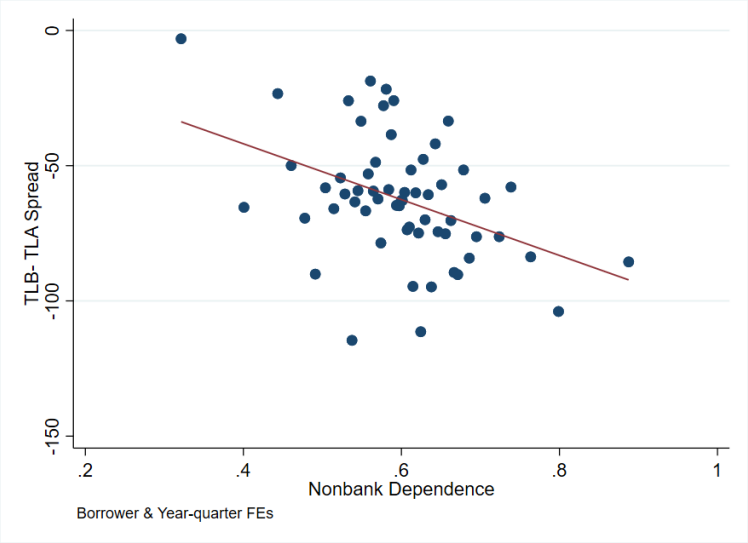
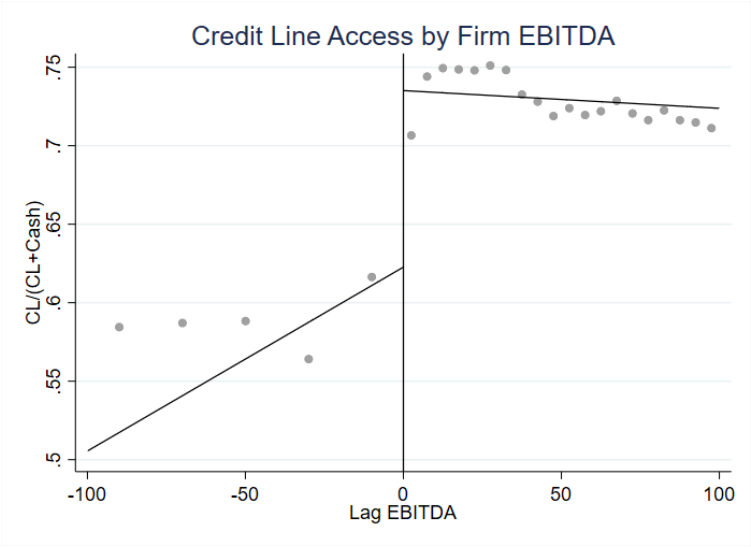


Figure OA5: Access to Bank Loans Based on Firm EBITDA

This figure presents regression discontinuity 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

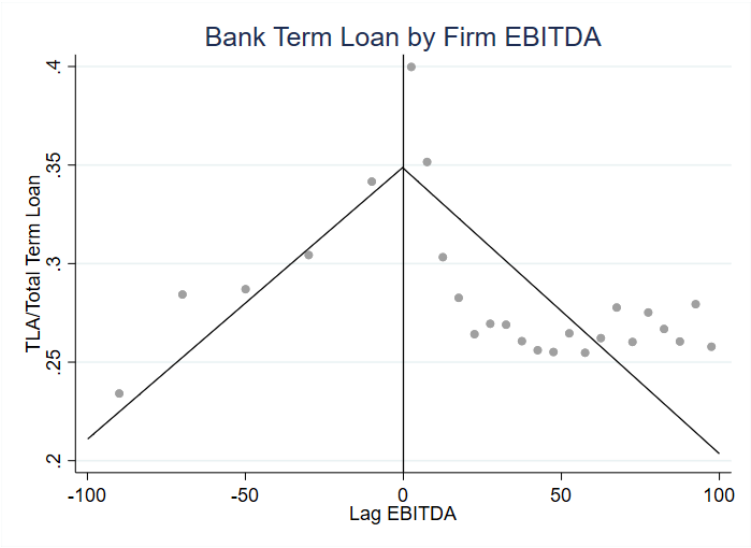


Figure OA6: CL Drawdown by Borrower Rating

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.

