Non-bank loans, corporate investment, and firm performance[1]

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Abstract

We examine the post-loan outcomes of firms borrowing from non-bank institutions in the US syndicated loan market. We compare non-bank borrowers with observably similar bank borrowers. For the sample of leveraged loans, non-bank borrowers have worse profitability and lower investments following loan origination. Non-banks are more likely to impose covenants restricting investments; if strict, these restrictions lead to lower profitability. Additionally, we exploit two exogenous shocks which affected the bank vis-à-vis non-bank lending environment in different ways. First, we show that the leveraged borrowers of non-banks are more severely affected than leveraged bank borrowers during the financial crisis. Second, we find that the leveraged lending guidance, which encouraged banks to reduce lending to leveraged borrowers, had an adverse effect on the profitability of the affected firms. Our findings are consistent with the view that, as the lenders of last resort, non-banks extract rents from borrowers with limited access to external finance.

Keywords: Institutional lending, Capex restrictions, Shadow banking sector, Leveraged lending guidance

JEL classification: G21, G23, G30

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1. Introduction

Recently there has been a debate about the role of non-bank lenders as key players in the syndicated loan market.[2] For instance, the leveraged loan market, which consists of syndicated loans to high risk firms, is dominated by non-bank lenders who are often the lead arrangers in the syndicate, and therefore directly negotiate with the borrowers. In 2007 the size of the leveraged loan market was $710 million, and it increased to $1.3 trillion in 2017. Given the unregulated nature of the shadow banking sector, it is important to understand whether non-bank lenders pose a significant risk to the borrowing firms, and through this channel, the broader economy. Despite the dramatic increase in non-bank lending in syndicated loan market, little is known about the implications of non-bank lending on borrowers' post-loan outcomes. In this paper, we examine the implications of non-bank lending for the borrower's real outcomes, including operating performance and investment (capital expenditure and R&D) behaviour, following the loan origination. For our analysis, we use the US syndicated loan market as the setting.[3]

Theoretical models highlight banks' special role as information producers and effective monitors for borrowers' investment activities mitigating potential conflicts of interests between managers and creditors in the presence of asymmetric information (e.g., Diamond, 1984; Besanko and Kanatas, 1993; Holmstrom and Tirole, 1997; Boot, 2000). At the same time, regulators are concerned about the stability of the banking sector. Motivated by the stability concern, regulators have taken steps such as issuing the leveraged lending guidance which aims to reduce the exposure of banks to the riskier leveraged loan sector. If banks reduce their lending in the leveraged loan market, and non-banks (such as hedge funds, private equity funds and venture capital firms) fill the void, what would be the potential consequences for the affected borrowers?

Non-bank lenders are mostly active in the leveraged loan market, where they extend loans to borrowers with limited access to external finance. In this market segment, non-banks have been viewed as the 'lenders of last resort', as they offer loans at a higher interest rate than bank lenders and mainly lend to

[2] For instance, see the FT article, "*Beware threat of low-quality debt and opaque shadow banks*", the *Financial Times*, March 6th, 2018.

[3] Following Lim et al. (2014) our definition of non-bank institutions includes distressed (vulture) fund, finance company, CDOs, hedge fund, insurance company, prime fund, mutual fund, pension fund, institution investor-other and other according to the DealScan categories. Further, we define a loan as 'non-bank loan' if there is at least one non-bank as a lead arranger in a syndicate.

high risk firms that are likely to be rejected by banks (Lim, Minton, and Weisbach, 2014).[4] This leads to the possibility that non-bank lenders may further exploit their position as the "lenders of last resort", and extract rents through imposing explicit or implicit restrictions on the borrowers.[5] For instance, they can impose restrictions on capital investment and R&D activities to minimize potential risk-shifting incentives following the loan origination (Jensen and Meckling, 1976; Smith and Warner, 1979). Consequently, the borrowers may not be able to take full advantage of investment opportunities, and experience poor operating performance. We therefore hypothesise that non-banks have a negative impact on the outcomes of leveraged borrowers.

In this paper, we test the above hypothesis. For our analysis, we use data from the US syndicated loan market during the period of 1997-2016. In order to investigate the potential channels through which non-bank lenders can influence post-loan borrower outcomes, we study the terms of the loan contract for explicit restrictions imposed by non-bank lenders and examine the implications of these restrictions for the borrowers. Additionally, we exploit an unexpected credit supply shock in the form of the financial crisis of 2007-08, to study the differential effect of bank and non-bank loans during times of credit dry-up. Finally, we study how the leveraged lending guidance, which encouraged banks to reduce their exposure to the leveraged loan sector, affected the real outcomes of borrowers.

A key issue in our analysis is that the average bank borrower is fundamentally different from the average non-bank borrower. Several studies find that non-bank borrowers are riskier and less profitable (see e.g., Carey, Post, and Sharpe, 1998; Denis and Mihov, 2003; Chernenko, Erel, and Prilmeier, 2018). In order to enhance the comparability of bank and non-bank borrowers, we use a propensity score matching technique, and identify a control group of bank borrowers, who are observably similar to the non-bank borrowers. We use time-varying industry fixed effects in order to control for unobserved heterogeneities at the industry level. However, our results are still potentially affected by unobservable differences at the borrower level. In order to address this issue, we exploit two separate exogenous shocks, the crisis of 2007-

[4] There is some anecdotal evidence about how institutional lenders, for instance, hedge funds, have been acting as lenders of last resort. See the *NY Times* article, "*Bank said No? Hedge funds fill a void in lending*", June 8th, 2011).

[5] An article in *NY Times* argues that hedge funds acting as lenders are dramatically changing the landscape of the loan markets. "Hedge funds do what others are not willing to do," says James Sprayregen, a legal advisor. "They are willing to take more risk for more return. And they are agnostic about outcomes as long as they are protected." See the *NY Times* article, "*Hedge fund lending to distressed firms makes for gray rules and rough play*". July 18th, 2005.

08 and the leveraged lending guidance, each affecting the landscape of bank lending vis-à-vis non-bank lending differently.

Given that non-bank lending is mainly concentrated in the leveraged loan market, we classify our borrowers into leveraged and non-leveraged sub-samples. First, we consider the leveraged loan sub-sample (the riskier borrowers). In terms of post-loan origination performance, we find that non-bank borrowers have lower return on assets (*ROA*), after controlling for firm-specific and contract-specific characteristics. More specifically, on average non-bank borrowers have 2% lower *ROA* annually, relative to observably similar bank borrowers in the three years after the origination of the loan. Next, we consider the non-leveraged borrower sub-sample. In the non-leveraged borrower sub-sample, non-bank loans are associated with negative post-loan performance, before controlling for the terms of the contract. However, once the contract terms are included in the regressions, the effect of non-banks becomes smaller in magnitude and statistically insignificant. This finding suggests that there is no statistically significant difference between banks and non-banks in terms of how they influence post-loan performance in the non-leveraged loan market.

If the contract terms are considered to be a proxy for the lender's monitoring technology (e.g., Rajan and Winton, 1995), our results suggest that differential monitoring incentives of banks and non-banks can explain the differences in post-loan outcomes in the non-leveraged sub-sample, but not in the leveraged sub-sample. This interpretation is consistent with the notion that non-banks exploit their role as the 'lender of last resort' of the risky borrowers in the leveraged loan market. In contrast, non-banks do not have the same bargaining power with the non-leveraged borrowers as they do with the leveraged borrowers, since non-leveraged borrowers are more likely to have access to funds from other sources. If the effects of non-banks were equally strong in the leveraged and the non-leveraged borrowers, it would indicate that differential monitoring between banks and non-banks explain the post-loan differences in outcomes of their borrowers.

In terms of post-loan investments, we find that for our sample of leveraged loans, non-bank borrowers have lower post-loan capital expenditure. The magnitude of the investment effect might appear small, but still it is significant: on average, non-bank borrowers invest 50 basis points less annually (which

accounts for 7.5% of the capital expenditure of a leveraged borrower, on average), compared to observably similar bank borrowers. Consistent with the finding for *ROA*, we find that there are no differences in post-loan investment activities of bank and non-bank borrowers, for our sample of non-leveraged borrowers.

As we investigate the terms of the contract, we find that non-banks have higher spreads, contain less covenants and more likely to be secured by collateral. These findings are consistent with the results from previous studies, i.e., Lim, Minton, and Weisbach (2014), and Chernenko, Erel, and Prilmeier (2018). However, different from these prior studies, we dig deeper into the loan contract terms and find that non-banks are 10.8% more likely to impose a specific type of covenant, i.e., a restriction on post-loan capital expenditure, in the leveraged loan contracts, relative to banks. This finding rings true with practitioner intuition: in a letter defending its engagement in the leveraged loan market, Credit Suisse Asset Management, while acknowledging that leveraged loans have looser covenants, wrote, "leveraged loans still have a variety of covenants and other investor protections".[6] Our finding of higher likelihood of non-banks imposing capital expenditure restriction on borrowers in the leveraged loan market could be interpreted as a way that these lenders protect their interests and minimize the risk-shifting incentives of high risk borrowers.

Next, we investigate whether the restrictions on capital expenditure induces lower investment in borrowers (as in Nini, Smith, and Sufi, 2009), and positive or negative effect on future operating performance. For bank borrowers, we do not find a statistically significant effect of the capital expenditure restrictions on future investment or operating performance *ROA*. For non-bank borrowers we find a non-monotonic effect. If the covenant on capital expenditures is not strict, the non-bank borrowers increase their investment and improve their post-loan operating performance. This indicates that the increase in investments with a non-strict covenant is beneficial to the borrowers; it can curb risk-shifting without having a negative impact on borrower performance. However, if the covenant is strict, investment is lower, and this seems to lead to lower performance. Notably, a strict restriction on capital expenditures does not lead to lower post-loan performance in bank borrowers. This finding provides evidence on how banks and non-banks differ in terms of the potential consequences of strict restrictions on capital expenditures.

[6] See the FT article, "*Credit Suisse defends loans to indebted companies*", the *Financial Times,* 3rd October 2018.

Additionally, we examine whether an exogenous shock to credit markets, i.e., 2007 financial crisis, affect bank and non-bank borrowers differently. We would expect that bank relationships may be more valuable during the times of economic downturns due to banks' access to regulatory subsidies and more stable funding. Therefore, assuming that it is difficult to switch borrowers during crisis periods (e.g., Slovin, Sushka, and Polonchek, 1993), non-bank borrowers would be more severely affected. If a firm borrows from a bank or a non-bank during the crisis is an endogenous decision. To mitigate this endogeneity issue, we use an intention-to-treat analysis (similar to Frydman and Hilt, 2017; von Beschwitz, 2017), in which we define a firm to be a bank (control) or a non-bank (treated) borrower depending on who it borrows from before the onset of the crisis, regardless of who it borrows from during the crisis. Considering that the matching between the borrower and lender prior to the crisis is not random either, we also control for non-crisis period differences across bank and non-bank borrowers. This specification suggests that any residual differences during the crisis period between the bank and non-bank borrowers may be interpreted as a causal effect.