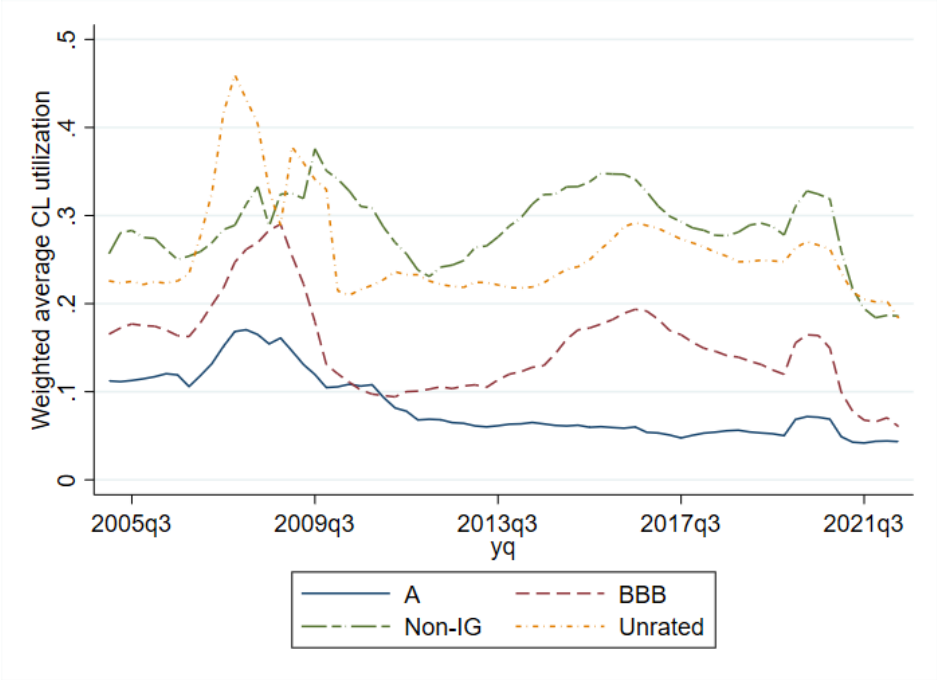


Figure OA7: Credit line issuance over time

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 TLB outstanding in that quarter. Sample period is from 2000 to 2022.

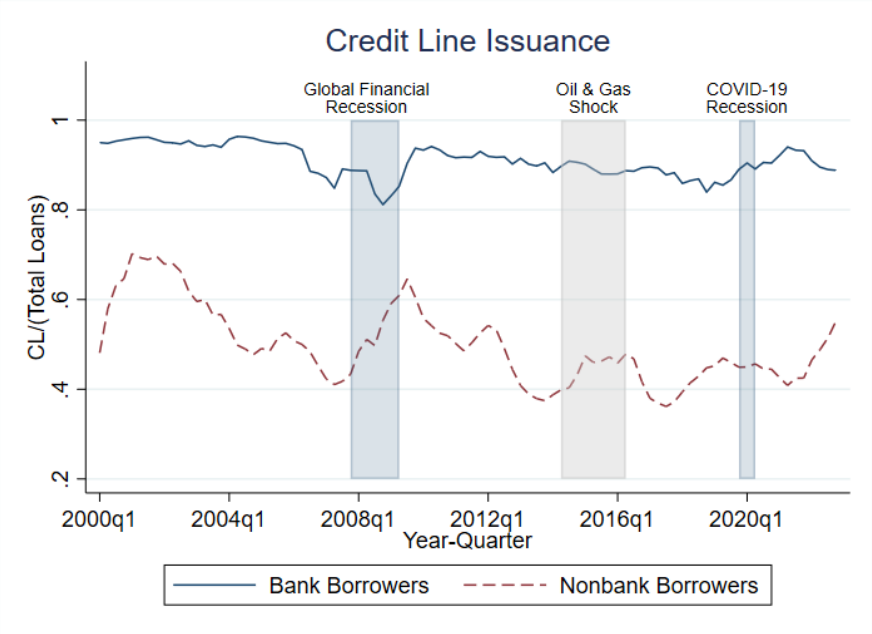
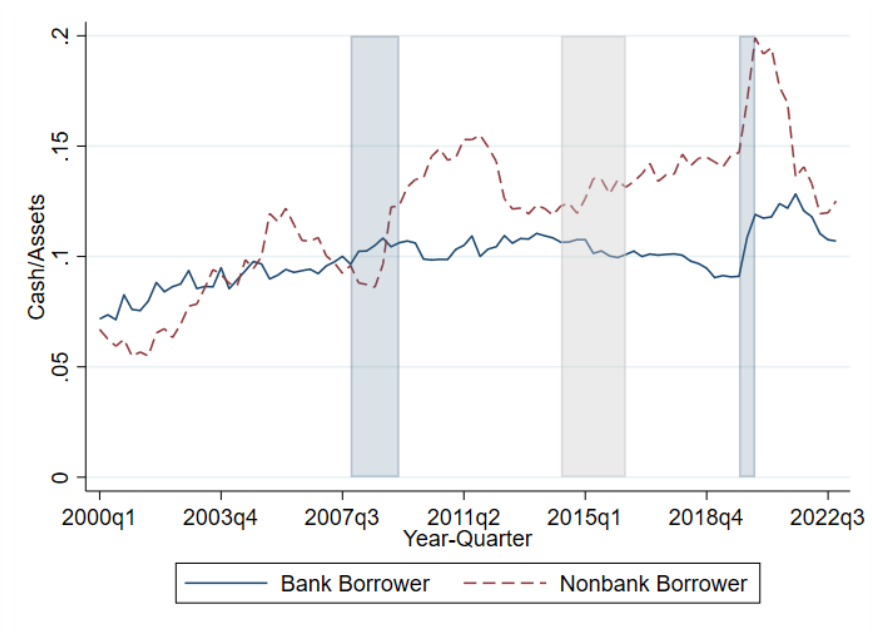


Figure OA8: Liquidity Buffers

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 TLB outstanding in a given quarter. Sample period is from 2000 to 2022. Panel A compares cash as a share of total firm assets for bank and nonbank borrowers as of that quarter. Panel B compares cash as a share of total firm assets for firms with a nonbank loan outstasning as of 2007Q4 (pre-GFC).

Panel A - Time-series variation in cash level



Panel B - Based on reliance on nonbanks during GFC

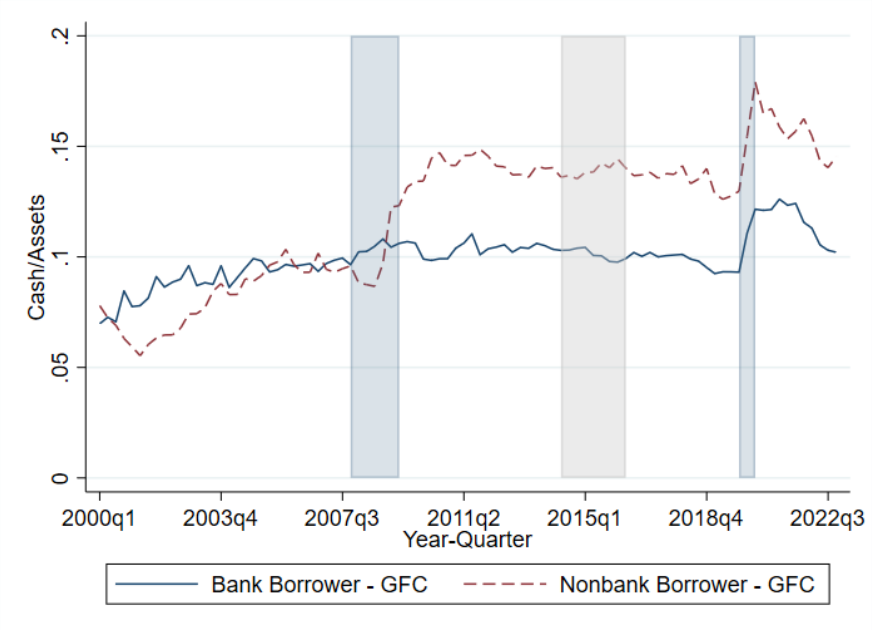
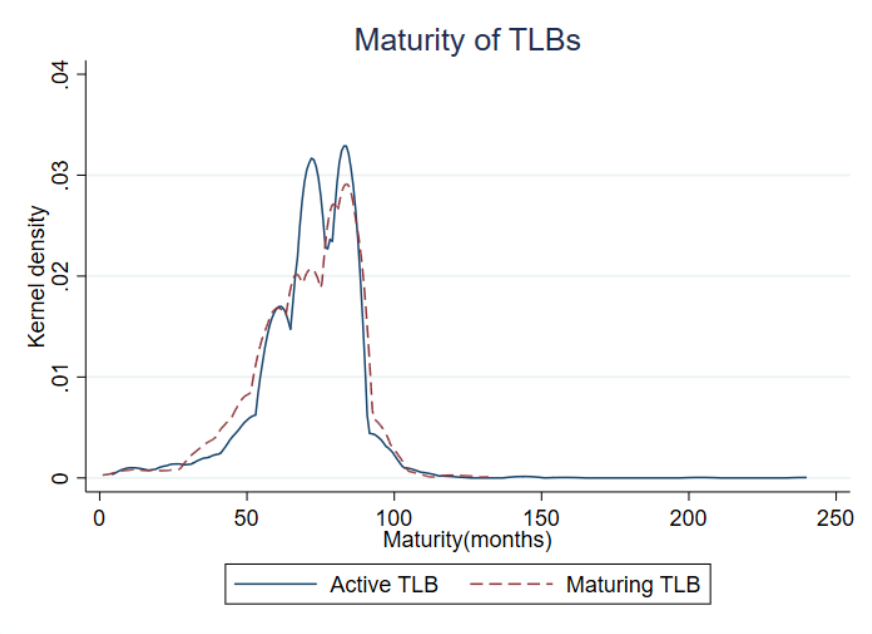