Our results show that firms which borrowed from non-banks pre-crisis, are more severely affected by the credit supply shock compared with the observably similar firms which borrowed from banks pre-crisis, in terms of lower capital expenditure and worse performance during the crisis period. This finding is consistent with our prediction that bank relationships may be more valuable than relationships with non-banks during economic downturns. As before, these results are concentrated in the leveraged loan sub-sample. This lends support to our argument that non-bank borrowers, especially the risky ones, have less access to external finance, and are therefore more vulnerable to an exogenous credit supply shock. Since we use the pre-crisis matching of borrowers and lenders, we interpret our results as non-banks being less supportive of their borrowers during the credit supply shock.

Further, we consider the effects of the leveraged lending guidance. In March of 2013 the Office of the Comptroller of the Currency (OCC), Board of Governers of the Federal Reserve System (Board) and the Federal Deposit Insurance Corporation (FDIC) jointly issued guidance to banks on the appropriate origination of leveraged lending[7], and further clarifications were issued in November, 2014[8]. The guidance

[7] Details can be found here: https://www.federalreserve.gov/supervisionreg/srletters/sr1303a1.pdf.
[8] Details are here: https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20141107a3.pdf.

discouraged banks from issuing loans to the leveraged (high risk) borrowers, pushing these borrowers towards non-banks (Kim, Plosser, and Santos, 2018). Therefore, we expect that the prospects of these borrowers would be adversely affected following the guidance, as potentially they would turn to non-banks who would extract rents in their role as the lenders of last resort. In order to test this hypothesis, we again resort to the intention-to-treat analysis. Consistent with our prediction, we find that high risk firms which borrowed from banks before the guidance, become less profitable and invest less in capital expenditures, following the guidance. These findings provide further evidence about the difference between banks and non-banks in terms of their impact on post-loan performance of high-risk borrowers. Consistent with Kim, Plosser and Santos (2018) the effects of the guidance are observed only after the clarifications are issued in November 2014.

Our study adds to the growing literature on non-bank lending. Prior studies mainly focus on differences in loan pricing and borrower firm characteristics between bank and non-bank lenders. Nandy and Shao (2010) document that loan spreads in non-bank loans are higher than those in bank loans. Their findings suggest that this higher spread provides a compensation for the non-bank lenders as they are expected to have relatively higher information asymmetry about the quality of borrowers than bank lenders. Further, they report that post-loan, credit-worthiness of non-bank borrowers declines more often than those of bank borrowers. Chernenko, Erel, and Prilmeier (2018) examine characteristics of firms that borrow from non-bank lenders. They use a random sample of publicly traded middle market firms over the period 2010-2015. Similar to the findings by Nandy and Shao (2010), and Lim, Minton, and Weisbach (2014), they report that the cost of borrowing from non-bank lenders is higher. They find that loan terms with non-bank lenders contain fewer financial covenants than those with bank lenders. Their results also show that the non-bank borrowers are relatively smaller than firms that rely on bank financing, and they engage in more R&D activities and have relatively poor performance. In contrast to these studies, we aim to deepen our understanding of non-bank lending by examining the real post-loan outcomes of borrowers.

Our analysis contributes to the literature in several ways. First, for our sub-sample of leveraged loans, we show that non-bank borrowers have worse operating performance and lower investment than bank borrowers, following loan origination. In their sample of middle-market firms, Chernenko, Erel, and Prilmeier (2018) also find that non-bank borrowers have worse operating performance, but the relationship

is insignificant after controlling for borrower characteristics. We find this to be the case for our sample of non-leveraged loans, but when we consider the sub-sample of the leveraged loans, controlling for observable characteristics does not explain the negative effect of non-banks on borrower performance. Next, we show how differences in loan contract terms can explain the differences in post-loan performance of bank and non-bank borrowers. Undocumented in previous studies, we show that non-banks are more likely to impose the specific covenant which limits capital expenditure and this restriction may have negative consequences for the non-bank borrower's post-loan outcomes. Lim, Minton and Weisbach (2014) find that non-banks charge higher spreads because their borrowers are more likely to be financially constrained. We further find that the relative bargaining power not only determine the pricing, but also the non-pricing terms, and there are implications for the borrowers' real investment activities and post-loan performance. Nini, Smith, and Sufi (2009) find that covenant restriction on investments can improve the bank borrowers' subsequent performance and valuation, while we find that the improvement will disappear if the covenant is too restrictive in the case of non-bank borrowers (but not so, in the case of bank borrowers).

Our results also complement the findings from Irani, Iyer, Meisenzahl, and Peydro (2018). Their results highlight the negative effects of non-bank exposure on loan market outcomes (price volatility), while we provide novel evidence on how non-bank lending can lead to negative consequences in real outcomes. Furthermore, we contribute to the debate on the impact of a macro prudential policy, i.e., the US leveraged lending guidance. Following this guidance, banks retreated from the leveraged loan market, leaving a void to be filled by the non-bank institutions (Schenck and Shi, 2017; Kim, Plosser, and Santos, 2018). Prior research shows that this guidance indeed reduced the leveraged lending by banks, but it pushed the leveraged loans to the non-banks who are less subject to the regulation (consistent with a regulatory arbitrage prediction in Plantin, 2014; see also Boot and Thakor, 2014; Stein, 2010), and the non-banks expanded their lending by borrowing from banks. Hence, there has been a debate on whether tightening the macro-prudential regulation on bank capital induces a shift away from the banking sector to the shadow banking sector because of regulatory arbitrage; this shift leaves the system equally risky and can render the regulation ineffective. Our study contributes to this debate by showing that non-bank lenders in the leveraged loan market are associated with negative consequences for borrowers, pointing to a more negative effect of the regulation (as opposed to a neutral effect).

Finally, our study contributes to the literature which studies the role of banks as special lenders. A large theoretical literature posits that bank financing is special (Diamond, 1984; Ramakrishnan and Thakor, 1984; Fama, 1985; Boyd and Prescott, 1986; Diamond, 1991). James (1987) and Lummer and McConnell (1989) show empirically that bank financing adds value to borrowers, relative to alternate forms of external financing, e.g., public debt. These studies generally compare bank loans to public debt or equity financing and thus, some of their results may be driven by the different types of markets, e.g. public versus private markets. Our study differs from these as we compare private debt (loans) extended by banks and non-banks; so, the observed differences in real outcomes, i.e., capital expenditures, are driven by differences in the type of institution (bank or non-bank) making the loan, not the type of external financing, i.e., public versus private debt.

The remainder of this paper is organized as follows. Section 2 provides the hypothesis statement. Section 3 discusses the data, sample construction and summary statistics. Section 4 provides information of the research design. Section 5 discusses empirical findings, and Section 6 concludes.

2. Hypothesis statement

Previous research documents (and we verify in our sample) that borrowing from non-banks is expensive in terms of spreads, as well as use of collateral (e.g., Lim, Minton, and Weisbach, 2014; Nandy and Shao, 2010; Chernenko, Erel, and Prilmeier, 2018). This may be due to a higher cost of capital for non-banks, as they have lower access to stable funding sources like the deposit market or lower access to government guarantees. So, why do firms borrow from non-banks? Lim, Minton, and Weisbach (2014) propose that non-banks assume the role of lenders of last resort and extend loans to borrowers who are likely to be rejected from the traditional banking sector. This allows non-banks to extract rents and demand higher spreads. The direct implication is higher cost of capital for the borrower of the non-bank, which would potentially manifest itself in lower operating performance and lower investment (relative to borrowers of banks).

We highlight below two channels through which non-banks in the leveraged loan market can negatively affect borrower performance and investment:

As lenders of last resort, non-banks may impose stricter non-price terms (as well as higher spreads) in the leveraged loan market. These restrictions may be value-reducing from the borrower's point of view but

makes debt repayments more secure. One such restriction would be to limit capital expenditure, as debtholders do not benefit from the upside of risky investments. These restrictions, if strict, would lead to under-investment, which negatively affects performance. Debt, whether issued by banks or non-banks, has the same payoff structure characterised by limited upside; increasing borrower risk does not benefit the debt-holder, but negatively affects the probability of repayment. Then, bank lenders have the same incentives to impose these restrictions as the nonbank counterparts (holding the risk of the borrower constant), in order to lower the risk-taking of the borrower. However, the lender of last resort role of the non-bank lender potentially allows it to impose relatively more restrictive limits.

Another potential channel may arise since banks and non-banks are financed differently, which leads to differential ability in terms of supporting their borrowers during times of crisis. Lending relationships are valuable for a borrower (e.g., Petersen and Rajan, 1994), as it is not easy to switch to a new lender (Slovin, Sushka, and Polonchek, 1993). Especially in times of economic downturns, lenders would support borrowers with ongoing relationships (some industry and sector-level evidence in Giannetti and Saidi, 2017 and De Jonghe, Dewachter, Mulier, Ongena, and Schepens, 2018, respectively). The traditional banking sector is subsidized by implicit or explicit government guarantees and receive additional help during crisis times (such as the TARP), which allows banks to support their borrowers during the times of economic downturns (e.g., Gatev and Strahan, 2006). Non-banks do not have access to these subsidies. Beyhaghi, Nguyen, and Wald (2018) show that both banks and non-banks increasingly exited their investments in syndicated loan market after the crisis. However, they find that non-banks have significantly higher likelihoods of exit during the post-2007 period (see also, Peek and Rosengren, 2016). This suggests that a relationship with a non-bank lender may be less valuable during the times of crisis. A sudden credit supply shock would then have a bigger adverse effect on borrowers of non-banks, compared to bank borrowers, who are expected to be more resilient.

3. Data, sample construction, and summary statistics

For our empirical analysis, we collect information on all facilities issued to US firms during the period 1997-2016 from the Loan Pricing Corporation (LPC) Dealscan database. We further exclude facilities issued to the financial service firms with SIC codes from 6000 to 6999. Firm-level information comes from Compustat. The two datasets are then merged by the Compustat-Dealscan link file provided by

Chava and Roberts (2008) and Keil (2018). The merge gives us a sample of 36,138 facilities. We conduct our analysis on the firm level, so we aggregate the data to the firm-year level. This results in a final sample of around 21,433 firm-year observations.

3.1. Definition of non-bank and bank lenders

Following Lim, Minton, and Weisbach (2014) we define a lender to be a non-bank if it is categorized as any of these in Dealscan: distressed (vulture) fund, finance company, CDOs, hedge fund, insurance company, prime fund, mutual fund, pension fund, institution investor-other and other. We create a dummy, *Non-bank*, which equals one if any of a facility's lead arrangers is a non-bank, and zero if all its lead arrangers are banks. Following Lim, Minton, and Weisbach (2014) we define a lender to be a bank if it is categorized as any of these in Dealscan: US Bank, African Bank, Asian-Pacific Bank, Foreign Bank, Eastern Europe/Russian Bank, Middle Eastern Bank, Western European Bank, and Thrift/S&L.[9]

3.2. Definition of leveraged loans

The leveraged loans make up the bulk of the non-bank lending.[10] Leveraged loans are typically riskier, with higher spread, and made to those smaller, younger, riskier firms, arguably with higher degree of information asymmetry. In our study, we follow the Dealscan market segment classification. The LPC defines a leveraged loan as "loan to a borrower rated BB+/Ba1 or lower with pricing thresholds based on market trends which change over time".