Figure OA9: Comparing the loan maturity of TLB borrowers

This figure presents the kernel density of loan maturity (in months) for TLB borrowers. Sample includes firms with a TLB outstanding 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

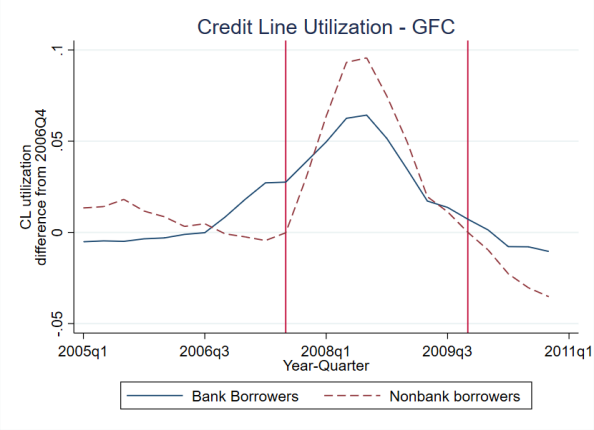
Panel C -Test of equality of distributions

	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	740.0678	0.04	0.0501	0.005

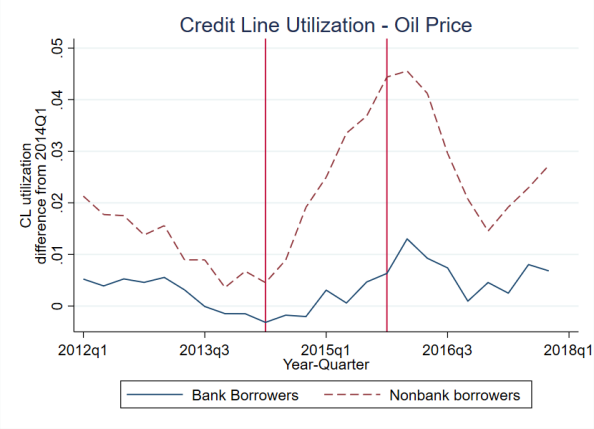
Figure OA10: Borrower Credit Line Drawdown During Market Stress

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 at least one outstanding TLB as of the quarter before the shock.

Panel A - Global Financial Crisis



Panel B - Oil Price Shock



Panel C - COVID-19

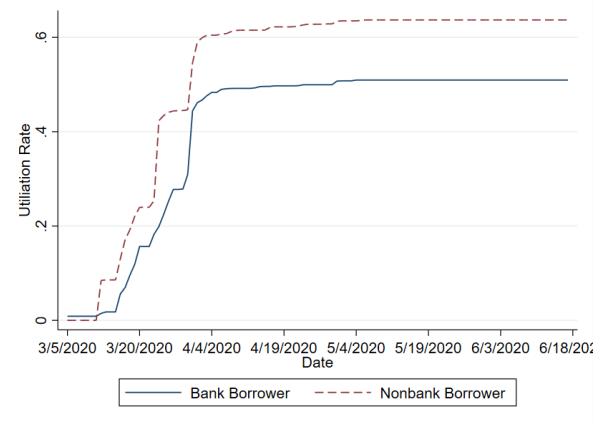
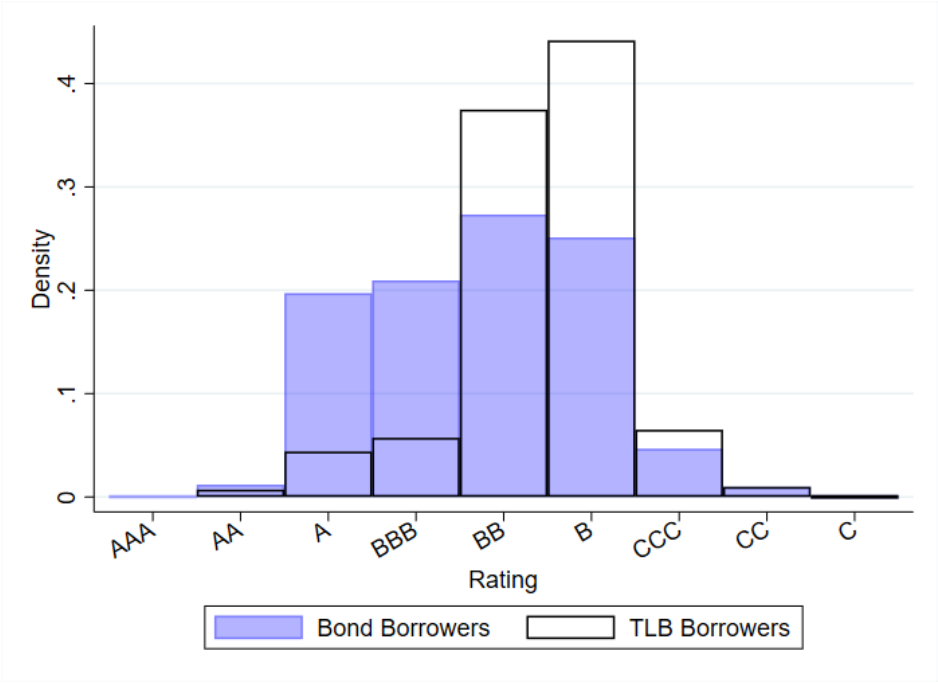


Figure OA11: Overlap - Bond and TLB Borrowers

The figure is the density plot showing the distribution of ratings for bond borrowers relative to TLB borrowers (Panel A) and bank borrowers (Panel B). *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 outstanding from banks but without any nonbank term loans outstanding.