3.3. Contract terms

All-in-drawn is the loan price calculated from the reported spreads and fees (Lim, Minton, and Weisbach, 2014; Berg, Saunders and Steffen, 2016). *Secured* is a dummy that equals one if the facility contains a collateral, and zero otherwise. *No. of covenants* is the total number of all covenants in a deal. *Maturity* is the tenor of the loan in months. *Ln (Maturity)* the logarithm of *Maturity. CapexRes* is a dummy

[9] There may be some less common lending identities in the loan syndicate, for instance, corporations, leasing companies, trust companies, etc. If these uncommon lending identities, who are not non-banks or banks according to our definition, are the only lead arrangers in a facility, we drop the facility.

[10] In our merged sample with Compustat at deal level, 74.3% of the loans that contain at least one non-bank lead arranger are leveraged loans.

that equals one if a facility contains a covenant on maximum of capital expenditure, and zero otherwise.[11] *Term Loan* is a dummy that equals one if the facility is a term loan, and zero otherwise.

3.4. Firm-specific characteristics

ROA is the ratio of income before extraordinary items over lagged total assets and is the main proxy for profitability. Firm's investment opportunity is measured by *Tobin's Q*, the market-to-book ratio in term of assets. Capital expenditure, and R&D (research and development expenditure) are scaled by the lagged total assets (*CAPEX* and *R&D*). *Size* is the logarithm of the total assets. *Leverage* is the total liability, scaled by the lagged total assets. *Cash* is the ratio of cash and short-term investments to the lagged total assets. *Tangibility* is the ratio of net property, plant and equipment to the lagged total assets.

3.5. Summary statistics

Table 1 presents the summary statistics of our variables for the sub-samples based on market segments, i.e., leveraged and non-leveraged loans, and lender types, i.e., bank and non-bank.[12] We winsorize the firm characteristics at the 2nd and 98th percentile.

[Insert Tables 1]

First, we consider the loan characteristics. Panel A of Table 1 presents loan contract terms for leveraged and non-leveraged sub-samples. We observe that both in the leveraged and non-leveraged borrower sub-samples, non-banks make smaller loans, and are more likely to be term loans. Leveraged loans are almost always secured by collateral; 92.3% of non-bank loans and 80.7% of bank loans are secured in this market segment. By comparison, non-leveraged loans are less frequently secured; 46.2% of non-bank loans and 22.5% of bank loans are secured in this market segment. In both market segments, non-banks appear to impose less covenants (e.g., on average non-banks impose 1.67 covenants compared to 1.77 imposed by banks, in the leveraged loan market segment). Despite less use of financial covenants in non-bank loans, a previously undocumented observation is that non-bank-loans, in both market segments,

[11] We illustrate the use of the *CapexRes* covenant with an example in the Appendix.
[12] The table for summary statistics for the whole sample, which includes both leveraged and non-leveraged sub-samples, is presented in the Internet Appendix.

are more likely to contain covenants which specifically restrict future investments. Finally, in both market segments, non-banks charge higher spreads. The average spread is 362 basis points for the non-bank loans, while it is 281 basis points for the bank loans, in the leveraged loan market segment.

Next, we compare the firm characteristics across bank and non-bank borrowers, in the two market segments. Panel B of Table 1 presents firm-specific characteristics for leveraged and non-leveraged loans. We observe that leveraged borrowers are smaller in size than non-leveraged borrowers, and within each market segment, non-bank borrowers are smaller in size. In addition, non-bank borrowers are less profitable than bank borrowers in each market segment. The mean *ROA* is -4.4% for the non-bank borrowers, while it is 0.1% for the bank borrowers in the leveraged loan market segment. While the non-leveraged borrowers are relatively more profitable, within market segment differences between bank and non-bank borrowers appear to be even more stark; the mean *ROA* is -3.4% for the non-bank borrowers, while it is 6.0% for the bank borrowers, in the non-leveraged loan market segment.

4. Research design

4.1. Matching

To conduct a sensible comparison of the bank and non-bank borrowers, we need to pick a pair of borrowers with similar pre-loan characteristics, but one borrows from a bank and another from a non-bank institution. To do this matching, we begin with the universe of loans in DealScan for the relevant period (1997-2016). We then match bank and non-bank borrowers on firm-specific variables measured in the 3 years prior to the loan initiation. We use the pre-loan *Size*, *Leverage*, *Tobin's Q* and *ROA* to calculate the probability that a borrower will borrow from a non-bank (using a probit model) and use the propensity score to perform matching (nearest neighbor method). *Size* and *Leverage* capture the riskiness of the borrower, while *ROA* captures its profitability. Finally, we include *Tobin's Q* as a matching variable as it is a forward looking variable, and captures market expectations (so, it includes information which may not be contained in the financial statements). For the sub-sample of leveraged borrowers, we further impose the requirement that the non-bank borrower is matched with a bank borrower from the same industry (the industries are classified by the Fama-French 12 industries) and issuing the loan in the same year. For the sub-sample of non-leveraged borrowers, restricting the matched loan to come from the same industry and

year makes the match quality poor, due to the small size of the sample.[13] We match with replacement, so multiple non-bank borrowers may be matched with a single bank borrower.

[Insert Table 2]

Table 2 shows our test results of balance property before and after the matching. Following Imbens and Rubin (2015), we use the mean differences normalized by the standard deviation and the variance ratios to examine the covariate balance. A well-balanced sample would have the standardized differences close to zero and the variance ratios close to one. First, we consider the leveraged borrowers. The standardized differences across all matching variables shrink in magnitude after the matching. For example, the standardized difference of *Leverage* between the non-bank and bank loans is -0.270 before matching, while it becomes -0.037 post-matching. The variance ratios span a smaller range around 1; pre-matching, the variance ratios lie in the range, 0.783-1.004, whereas post-matching the variance ratio lies in the range 0.921-1.023. Similarly, in the non-leveraged sample, the balance improves both in terms of standardized differences and variance ratios. The variance ratios lie in the range, 0.171-0.562 pre-matching, and 0.758-0.942 post-matching. Overall, matching improves balance in both sub-samples (leveraged and non-leveraged), but the improvement is much starker in the leveraged borrower sub-sample (which is the sub-sample of interest for most of our analysis).

4.2. Estimation

We estimate the following regression model:

$$Y_{i\,post} = \beta\ Non\text{-}bank + \gamma X_{i\,pre} + \pi Z_{it} + \alpha_{jt} + \epsilon_i \qquad (1)$$

Y is the dependent variable which can be the post-loan outcome (i.e., borrower's profitability, capital expenditure and R&D expenditure) or a loan contract term. For post-loan outcomes, we take their average over the 3 years following the loan initiation, *[t+1, t+3]* (or any of the 3 years for which data is available), where *t* is the year of the loan issuance. The key variable of interest is the $Non\text{-}bank$ which equals 1 if one of the lead banks is a non-bank; *X* is the vector of control variables at the firm-level; *Z* is

[13] We do the more restricted matching for the non-leveraged borrowers, and put the results in the Appendix. The regression results are qualitatively similar.

the vector of control variables at the contract level. For all regressions, we include the firm-level control variables: lagged average of *Size*, *Leverage*, *Cash, ROA*, *Tobin's Q*, *Tangibility*, *CAPEX*, *and R&D*; contract term control variables: *Term Loan*, *All-in-drawn*, *No. of covenants*, *Ln (Maturity)*, and *Secured*. α_{jt} is the industry × year fixed effects in order to control for time-varying differences across industries. Firm-level controls are averaged over the three years previous to the initiation of the loan, *[t-1, t-3]* (or any of the 3 years for which data is available). We estimate Equation (1) using OLS and cluster standard errors at the firm-level.

Regressions for the borrower post-loan outcomes are at the firm-year level, while regressions on loan terms are at the deal level. If the dependent variable is binary, we use the linear probability model. Our regressions have a cross-sectional structure similar to Dass and Massa (2011), Delis, Kokas, and Ongena, (2017), and Biswas, Gómez, and Zhai (2017).

5. Results

We focus our analysis on the set of propensity score matched regressions.[14]

5.1. Post-loan firm performance of borrowers with non-bank lenders

Table 3 presents the regression results for the borrower post-loan performance, measured by *ROA* and *Tobin's Q*.

[Insert Table 3]

In columns (1) to (3), we report the regression results for post-loan performance, *ROA*, for our sub-sample of leveraged loan borrowers. In column (1) we do not include any firm-specific or contract-specific control variables, but we control for the industry-year fixed effects. The coefficient on the *Non-bank* is negative and statistically significant. This indicates that non-bank borrowers have lower future profitability, after the origination of the loan. Non-bank borrowers have, on average, 2.6% lower *ROA*, post-loan, compared to bank borrowers. The leveraged borrowers are, on average, unprofitable (with a mean *ROA* of

[14] The whole sample (un-matched) regressions are reported in the Internet Appendix (results are qualitatively similar). Additionally, most of our regressions are in sub-samples, classified as leveraged and non-leveraged. The mixed sample regressions, containing both the leveraged and non-leveraged borrowers, are reported in the Internet Appendix.

-0.86%). This indicates that after borrowing from a non-bank lender, these marginally unprofitable borrowers may become severely loss-making. In column (2), we control for the firm-specific characteristics. We find that the coefficient on the *Non-bank* is still negative and statistically significant. This result indicates that little of the negative effect of non-bank lending can be explained by the differences in the firm-specific characteristics in the leveraged loan sub-sample. In column (3), we also control for the contract terms. We find that the *No. of covenants* is positively related to post-loan profitability; this is consistent with the notion that higher number of covenants can be a proxy for higher monitoring incentives, which help to improve the post-loan performance. We also find that the coefficient of *Secured* is negative and statistically significant. After we include the contract term controls, the coefficient on the *Non-bank* is further reduced by a fraction of 23.1%. This indicates that differences in the contract terms can explain a part of the negative effect of non-bank lending on future profitability. After including both firm-specific and contract-specific controls, we observe that on average non-bank borrowers have a *ROA* of 2.0% lower than the bank borrowers for our leveraged loan sub-sample.

Several papers posit that non-price terms of the contract are important determinants of the lender's monitoring incentives (e.g., Rajan and Winton, 1995). In this view, our findings indicate that some, but not all, of the negative association between post-loan performance, *ROA,* and borrowing from non-banks, *Non-bank*, can be explained by differential monitoring between banks and non-banks. In column (4) to (6), we present the results for the non-leveraged loan borrowers. Column (4) only includes the industry-year fixed effects and no additional controls. Our results show that the non-bank lending is related to lower future profitability. On average, in the non-leveraged sub-sample, a non-bank borrower has 4.5% lower *ROA* than bank borrowers, following loan initiation. The effect is statistically significant at the 1% level. The magnitude of the effect appears even larger than the magnitude in the leveraged sub-sample (4.5% compared to 2.6%). However, note that the non-leveraged borrowers are relatively more profitable than the leveraged borrowers, on average. Taking the lower profitability of the leveraged borrowers into account, proportionally (as opposed to absolutely), the magnitude of the effect is smaller for the non-leveraged sub-sample. In column (5), after we include firm fundamentals as controls, the size of the coefficient is reduced by 53.3% but remain statistically significant at the 5%. Further in column (6), after we add on the contract terms as controls, the magnitude of the coefficient is further reduced by 62%, and it becomes statistically

insignificant. These results indicate that after we control for firm-specific differences across borrowing firms and monitoring incentives across lenders (i.e., banks and non-banks), there is no significant difference in post-loan profitability between non-leveraged borrowers of banks and non-banks.