Panel A - Overlap between bond and nonbank borrowers



Panel B - Overlap between bond and bank borrowers

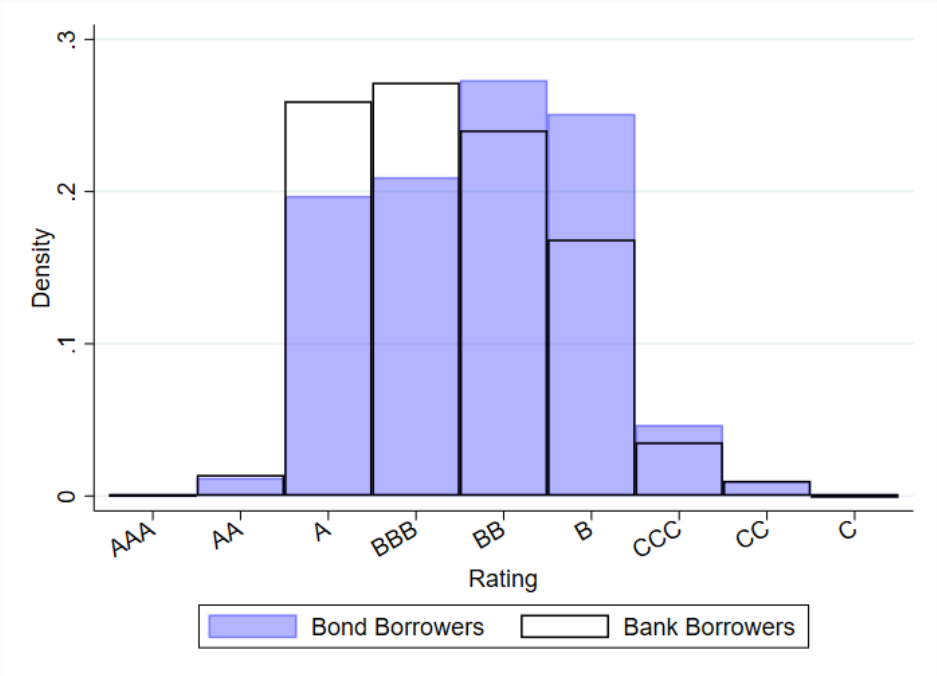
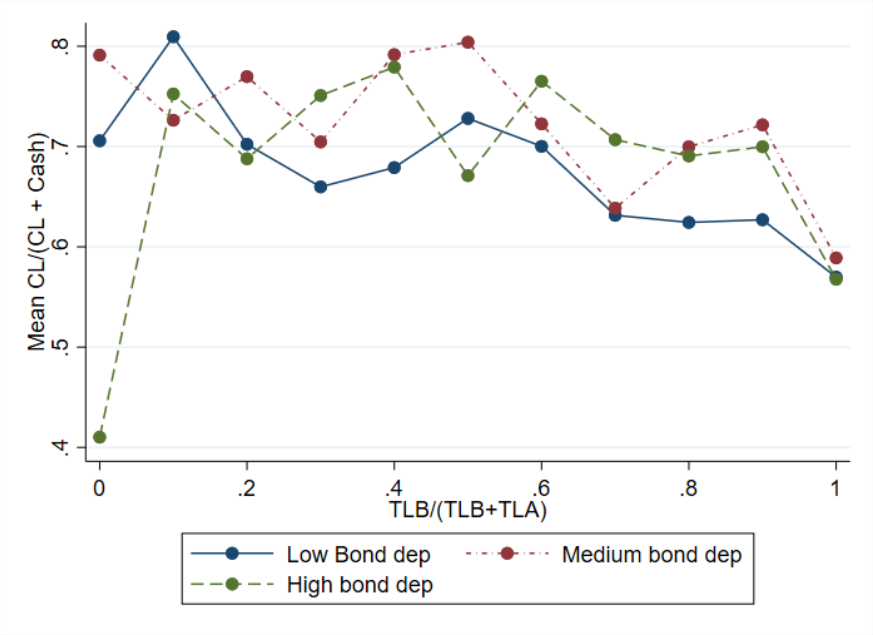


Figure OA12: Credit Line Access for Nonbank and Bond Borrowers

The figure plots the volume and cost of credit lines for borrowers with both bonds and nonbank term loan (TLB) outstanding. Borrowers are divided into three terciles based on the level of bond outstanding as a share of firm assets. The nonbank dependence is calculated as the volume of TLB 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 dependence and bond tercile.

Panel A - Average Volume



Panel B - Average Drawn Spread

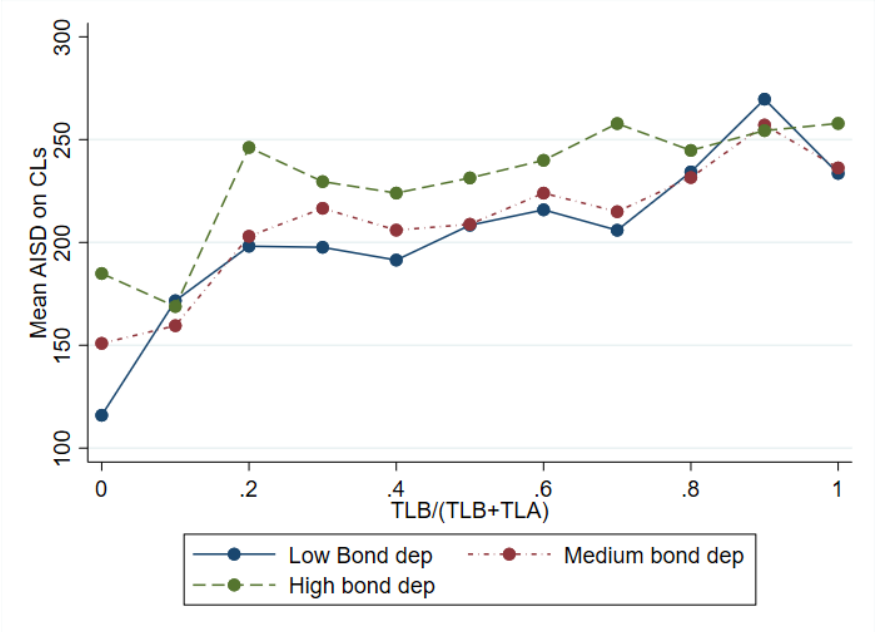


Table OA2: Credit Line Drawdowns

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 drew down on its credit line during the sample period. *Utilization* is the increase in total credit lines drawn down 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 controls 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. *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans outstanding as a share of total term loans outstanding in the given quarter for the borrower. In Panels A, C, and E 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 Panels B, D, and F we measure loan spreads in basis points. Columns 1 to 5 present results for credit lines while Columns 6 and 7 present results for bank and nonbank term loans respectively.
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, two-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. *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (TLB) outstanding as a share of total term loans outstanding in the given quarter for the borrower. 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 loan spreads in basis points. Columns 1 to 5 present results for credit lines while Columns 6 and 7 present results for bank and nonbank term loans respectively. We include borrower, borrower rating × year-quarter fixed effects, two-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. *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (TLB) outstanding as a share of total term loans outstanding in the given quarter for the borrower. 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 loan spreads in basis points. Columns 1 to 5 present results for credit lines while Columns 6 and 7 present results for bank and nonbank term loans respectively. We include borrower, borrower rating × year-quarter fixed effects, two-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 *Nonbank Dependence* is a measure of nonbank exposure of the borrower based on the volume of nonbank term loans (TLB) outstanding as a share of total term loans outstanding in the given quarter for the borrower. 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 loan spreads in basis points. Columns 1 to 5 present results for credit lines while Columns 6 and 7 present results for bank and nonbank term loans respectively. We include borrower, borrower rating × year-quarter fixed effects, two-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***	−0.276***	−0.192***	−0.196***	−0.062***	−0.055***	−0.028***	−0.032***
	(0.016)	(0.013)	(0.015)	(0.018)	(0.010)	(0.010)	(0.010)	(0.010)
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	0.71	0.71	0.65	0.65	0.65	0.65
Obs.	20,542	20,542	19,318	18,401	20,538	20,538	19,314	18,397
R^2	0.047	0.058	0.471	0.531	0.108	0.122	0.661	0.725

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 as well as borrower rating. Data is at the 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 (TLB) outstanding as a share of total term loans outstanding in the given quarter for the borrower. In Panel A we measure credit line shares at issuance. Columns 1 to 5 measure credit line as a share of total loans to the borrower. Columns 6-10 measure credit lines as a share of total liquidity (measured by cash plus credit lines). In Panel B we measure loan spreads in basis points. Columns 1 to 5 present results for all-in-drawn spread of credit lines while Columns 6-10 present results for all-in-undrawn-spread. We include two-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). In Panel A, we present results separately for borrowers with low and high exposure to the oil-gas shock based on CLO holdings where 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* and borrowers with TLB outstanding as of 2014Q1 but none maturing during the oil price shock are classified as *Active TLB*. 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. *Share unrated firms* is the share of all firms without ratings in CapitalIQ. *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.

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	0.26	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	0.55	1.00	0.50	0.51	1.00	0.50	0.04
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	0.28	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	0.54	1.00	0.50	0.51	1.00	0.50	0.02
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 $y_{i,b,t}$ is the volume and spreads on 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). 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. We include borrower fixed effects, rating fixed effects, and 2-digit SIC code 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).

	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 outstanding. 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. *Total Liabilities/Assets* is total firm liabilities to assets. *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. *Share unrated firms* is the share of all firms without ratings in CapitalIQ. *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. *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 drawn down 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	