Finally, in columns (7) and (8), we present the results using an alternate proxy for profitability, *Tobin's Q*. Consistent with our previous results, we find that in column (7) for our leveraged sub-sample, non-bank lending is associated with lower future performance, *Tobin's Q*, but it has a little distance to be statistically significant. It is not significant in the non-leveraged sub-sample in column (8) either.

5.2. Post-loan investment behavior of borrowers with non-bank lenders

Table 4 presents the regression results for the post-loan firm investment, i.e., *CAPEX* and *R&*D.

[Insert Table 4]

In columns (1) and (2), we present the results for the leveraged loan borrowers. Column (1) shows that the presence of a non-bank lead arranger is related to 0.5% lower *CAPEX*. The mean of the post-loan *CAPEX* is 5.52% in the matched sample for leveraged loan borrowers, meaning that the effect accounts for 9% of the average *CAPEX*. In column (2), we find that the *Non-bank* is negatively and statistically significantly associated with *R&D*, but the magnitude of the effect is relatively smaller. Columns (3) and (4) show the estimation results for the non-leveraged loan borrowers. The coefficient on *Non-bank* is statistically insignificant in both the *CAPEX* and *R&D* regressions (columns (3) and (4), respectively). These results indicate that non-bank borrowers have lower post-loan investment; the effects are concentrated in the leveraged loans sector.

5.3. Contract terms on non-bank loans

In this section, we investigate whether banks and non-bank institutions are different in designing the contract terms, and essentially confirm previous results from Nandy and Shao (2016) and Chernenko, Erel, and Prilmeier (2018). Table 5 presents the regression results for *All-in-drawn*, *No. of covenants*, and *Secured*.

[Insert Table 5]

In column (1) to (3), we present the results for the leveraged deals. In column (1), we find that non-bank loans have higher spreads, the coefficient on the *Non-bank* is 62.5 bps and highly statistically significant. The magnitude of coefficient is much smaller than the one in Chernenko, Erel, and Prilmeier (2018) with 187 bps in their full model (middle market borrowers who borrow directly from non-bank institutions rather than syndicated loan market), while it is comparable to the one in Lim, Minton, and Weisbach (2014) with 53.9 bps in their full model (leveraged borrowers in the syndicated loan market, same as us). In column (2), we find that contracts with non-bank lenders contain fewer financial covenants. This is consistent with the finding by Chernenko, Erel, and Prilmeier (2018) that non-banks rely less on the covenants to exert monitoring. In column (3), we observe that the coefficient for *Non-bank* is 0.107 and statistically significant suggesting that contracts with non-bank lenders are more likely to include collateral. This result indicates that non-bank lenders rely more on collateral to secure the repayment compared with the banks. In columns (4) to (6) we present the results for the non-leveraged deals and find that the patterns are similar to the leveraged loan sub-sample.

5.4. CAPEX restrictions

Having provided evidence that the contracts in our sample look similar to the contracts studied in existing papers, we investigate the use of a specific covenant, i.e., the restriction on maximum of capital expenditure, and find that the results shed new light on the lending technology of the non-banks. We present the results on the use of the capex restriction covenant in Table 6.

[Insert Table 6]

In column (1), we consider the leveraged loan borrowers. We observe that the presence of a non-bank lead arranger in the syndicate is associated with about 10.8% higher probability of imposing the capex restriction, on average. This indicates that non-banks are more likely to rely on the specific restriction on borrowers' subsequent investments to secure the repayment of debt. In column (2) for the non-leveraged borrowers, we find that the coefficient is smaller in magnitude and statistically insignificant. This finding is consistent with the view that leveraged loan borrowers, which are relatively riskier than non-leveraged loan borrowers, might have incentives for high risk investment strategies, i.e., risk shifting incentives, thus non-bank lenders attempt to limit those incentives and lower potential loss for creditors by relying on

restrictions on *CAPEX*.

Next, we examine the real effects of the capex restrictions, for the sub-sample of leveraged borrowers. Conditional on the presence of a restriction, it is important to measure the strictness of the restriction. We consider a restriction to be strict if the difference between the contract limit and capital expenditure in the previous year is smaller than the median difference in the industry.[15] On the deal level, we generate four dummies: *Non-bank CapexRes* equals one if the non-bank institution imposes a covenant on capital expenditure (regardless of whether it is strict or not) and zero otherwise, while *Bank CapexRes* equals one if the bank imposes the covenant and zero otherwise. *Non-bank Strict* equals one if a non-bank imposes a strict restriction and zero otherwise, while *Bank Strict* equals one if a bank imposes a strict restriction, and zero otherwise. We define "Non-bank imposes a restriction" as the contract contains at least one non-bank lead arranger; and "Bank imposes a restriction" as the contract contains only banks as lead arrangers.

Our measure of strictness of the *CapexRes* covenant is based on the initial slack, that is, the distance between the level of capital expenditure at the time of the loan origination and the permitted level in the contract. Murfin (2012) notes that the slack on its own may not be sufficient to capture the strictness of covenants in a contract, and proposes a measure which combines slack with the correlations across all covenants. However, as we aim to capture the strictness of a single covenant (the *CapexRes*), we do not need to account for correlations. Additionally, we control for the overall strictness of the contract by including the total number of covenants in the contract (e.g., Bradley and Roberts, 2004).

We report our estimation results in Table 7.

[Insert Table 7]

In columns (1) and (2), the dependent variable is capital expenditure. In column (1), we include the dummies *Bank CapexRes* and *Non-bank CapexRes*. Our results show that the coefficient estimates for both *Bank CapexRes* and *Non-bank CapexRes* are positive but statistically insignificant. This finding suggests

[15] In doing so, we follow Demiroglu and James (2010), who define covenant strictness in a comparable way, by using the median as the reference.

that imposing the capex restriction covenant itself does not explain the post-loan capital expenditure, for either bank or non-bank borrowers. In column (2), we further include the interactions, *Non-bank Strict* and *Bank Strict*. We find that the coefficient estimate for *Bank Strict* is negative, but statistically insignificant suggesting that capex restrictions do not influence post-loan level of capital expenditures for bank borrowers regardless of whether these restrictions are strict or not. However, we find a non-monotonic effect for the non-bank borrowers. The coefficient estimate for *Non-bank CapexRes* is positive and statistically significant. Thus, a capex restriction is associated with a higher level of post-loan investment for non-bank borrowers when the restriction is not strict. In contrast, we find that the coefficient estimate for *Non-bank Strict* is negative and statistically significant indicating that conditional on the use of a capex restriction, if the restriction is strict, it leads to lower investment.

We next investigate the effect of the capex restrictions on the post-loan performance of the borrower. In column (3) we include *Bank CapexRes* and *Non-bank CapexRes* as explanatory variables. The coefficient on *Non-bank* remians negative and statistically significant. The coefficient on *Bank CapexRes* is not statistically significant, while the coefficient on *Non-bank CapexRes* is positive and statistically significant. Thus, imposing a capex restriction does not affect the post-loan performance for bank borrowers but is related to better post-loan performance for non-bank borrowers.

In column (4), we further include *Non-bank Strict* and *Bank Strict*. The coefficient on *Non-bank CapexRes* is positive and statistically significant, but the coefficient on *Bank CapexRes* is statistically insignificant. The stand-alone effect of imposing capex restrictions (before considering if they are strict or not) on *ROA* is positive for non-bank borrowers. This suggests that non-bank borrowers are riskier and therefore some restriction on their investment can enhance their performance. Next, we check what happens to borrower post-loan performance when capex restrictions are strict. We observe that the coefficient on *Non-bank Strict* is negative and statistically significant, while the coefficient on *Bank Strict* is much smaller in magnitude and statistically insignificant. Therefore, our findings show that conditional on having a capex restriction, if the restriction is strict, this will lower post-loan performance for the non-bank borrowers, but not the bank borrowers. This finding suggests that non-banks and banks impose their capex restrictions in a different manner. While non-banks seem to impose overly restrictive capex restrictions, which can be detrimental for their borrowers' performance, the impact of capex restrictions imposed by banks does not

seem to affect borrower outcomes.

5.5. Alternate specifications

In this section, we consider some alternate specifications for robustness of our main results. We summarize the findings in Table 8 and report the full tables in the Internet Appendix.

[Insert Table 8]

12% of bank loans in our sample are made with the stated purpose of 'Debt Repayment', while the same for non-bank loans is 17%. To ensure that our results are not driven by different purposes for issuing loans, we drop the 'Debt Repayment' loans from our sample and re-estimate the regressions (column (1) and (2)). Results remain qualitatively similar, while in the binding restriction regression for *ROA, Non-bank Strict* is still negative but is at the margin to be statistically significant.

In our main specifications, the treated group is made up of loans which have at least one non-bank lead arranger and the control group is made up of loans with only bank lead arrangers. In a placebo test (column (3) and (4)), we compare loans in which a participant is a non-bank, but not a lead (treated, '*Non-bank*'=1) and the loans in which all members are banks (control, '*Non-bank*'=0). As the participants are the passive members, and do not play substantial negotiating or monitoring roles in the syndicate, we expect that the placebo treated borrowers (with non-banks as participants) are no different to the bank borrowers (or at least, the differences will be smaller). We find that this is indeed the case, as most coefficients of interest are no longer statistically significant.

Finally, in our main specifications, the treated group is made up of loans which have at least one non-bank lead arranger but may contain bank lead arrangers too. In a narrower definition, we consider a loan to be '*Non-Bank*', only if all lead arrangers (which may be 1) in a deal are non-banks. The control group is the firms that only borrow from banks during a year (column (5) and (6)). Using this definition, most of our results remain qualitatively unchanged. In the *R&D* regression in the leveraged sample, the coefficient of *Non-bank* dummy is negative but no longer statistically significant; and in the binding restriction regression for *ROA, Non-bank Strict* is still negative but becomes marginally insignificant.

5.6. Credit supply shock of 2007 financial crisis

In this section, we investigate how bank and non-bank borrowers reacted differently to an external and unexpected credit supply shock. Duchin, Ozbas, and Sensoy (2010) state that the 2007 financial crisis represents a typical and systematic negative credit supply shock, as the spreads surged during the second half of 2007. The supply shock caused non-financial firms to fall short of external capital to finance profitable investment opportunities. They find that, firms with higher pre-crisis cash reserves experienced less reduction in investments as the cash served as a buffer. In addition, they also find that the supply shock affected more intensely the firms who relied more heavily on external financing and were financially constrained.

If indeed non-bank borrowers have less sources of external funding and are more financially constrained, and non-banks are less supportive during the crisis compared with banks, we would expect non-bank borrowers to be more severely impacted by the credit supply shock. Explicitly, we expect non-bank borrowers cut their investment by larger extent during the crisis, compared with bank borrowers. In addition, we expect that this shortfall of investments is value destroying, in term of worse operating performance.

We exploit an intention-to-treat type analysis (details below) along with propensity score matching to test the hypothesis. We use quarterly data from the Compustat database merged with DealScan. The sample is from 2006/q1 to 2008/q4, with the crisis period defined as 2007/q3 to 2008/q4. While the crisis extended beyond 2008/q4, we end our sample here as we wish to capture the impact of the peak of the supply shock, before liquidity in the market was resurrected by the regulators (e.g., introduction of TARP).

The purpose of this exercise is to compare the investment and performance of the non-bank borrowers with that of the bank borrowers during the crisis. A concern is that borrowing from a bank or a non-bank during the crisis, may itself be related with the underlying firm fundamentals, which introduces an endogeneity bias. Therefore, we use an intention-to-treat type analysis (similar to Frydman and Hilt, 2017 and von Beschwitz, 2017) in which we use the pre-crisis period to define a borrower to be a non-bank or bank borrower, regardless of who they might have borrowed from during the crisis (or, if at all). Specifically, we define a dummy, *Non-bank*, that equals one if a firm borrowed from a non-bank lead

arranger during the period 2005/q1 to 2006/q4. Then, we define two further dummy variables: *Non-bank Lev* equals one for a leveraged borrower involving a non-bank lender and *Bank Lev* equals one for a leveraged bank borrower. Together with the *Non-bank* dummy, these three dummies are interacted with the crisis period. We estimate the following equation with the *CAPEX* and *ROA* as dependent variables:

$$Y_{it} = \beta_1 Non\text{-}bank\ Lev \times Crisis + \beta_2 Bank\ Lev \times Crisis + \beta_3 Non\text{-}bank \times Crisis + \beta_4 Non\text{-}bank\ Lev + \beta_5 Bank\ Lev + \beta_6 Crisis + \beta_7 Non\text{-}bank + \gamma X_{it} + \pi Z_{it} + \alpha_j + \alpha_t + \epsilon_i \quad (2)$$

The vector, X_{it}, contains the firm-level control variables, which are contemporaneous with the outcome variable. The vector, Z_{it}, contains the contract-level control variables, which are the average during the period 2005/q1 to 2006/q4. The regressions include industry fixed effects and quarter fixed effects. We estimate Equation (2) using OLS and standard errors are clustered on the firm level. We report the results in Table 9.

[Insert Table 9]

In column (1), we present the result for the regression of *ROA*. We find that the interaction *Non-bank Lev*Crisis* is loaded negatively and significantly. The linear combination test shows that leveraged borrowers of non-banks perform worse both before and after the onset of crisis, but the difference is larger and more significant during the crisis period. In column (2), we present the result for the regression of *CAPEX*. The coefficient of the interaction *Non-bank Lev*Crisis*" is statistically significant and negative which indicates that the non-bank borrowers cut their investment more severely during the crisis. These findings indicate that in the leveraged loan sector (but not in the non-leveraged sector), the cut in investments due to the credit supply shock resulted in under-investment, which is value destroying in term of subsequent profitability.

Next, we perform a placebo test using the data from 2003/q1 to 2005/q4, with the non-existent *Crisis* period defined from 2004/q3 to 2005/q4; the *Non-bank* dummy, *Non-bank Lev*, *Bank Lev*, contract terms are defined in 2002 and 2003. The results are presented in columns (3) and (4). In column (3), the coefficient of *Non-bank Lev*Crisis* in the regression of *ROA* is much smaller in magnitude and statistically insignificant. In column (4), we present the placebo result for the regression of capital expenditure. It shows

that both the bank and non-bank leveraged borrowers have higher level of capital expenditure during the *Crisis* period. This indicates that there was a general positive trend in the level of investment in the run-up to the 2007-08 financial crisis. But important for our identification, the difference between the coefficients on *Non-bank Lev*Crisis* and *Bank Lev*Crisis* is not statistically significant. Overall, the placebo test rules out differential pre-period trends, giving reliability to the results.

5.7. The leveraged lending guidance

Finally, we examine the effects of the leveraged lending guidance on outcomes of bank and non-bank borrowers. The guidance encouraged banks to reduce their exposure to the risker, leveraged loans. Thus, leveraged borrowers, previously borrowing from banks, were pushed towards the non-banks after the issuance of the guidance (see e.g., Kim, Plosser, and Santos, 2018). Hence, we expect that the real effects would concentrate in the leveraged borrowers, who relied on bank financing previous to the guidance.

As borrowing from a bank or a non-bank during after the guidance may itself be related with the underlying firm fundamentals, we again exploit the intention-to-treat analysis. We re-estimate Equation (2), with the difference that the variable *Crisis* is replaced with *Guidance.* The sample is from 2013/q2 to 2016/q1, with the guidance period defined as 2014/q4 to 2016/q1 (as before, 6 quarters pre- and post-treatment). While the guidance was issued in March 2013, it was only after further clarifications in November 2014, bankers realized the importance of conforming to the guidance. Additionally, Kim, Plosser, and Santos (2018), find that lending patterns changed after the clarifications in 2014, not the initial issuance of the guidance in 2013. As such, we expect that any real effects would be observable after the 2014 clarifications. We report the results in Table 10.

[Insert Table 10]

In column (1), we present the result for the *ROA* regression. We find that the interaction *Bank Lev*Guidance* is loaded negatively and significantly at the 1% level. This finding is consistent with our expectation that post-guidance, the leveraged borrowers who previously borrowed from banks, were adversely affected. Indeed, leveraged non-bank borrowers or non-leveraged borrowers of banks, were unaffected, in terms of profitability. The non-leveraged borrowers of non-banks perform better after the

guidance. In column (2), we present the result for the *CAPEX* regression. The coefficient on *Bank Lev*Guidance* is negative, and statistically significant. This indicates that the cut in investments due to the credit supply shock resulted in under-investment, which possibly caused lower subsequent profitability.

Next, we perform a placebo test using the data from 2011/q4 to 2014/q3, with the guidance period defined from 2013/q2 to 2014/q3. While the guidance was issued in late 2013/q1, Kim, Plosser, and Santos (2018) find that lending patterns were unaffected following this event. We find that the coefficient on *Bank Lev*Guidance* is positive and marginally statistically significant in the *ROA* regression and statistically insignificant in the *CAPEX* regression, around the initial guidance issuance date in late 2013/q1. Non-bank borrowers and leveraged bank borrowers are unaffected. This indicates, consistent with the findings of Kim, Plosser, and Santos (2018), there were no adverse effects on leveraged bank borrowers following the initial guidance issuance date.

6. Conclusion

Different from banks, non-bank lenders, as the lenders of last resort for riskier borrowers, are likely to have more bargaining power in the negotiations. We find that, on average, non-bank borrowers have lower post-loan profitability. Both the pricing and non-pricing contract terms can explain part of the negative relationship between non-bank lending and post-loan performance of borrowers. We show that non-bank borrowers invest less during the post-loan period, which suggests that the lower performance comes from under-investment. Undocumented in the literature so far, we find that non-banks are more likely to impose a specific type of covenant: the restriction on borrowers' future capital expenditure. We find that this covenant does not affect bank borrowers but has non-monotonic effects on non-bank borrowers. If the restriction is strict, non-bank borrowers invest less during the post-loan period and have lower profitability. Firm which borrow from non-banks in the pre-crisis period, perform worse and invest less, during the crisis, compared to firms which borrow from banks in the pre-crisis period. Finally, we find that following the leveraged lending guidance in 2014, leveraged borrowers, who previously borrowed from banks, experience lower performance, *ROA*.

It is important to note that most of our findings are more pronounced in the sub-sample of the leveraged borrowers and muted in the non-leveraged borrowers. This indicates that our results are driven

by differential bargaining powers in the lender and leveraged borrower negotiations; if these findings were equally strong in the non-leveraged borrowers (who have greater access to external credit, and hence, more bargaining power), it would point to a difference in monitoring technology between banks and non-banks. The key policy takeaway of our paper is that regulation (such as the leveraged lending guidance) which targets the banking sector and thereby, hands more bargaining power to the shadow banking sector, may be harmful, beyond being ineffective.

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Appendix: An example of how to identify *Strict* restrictions on capital expenditure

To illustrate an example of how we classify *a* restriction on capital expenditure as *Strict*, we begin with the case cited in Nini, Smith, & Sufi (2009). In their study, they document a capital expenditure restriction in the loan agreement for Airborne Express, Inc. in the June 29, 2001, which states that:

Limitation on Capital Expenditures: Capital Expenditures for each Fiscal Year shall not exceed the maximum levels as set forth below opposite such Fiscal Year:

Fiscal year ended	Maximum level
December 31, 2001	$205,000,000
December 31, 2002	$255,000,000
December 31, 2003	$305,000,000

*Table from Nini, Smith, & Sufi (2009)

We find that the *gvkey* for Airborne Express, Inc. is 1213 in the Compustat database, and the contract mentioned above has a *PackageID* of 100700 in the DealScan database. From the data of financial covenant, we find that this contract includes four financial covenants: maximum capital expenditure, maximum Debt to EBITDA ratio, minimum debt service coverage, and minimum EBITDA.

The DealScan measures the capital expenditure restriction threshold with two variables: *Initial Amount* and *Final*. For the above case, the *Initial Amount* equals $205,000,000 in the DealScan, which is the maximum level in the fiscal year of 2001; the *Final* equals $305,000,000, which is the maximum level in the fiscal year of 2003. Therefore, for each contract in our sample, we take the minimum between *Initial Amount* and *Final*, as the contract limit of the deal. In this case, the contract limit is $205,000,000.

To determine whether a restriction on capital expenditure is strict or not, we compare the contract limit with the capital expenditure level one year prior to the contract signing and normalize their difference by the total assets level one year prior to the contract signing. The capital expenditure level of Airborne in 2000 is $372,500,000, its total assets in 2000 is $1,745,000,000. Therefore, the slack between the contract limit and pre-loan capital expenditure, normalized by the pre-loan total assets, is:

$$\frac{\$205{,}000{,}000 - \$372{,}500{,}000}{\$1{,}745{,}000{,}000} = -0.096$$

We apply this calculation to all the deals in our sample that contains a restriction on capital expenditure, and we calculate the industry median of this slack. By the Fama-French 12 industries classification, the median of the slack in the industry where Airborne belongs to is 0.0076. Because Airborne's slack is below the industry median, we define its restriction on capital expenditure to be *Strict*. The contract contains only one facility with an US bank lender, therefore, the dummies *Bank Strict* and *Bank CapexRes* equal one for Airborne in this contract.

Appendix: Variable Definition

Term Loan	A dummy that equals one if the facility is a term loan, and zero otherwise.
Maturity	The maturity of a facility in months.
Ln (Maturity)	The logarithm of *Maturity*. If we need to calculate the average of *Maturity* on the deal level, firm-year level or period level, we always calculate the average of *Maturity* firstly, then calculate the logarithm of the averaged *Maturity* as the *Ln (Maturity).*
Secured	A dummy that equals one if the facility includes collateral, and zero otherwise.
No. of Covenants	The number of financial covenants within a deal.
CapexRes	A dummy that equals one if the deal contains a covenant on *CAPEX*, and zero otherwise.
All-in-drawn	"The amount the borrower pays in basis points over LIBOR for each dollar drawn down. It adds the spread of the loan with any annual (or facility) fee paid to the bank group." (according to DealScan). If a facility is a fixed-rate facility, we calculate the all-in-drawn as the average of the maximum and minimum number of the basis points added to the current interest level. It is divided by 100 to be re-scaled. For instance, an original spread of 250 bps will appear as 2.5 (hundred bps) in our data.
Non-bank	A dummy that equals one if the facility has at least one non-bank lead arrangers, and zero otherwise. Non-bank institutions include distressed (vulture) fund, finance company, CDOs, hedge fund, insurance company, prime fund, mutual fund, pension fund, institution investor-other and other according to the DealScan categories.
Leveraged Loan	A dummy that equals one if the facility is a leveraged loan, and zero otherwise. The LPC defines a leveraged loan as "loan to a borrower rated BB+/Ba1 or lower with pricing thresholds based on market trends which change over time".
Total Assets	The total amount of assets in millions.
Size	The logarithm of the total amount of assets.
Leverage	The ratio of total liability to the current total assets.
ROA	The ratio of income before extraordinary items to the lagged total assets.
Tobin's Q	The total assets minus the common equity, plus the common shares outstanding times the annual close price per share, divided by the current total assets.
Cash	The ratio of cash and short-term investments to the lagged total assets.
Tangibility	The ratio of net property, plant and equipment to the lagged total assets
CAPEX	The ratio of capital expenditure to the lagged total assets.
R&D	The ratio of research and development expenses to the lagged total assets.
Non-bank CapexRes	A dummy that equals one if non-banks impose any covenant on capital expenditure for a firm in a year, and zero otherwise.
Bank CapexRes	A dummy that equals one if banks impose any covenant on capital expenditure for a firm in a year, and zero otherwise.
Strict	On the deal level, for those deals which include the covenant on capital expenditure, we calculate the difference between the contract limit and the pre-loan capital expenditure of the borrower, scaled by the lagged total assets. We then calculate the industry median of this difference. Next, we define *Strict* as a dummy on the deal level that equals one if the difference is below the industry median, and zero otherwise

Non-bank Strict	A dummy that equals one if non-banks impose a strict covenant on capital expenditure for a firm in a year, and zero otherwise.
Bank Strict	A dummy that equals one if banks impose a strict covenant on capital expenditure for a firm in a year, and zero otherwise.
Crisis	The crisis period is defined as 2007/q3 to 2008/q4 (2004/q3 to 2005/q4 for the placebo test).
Non-bank Lev	A dummy that equals one if a firm is a leveraged loan borrower with non-bank lead arrangers during the years 2005 and 2006 (2002 and 2003 for the placebo test), and zero otherwise.
Bank Lev	A dummy that equals one if a firm is a leveraged loan borrower with bank lead arrangers during the years 2005 and 2006 (2002 and 2003 for the placebo test), and zero otherwise.
Guidance	The leveraged lending guidance period is defined as 2014/q4 to 2016/q1 (2013/q2 to 2014/q3) for the placebo test).

Table 1: Summary statistics

This table reports the summary statistics of key variables for the sub-samples of leveraged loans and non-leveraged loans; and within each sub-sample, non-bank loans and bank loans. The definition of leveraged loans follows the classification of the DealScan database. We winsorize firm level data at the 2nd and 98th percentiles. We exclude observations with extremely large number of lenders. We perform two sample t-test for the difference in means, and Wilcoxon rank-sum test for the difference in medians. $*$, $**$ and $***$ denote significance at the 10%, 5% and 1% levels, respectively.

Panel A. Contract terms

	Non-bank loan sub-sample			Bank loan sub-sample				
Variable:	N	Mean	Median	N	Mean	Median	t-test	Wilcoxon
Leveraged loan sub-sample								
Term Loan	3320	0.438	0	17089	0.410	0	-3.03**	-3.05***
Maturity	3214	50.176	53	16464	50.991	60	1.98**	2.73***
Secured	3320	0.923	1	17089	0.807	1	-21.09***	-16.19***
No. of Covenants	3320	1.673	2	17089	1.773	2	3.31***	3.90***
CapexRes	3320	0.381	0	17089	0.249	0	-14.57***	-15.66***
All-in-drawn	3225	3.622	3	16828	2.813	3	-22.88***	-27.32***
Non-leveraged loan sub-sample								
Term Loan	862	0.376	0	14867	0.153	0	-13.29***	-17.13***
Maturity	772	47.665	48	14010	43.574	58	-3.15***	-0.69
Secured	862	0.462	0	14867	0.225	0	-13.64***	-15.84***
No. of Covenants	862	0.887	0	14867	1.085	1	4.86***	6.00***
CapexRes	862	0.082	0	14867	0.042	0	-4.28***	-5.68***
All-in-drawn	568	2.827	1	12980	1.060	1	-6.82***	-12.07***

Panel B. Firm characteristics

	Non-bank loan sub-sample			Bank loan sub-sample				
Variable:	N	Mean	Median	N	Mean	Median	t-test	Wilcoxon
Leveraged loan sub-sample								
Total Assets	1935	2074	340	9095	2120	582	-0.31	9.47***
Size	1885	5.728	5.677	8908	5.990	6.072	5.70***	6.65***
Leverage	1882	0.705	0.685	8896	0.630	0.610	-10.43***	-10.64***
ROA	1801	-0.044	-0.009	8493	0.001	0.023	11.40***	15.36***
Tobin's Q	1560	1.650	1.296	7589	1.716	1.397	2.36**	5.53***
Cash	1805	0.140	0.055	8499	0.149	0.061	1.49	1.91*
Tangibility	1802	0.366	0.267	8486	0.407	0.292	4.66***	3.90***
CAPEX	1783	0.085	0.045	8440	0.097	0.050	3.94***	4.57***
R&D	1816	0.023	0.000	8518	0.026	0.000	2.06**	3.51***
Non-leveraged loan sub-sample								
Total Assets	573	6783	1217	9830	7925	2477	2.24**	8.18**
Size	565	6.610	6.861	9786	7.523	7.610	8.62***	8.05***
Leverage	565	0.634	0.620	9769	0.568	0.580	-5.93***	-4.94***
ROA	539	-0.034	0.038	9668	0.060	0.055	10.44***	9.87***
Tobin's Q	475	2.113	1.592	8759	1.923	1.582	-3.00**	-0.30
Cash	539	0.185	0.064	9662	0.113	0.051	-5.71***	-3.58***
Tangibility	537	0.426	0.307	9635	0.424	0.341	-0.10	0.99
CAPEX	535	0.082	0.054	9603	0.081	0.056	-0.34	1.42
R&D	542	0.037	0.000	9672	0.020	0.000	-4.82***	-1.06

Table 2: Test for Balance

This table presents our results for the test of balance property, before and after the matching. We use probit model to estimate the propensity that a borrower will borrow non-bank lead arrangers. The variables used in the estimation are pre-loan *Size, Leverage, ROA, and Tobin's Q*. We further use the restrict matching to occur within industry and year for Panel A. We use the Fama-French 12 industry classification. For each observation in the treatment group, we find a control observation using the nearest neighbour method. We use the selected observations to construct the matched sample, with sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. We perform tests in standardized difference and variance ratio between non-bank borrowers and bank borrowers in each sample, before and after matching. The non-bank indicator is equal to one if any of a firm-year's facility contains any non-bank lead arrangers. ∗, ∗∗ and ∗∗∗ denote significance at the 10%, 5% and 1% levels, respectively.

Panel A: Leveraged loan sub-sample				
	Standardized Difference		Variance Ratio	
Variable:	Pre-match	After-match	Pre-match	After-match
Size	0.144	0.022	1.004	0.921
Leverage	-0.270	-0.037	0.869***	1.004
ROA	0.308	0.082	0.783***	1.023
Tobin's Q	0.067	0.020	0.966	0.924*
Panel B: Non-leveraged loan sub-sample				
	Standardized Difference		Variance Ratio	
Variable:	Pre-match	After-match	Pre-match	After-match
Size	0.421	0.114	0.543***	0.763***
Leverage	-0.289	-0.145	0.533***	0.942
ROA	0.591	0.149	0.171***	0.758***
Tobin's Q	-0.157	0.044	0.562***	0.835*

Table 3: Borrower performance following the loan origination

This table examines the relation between non-bank participation and borrower performance following the loan origination. Dependent variables are *ROA* $_{post}$, which is return on assets, and *Tobin's Q* $_{post}$, which is the market to book ratio in term of assets. We use OLS regressions to estimate borrower performance for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if any of a firm-year's facility contains non-bank lead arrangers, and zero otherwise. Industry×year fixed effects are included in our regressions. Industry dummies are based on the 12 Fama-French industries. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Leveraged loan sub-sample			Non-leveraged loan sub-sample			Leveraged	Non-leveraged
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*Tobin's Q* $_{post}$	*Tobin's Q* $_{post}$
Non-bank	-0.026***	-0.026***	-0.020***	-0.045***	-0.021**	-0.008	-0.040	-0.077
	(-5.34)	(-5.65)	(-4.05)	(-3.86)	(-2.22)	(-0.95)	(-1.52)	(-1.09)
Size $_{pre}$		0.002	0.001		0.008***	0.002	-0.019*	-0.084***
		(1.24)	(0.51)		(2.96)	(0.79)	(-1.74)	(-2.98)
Leverage $_{pre}$		0.027**	0.036***		0.041*	0.007	0.241***	0.757***
		(2.45)	(3.19)		(1.85)	(0.30)	(2.95)	(2.74)
ROA $_{pre}$		0.213***	0.196***		0.449***	0.419***	-0.469***	0.229
		(7.94)	(7.16)		(9.78)	(7.40)	(-2.92)	(0.42)
Cash $_{pre}$		-0.050***	-0.053***		0.019	0.032	-0.074	-0.264
		(-2.78)	(-2.88)		(0.60)	(0.89)	(-0.68)	(-0.82)
Tobin's Q $_{pre}$		0.012***	0.009**		-0.004	-0.005	0.281***	0.455***
		(3.02)	(2.32)		(-0.68)	(-1.10)	(9.00)	(6.60)
Tangibility $_{pre}$		0.008	0.010		0.022	-0.010	-0.066	0.166
		(0.59)	(0.77)		(0.90)	(-0.43)	(-0.80)	(0.85)
R&D $_{pre}$		-0.255***	-0.218**		-0.144	0.072	2.339***	3.001**

		(-2.95)	(-2.50)		(-1.09)	(0.56)	(4.28)	(2.31)
CAPEX $_{pre}$		-0.085**	-0.086**		-0.026	0.033	-0.223	-0.595
		(-2.04)	(-2.04)		(-0.36)	(0.39)	(-0.88)	(-0.77)
Term Loan		0.006	0.013**		-0.018	0.003	-0.045	-0.230**
		(1.24)	(2.28)		(-1.47)	(0.29)	(-1.47)	(-2.29)
All-in-drawn			-0.008***			-0.008**	0.006	0.021
			(-3.29)			(-2.56)	(0.62)	(0.96)
Ln (Maturity)			-0.002			-0.002	-0.006	-0.088
			(-0.40)			(-0.21)	(-0.21)	(-1.11)
No. of Covenants			0.004**			0.004	-0.005	-0.032
			(2.07)			(0.97)	(-0.45)	(-0.83)
Secured			-0.020***			-0.002	-0.039	0.025
			(-2.90)			(-0.14)	(-0.83)	(0.24)
Constant	-0.013	-0.032	0.012	-0.019	-0.044	-0.030	1.057***	1.052**
	(-0.31)	(-0.83)	(0.26)	(-0.32)	(-0.66)	(-0.43)	(4.65)	(2.36)
Observations	2501	2474	2408	798	787	605	2379	603
R^2	0.17	0.29	0.31	0.32	0.64	0.69	0.38	0.65

Table 4: Investment following the loan origination

This table examines the relation between non-bank lending and the post-loan firm investment. The dependent variable is $CAPEX_{post}$ in Columns (1) and (3), and $R\&D_{post}$ in columns (2) and (4). We use OLS estimation for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which equals one if a deal contains a non-bank lead, and zero otherwise. Industry×year fixed effects are included in our regressions. Industry dummies are based on the 12 Fama-French industries. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Leveraged loan sub-sample		Non-leveraged loan sub-sample	
	(1)	(2)	(3)	(4)
Dependent variable:	$CAPEX_{post}$	$R\&D_{post}$	$CAPEX_{post}$	$R\&D_{post}$
Non-bank	-0.005**	-0.002*	-0.007	-0.000
	(-2.25)	(-1.91)	(-1.50)	(-0.02)
$Size_{pre}$	-0.002***	0.000	-0.006***	-0.001
	(-2.84)	(0.33)	(-3.26)	(-0.91)
$Leverage_{pre}$	0.004	-0.004	0.024	0.010
	(0.92)	(-1.42)	(1.51)	(1.18)
ROA_{pre}	0.010	-0.001	0.014	0.014
	(0.90)	(-0.19)	(0.43)	(0.85)
$Cash_{pre}$	-0.022***	-0.004	-0.004	-0.005
	(-3.03)	(-0.76)	(-0.17)	(-0.58)
$Tobin's\ Q_{pre}$	0.004**	-0.000	-0.005	-0.001
	(2.08)	(-0.31)	(-1.44)	(-0.39)
$Tangibility_{pre}$	0.046***	-0.004*	0.060**	-0.008*
	(5.83)	(-1.85)	(2.35)	(-1.86)
$R\&D_{pre}$	0.001	0.652***	0.016	0.639***
	(0.03)	(23.38)	(0.22)	(11.19)
$CAPEX_{pre}$	0.130***	-0.011	0.138	0.008
	(4.63)	(-1.21)	(1.60)	(0.50)
Term Loan	-0.005**	-0.002*	0.010	0.001
	(-2.11)	(-1.95)	(1.30)	(0.43)
All-in-drawn	-0.001	0.001	-0.003**	0.000
	(-1.04)	(1.52)	(-1.98)	(0.08)
Ln (Maturity)	0.004*	0.000	-0.001	-0.001
	(1.83)	(0.19)	(-0.11)	(-0.38)
No. of Covenants	0.000	-0.001	-0.002	-0.001
	(0.22)	(-1.42)	(-0.97)	(-0.84)
Secured	-0.003	-0.003	0.002	-0.000
	(-0.98)	(-1.58)	(0.31)	(-0.01)
Constant	0.036***	0.001	0.083***	0.007
	(2.65)	(0.11)	(2.66)	(0.68)

Observations	2400	2414	602	606
R^2	0.53	0.80	0.68	0.88

Table 5: Loan contract Terms

This table examines the relation between non-bank lending and contract terms. Dependent variables are *All-in-drawn*, which is the average loan spread within a deal. *No. of covenants*, which is the total number of financial covenants in a contract, *Secured*, which is a dummy variable equal to one if the contract demands collateral. We use OLS regressions to estimate *All-in-drawn* and *No. of Covenants* and use linear probability regressions to estimate *Secured*, for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if a deal contains non-bank lead arrangers, and zero otherwise. Industry×year fixed effects are included in our regressions. Industry dummies are based on the 12 Fama-French industries. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Leveraged loan sub-sample			Non-leveraged loan sub-sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	*All-in-drawn*	*No. of Covenants*	*Secured*	*All-in-drawn*	*No. of Covenants*	*Secured*
Non-bank	0.625***	-0.394***	0.107***	0.726***	-0.204**	0.072**
	(10.14)	(-7.30)	(8.02)	(3.55)	(-2.34)	(2.19)
Size $_{pre}$	-0.151***	-0.113***	-0.017***	-0.382***	-0.126***	-0.063***
	(-7.37)	(-4.70)	(-3.20)	(-4.14)	(-3.63)	(-5.38)
Leverage $_{pre}$	0.662***	0.046	0.073***	-0.324	-0.389	0.309***
	(5.03)	(0.37)	(2.97)	(-0.20)	(-1.65)	(3.41)
ROA $_{pre}$	-1.823***	1.065***	-0.232***	-7.731***	1.764***	-0.127
	(-7.59)	(4.72)	(-5.04)	(-3.86)	(4.29)	(-0.71)
Cash $_{pre}$	0.228	-0.011	0.012	-1.403	-0.432	0.553***
	(1.05)	(-0.07)	(0.32)	(-1.34)	(-1.17)	(4.29)
Tobin's Q $_{pre}$	-0.209***	0.004	-0.025***	-0.169	-0.014	-0.089***
	(-5.71)	(0.11)	(-3.19)	(-0.37)	(-0.24)	(-4.35)
Tangibility $_{pre}$	0.146	0.161	-0.025	-1.203	-0.060	0.013
	(0.88)	(1.08)	(-0.71)	(-1.28)	(-0.25)	(0.16)

R&D $_{pre}$	0.158	-1.839***	0.225	-2.067	-0.354	-0.430
	(0.25)	(-2.96)	(1.51)	(-0.52)	(-0.32)	(-0.94)
CAPEX $_{pre}$	-0.309	-0.773*	0.051	0.158	-0.066	-0.082
	(-0.59)	(-1.72)	(0.50)	(0.07)	(-0.08)	(-0.26)
Term Loan	1.131***	0.300***	0.050***	1.974**	0.094	0.147***
	(15.57)	(5.03)	(3.22)	(2.25)	(0.78)	(3.27)
All-in-drawn		-0.016	0.005		-0.019***	0.009**
		(-0.87)	(1.06)		(-2.61)	(2.52)
Ln (Maturity)	-0.612***	0.218***	0.062***	-0.986	0.134**	0.022
	(-9.21)	(4.26)	(4.47)	(-1.35)	(2.23)	(0.87)
No. of Covenants	-0.021		0.047***	-0.428*		0.083***
	(-0.86)		(9.50)	(-1.71)		(4.83)
Secured	0.105	0.806***		1.521**	0.651***	
	(1.08)	(10.13)		(2.03)	(4.89)	
Constant	4.875***	0.235	0.473***	9.078**	2.020***	0.325
	(14.11)	(0.62)	(4.19)	(1.98)	(2.92)	(1.36)
Observations	3117	3117	3117	788	788	788
R^2	0.32	0.23	0.18	0.36	0.42	0.56

Table 6: CAPEX Restriction

This table examines the relation between non-bank lending and the imposition of restriction on future investments. Dependent variable is *CapexRes*, which is a dummy variable equal to one if the contract imposes a Max CAPEX covenant, and zero otherwise. We use the ordinary least square estimation for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if a deal contains non-bank lead arrangers, and zero otherwise. Industry×year fixed effects are included in our regressions. Industry dummies are based on the 12 Fama-French industries. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Leveraged loan sub-sample	Non-leveraged loan sub-sample
	(1)	(2)
Dependent variable:	*CapexRes*	*CapexRes*
Non-bank	0.108***	0.009
	(7.77)	(0.47)
Size $_{pre}$	0.003	-0.013*
	(0.55)	(-1.72)
Leverage $_{pre}$	0.057*	0.057
	(1.77)	(1.08)
ROA $_{pre}$	-0.282***	0.096
	(-4.66)	(0.86)
Cash $_{pre}$	0.033	0.071
	(0.73)	(0.85)
Tobin's Q $_{pre}$	-0.013	-0.021
	(-1.40)	(-1.58)
Tangibility $_{pre}$	-0.070**	0.040
	(-2.02)	(0.88)
R&D $_{pre}$	0.038	0.367
	(0.24)	(1.28)
CAPEX $_{pre}$	-0.084	0.089
	(-0.82)	(0.55)
Term Loan	-0.015	-0.004
	(-0.96)	(-0.14)
All-in-drawn	0.016***	0.001
	(3.82)	(0.27)
Ln (Maturity)	-0.014	0.004
	(-1.18)	(0.33)
No. of Covenants	0.190***	0.082***
	(40.24)	(6.51)
Secured	0.031*	0.057*
	(1.71)	(1.84)
Constant	-0.235***	-0.120
	(-3.35)	(-1.18)

Observations	3117	788
R^2	0.50	0.41

Table 7: Test with strict restrictions using the sub-sample of leveraged loan borrowers.

This table examines the relation between strict restrictions of capital expenditure and post-loan capital expenditure, and performance. Dependent variables are $CAPEX_{post}$, which is the post-loan capital expenditure scaled by the assets, ROA_{post}, which is the post-loan return on assets. We use OLS regressions to estimate capital expenditure and performance following the loan origination, for our sub-sample of leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if any of a firm-year's facility contains non-bank lead arrangers, and zero otherwise. *Bank CapexRes* is a dummy variable, which is equal to one if banks impose covenants on capital expenditure in a year, and zero otherwise. *Non-bank CapexRes* is a dummy variable, which is equal to one if non-banks impose covenants on capital expenditure in a year, and zero otherwise. *Non-bank Strict* is a dummy variable, which is equal to one if non-banks impose strict restrictions on capital expenditure in a year. *Bank Strict* is a dummy variable, which is equal to one if banks impose strict restrictions on capital expenditure in a year, and zero otherwise. Industry×year fixed effects are included in our regressions. Industry dummies are based on the 12 Fama-French industries. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Dependent variable:	$CAPEX_{post}$	$CAPEX_{post}$	ROA_{post}	ROA_{post}
Non-bank	-0.005*	-0.005*	-0.025***	-0.025***
	(-1.90)	(-1.89)	(-4.20)	(-4.21)
Non-bank Strict		-0.008**		-0.023**
		(-2.17)		(-2.11)
Non-bank CapexRes	0.004	0.009**	0.014*	0.028***
	(1.21)	(2.33)	(1.66)	(2.65)
Bank Strict		-0.004		0.001
		(-0.87)		(0.05)
Bank CapexRes	0.001	0.004	-0.000	-0.000
	(0.43)	(0.85)	(-0.00)	(-0.01)
$Size_{pre}$	-0.002***	-0.002**	0.001	0.001
	(-2.64)	(-2.56)	(0.33)	(0.41)
$Leverage_{pre}$	0.003	0.003	0.043***	0.043***
	(0.71)	(0.76)	(3.63)	(3.66)
ROA_{pre}	0.014	0.014	0.207***	0.207***
	(1.24)	(1.23)	(7.34)	(7.31)
$Cash_{pre}$	-0.018**	-0.018**	-0.051***	-0.050***
	(-2.48)	(-2.39)	(-2.68)	(-2.62)
$Tobin's\ Q_{pre}$	0.004*	0.004	0.007*	0.007
	(1.69)	(1.61)	(1.68)	(1.64)
$Tangibility_{pre}$	0.046***	0.046***	0.015	0.015
	(5.72)	(5.72)	(1.11)	(1.11)
$R\&D_{pre}$	-0.003	-0.005	-0.243***	-0.245***
	(-0.13)	(-0.20)	(-2.74)	(-2.76)
$CAPEX_{pre}$	0.123***	0.123***	-0.086**	-0.086**
	(4.31)	(4.32)	(-2.03)	(-2.03)
Term Loan	-0.004*	-0.004*	0.011*	0.011*

	(-1.77)	(-1.80)	(1.92)	(1.87)
All-in-drawn	-0.001	-0.001	-0.007***	-0.007***
	(-0.99)	(-0.84)	(-3.15)	(-3.07)
Ln (Maturity)	0.003	0.003	-0.003	-0.003
	(1.52)	(1.43)	(-0.49)	(-0.53)
No. of Covenants	-0.001	-0.001	0.002	0.002
	(-0.64)	(-0.64)	(1.10)	(1.10)
Secured	-0.003	-0.003	-0.018***	-0.018***
	(-0.79)	(-0.78)	(-2.61)	(-2.61)
Constant	0.039***	0.039***	0.017	0.016
	(2.91)	(2.92)	(0.35)	(0.34)
Observations	2308	2308	2316	2316
R^2	0.53	0.53	0.31	0.31

Table 8: Alternate specifications

This table reports a summary of results for the robustness tests. In Panel A, we report the coefficients of the "*Non-bank*" dummy for each dependent variable, with dependent variables presented in the rows. In the Panel B, we report the results for the tests with binding restrictions using the sub-samples of leveraged loan borrowers, with key explanatory variables in the rows, and dependent variables in the columns. Firm level and contract term control variables are included in the regressions. Industry × year fixed effects are included. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	No debt repayment		Non-bank participants		Only Non-bank lead	
Panel A: Performance, Investment, and Capex Restriction						
	(1)	(2)	(3)	(4)	(5)	(6)
Sub-samples:	*Lev*	*NonLev*	*Lev*	*NonLev*	*Lev*	*NonLev*
ROA $_{post}$	-0.016***	-0.013	0.000	-0.003	-0.017**	0.007
	(-3.21)	(-1.51)	(0.04)	(-1.24)	(-2.24)	(0.39)
Tobin's Q $_{post}$	-0.044	-0.040	-0.017	-0.003	-0.041	0.205
	(-1.40)	(-0.46)	(-0.82)	(-0.14)	(-0.94)	(1.58)
CAPEX $_{post}$	-0.005**	-0.002	-0.003	-0.000	-0.008**	0.000
	(-2.05)	(-0.41)	(-1.62)	(-0.22)	(-2.52)	(0.02)
R&D $_{post}$	-0.002*	-0.000	-0.001**	-0.001	-0.001	0.006
	(-1.69)	(-0.03)	(-2.10)	(-1.25)	(-0.81)	(0.97)
CapexRes	0.095***	0.000	0.012	-0.014**	0.137***	0.010
	(6.08)	(0.00)	(0.95)	(-2.30)	(7.00)	(0.21)
Panel B: Test with binding restrictions using the sub-sample of leveraged loan borrowers						
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	*CAPEX*	*ROA*	*CAPEX*	*ROA*	*CAPEX*	*ROA*
Non-bank Strict	-0.008**	-0.018	0.002	0.010	-0.012**	-0.022
	(-1.99)	(-1.61)	(0.48)	(1.31)	(-2.30)	(-1.51)
Non-bank CapexRes	0.010**	0.032***	-0.002	-0.003	0.010*	0.025*
	(2.31)	(2.93)	(-0.56)	(-0.41)	(1.78)	(1.66)
Bank Strict	-0.000	-0.007	-0.003	-0.020*	-0.006	-0.028
	(-0.02)	(-0.67)	(-0.49)	(-1.69)	(-0.87)	(-1.52)
Bank CapexRes	-0.001	-0.002	0.003	0.003	0.003	0.011
	(-0.25)	(-0.17)	(0.70)	(0.36)	(0.56)	(0.73)

Table 9: Intention-to-treat analysis of the impact of financial crisis

This table reports the results of ITT (intention-to-treat) analysis for *ROA* and *CAPEX*. For this analysis, we use quarterly data. In columns (1) and (2), our sample period is 2006/q1 to 2008/q4, with the crisis period defined as 2007/q3 to 2008/q4. In columns (3) and (4) our sample period is 2003/q1 to 2005/q4 with the placebo crisis period defined as 2004/q3 to 2005/q4. Dependent variables are *ROA*, which is the current return on assets, and *CAPEX* is the current capital expenditure scaled by current total assets. We use the ordinary least square estimation. *Non-bank* is a dummy variable equal to one if a firm borrowed from any non-bank lead arranger during the years 2005 and 2006 for columns (1) and (2); 2002 and 2003 for columns (3) and (4). The *Non-bank Lev* is a dummy that equals one if a firm borrowed any leveraged loan that contains any institutional lead arrangers during the years 2005 and 2006 for the columns (1) and (2); 2002 and 2003 for columns (3) and (4). *Bank Lev* is a dummy that equals one if a firm borrowed any leveraged loan that contains only bank lead arrangers during the years 2005 and 2006 for the columns (1) and (2); 2002 and 2003 for columns (3) and (4). Firm level control variables include the current *Size*, *Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Maturity*, *Secured*, and *No. of covenants*, which are the average over 2005 and 2006 for the columns (1) and (2); 2002 and 2003 for columns (3) and (4). We take the natural logarithm of *Maturity* in the regressions. Industry dummies are based on the 12 Fama-French industries. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Crisis		Placebo Crisis	
Dependent variable:	*ROA*	*CAPEX*	*ROA*	*CAPEX*
*Non-bank Lev*Crisis*	-0.012*	-0.003*	-0.001	0.002**
	(-1.69)	(-1.80)	(-0.16)	(2.11)
*Bank Lev*Crisis*	0.001	0.000	-0.001	0.001**
	(0.46)	(0.31)	(-0.26)	(2.34)
*Non-bank*Crisis*	0.012*	0.003	0.007	-0.000
	(1.89)	(1.47)	(0.87)	(-0.16)
Non-bank Lev	0.007	0.002	0.013	0.000
	(0.91)	(1.32)	(1.41)	(0.11)
Bank Lev	0.004*	-0.002*	0.003	-0.000
	(1.92)	(-1.79)	(0.98)	(-0.34)
Crisis	-0.048***	0.002***	0.002	0.005***
	(-10.08)	(3.61)	(0.82)	(8.64)
Non-bank	-0.007	-0.003*	-0.013*	0.000
	(-1.12)	(-1.77)	(-1.89)	(0.32)
Size	0.005***	-0.000**	0.007***	-0.001***
	(6.54)	(-2.12)	(7.07)	(-5.02)
Leverage	-0.044***	-0.007***	-0.091***	-0.004***
	(-5.11)	(-5.55)	(-7.28)	(-4.85)
ROA		-0.001		0.005
		(-0.29)		(1.45)
Cash	-0.033***	-0.001	-0.009	0.002

	(-2.77)	(-0.56)	(-0.50)	(0.99)
Tobin's Q	0.012***	0.003***	-0.007**	0.001***
	(10.67)	(7.91)	(-2.26)	(3.40)
Tangibility	0.001	0.045***	-0.006	0.032***
	(0.19)	(18.81)	(-0.99)	(18.52)
R&D	-0.938***	-0.017	-0.701***	0.005
	(-5.15)	(-0.90)	(-3.82)	(0.34)
CAPEX	-0.020		0.154	
	(-0.29)		(1.41)	
All-In-Drawn	-0.002	0.001*	-0.001	-0.000***
	(-1.34)	(1.79)	(-0.37)	(-2.59)
No. of Covenants	0.001	-0.001***	0.002**	-0.000
	(1.01)	(-2.70)	(2.18)	(-0.29)
Secured	-0.002	0.002***	-0.001	-0.000
	(-0.96)	(2.79)	(-0.36)	(-0.33)
Ln (Maturity)	0.001	0.000	0.004	0.000
	(0.61)	(0.33)	(1.47)	(0.31)
Constant	-0.025***	0.001	0.019*	0.006***
	(-2.74)	(0.20)	(1.80)	(2.90)
Observations	11191	11191	14024	14024
R^2	0.19	0.56	0.44	0.39

Table 10: Intention-to-treat analysis of the impact of leveraged lending guidance

This table reports the results of ITT (intention-to-treat) analysis for *ROA* and *CAPEX*. For this analysis, we use quarterly data. In columns (1) and (2), our sample period is 2013/q2 to 2016/q1, with the Guidance period defined as 2014/q4 to 2016/q1. In columns (3) and (4) our sample period is 2011/q4 to 2014/q3 with the placebo Guidance period defined as 2013/q2 to 2014/q3. Dependent variables are *ROA*, which is the current return on assets, and *CAPEX* is the current capital expenditure scaled by current total assets. We use the ordinary least square estimation. *Non-bank* is a dummy variable equal to one if a firm borrowed from any non-bank lead arranger during the years 2012 and 2013 for columns (1) and (2); 2011 and 2012 for columns (3) and (4). The *Non-bank Lev* is a dummy that equals one if a firm borrowed any leveraged loan that contains any institutional lead arrangers during the years 2012 and 2013 for the columns (1) and (2); 2011 and 2012 for columns (3) and (4). *Bank Lev* is a dummy that equals one if a firm borrowed any leveraged loan that contains only bank lead arrangers during the years 2012 and 2013 for the columns (1) and (2); 2011 and 2012 for columns (3) and (4). Firm level control variables include the current *Size*, *Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Maturity*, *Secured*, and *No. of covenants* which are the average over 2012 and 2013 for the columns (1) and (2); 2011 and 2012 for columns (3) and (4). We take the natural logarithm of *Maturity* in the regressions. Industry dummies are based on the 12 Fama-French industries. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Guidance clarification, 2014		Guidance issuance, 2013	
Dependent variable:	*ROA*	*CAPEX*	*ROA*	*CAPEX*
*Non-bank Lev*Guidance*	0.009	0.001	-0.002	-0.002
	(1.30)	(0.85)	(-0.31)	(-0.57)
*Bank Lev*Guidance*	-0.010***	-0.001**	0.003*	0.001
	(-3.24)	(-1.99)	(1.67)	(1.51)
*Non-bank*Guidance*	0.007*	-0.001	-0.001	0.004
	(1.78)	(-0.93)	(-0.18)	(0.99)
Non-bank Lev	-0.007	-0.004	0.003	0.003
	(-1.07)	(-1.58)	(0.42)	(1.10)
Bank Lev	0.005	0.001	0.002	0.001
	(1.49)	(0.63)	(0.60)	(0.50)
Guidance	-0.003	-0.002***	-0.007*	-0.002***
	(-1.33)	(-3.67)	(-1.73)	(-3.18)
Non-bank	-0.005	0.002	-0.003	-0.004
	(-1.33)	(0.77)	(-0.70)	(-1.61)
Size	0.008***	-0.001**	0.004***	-0.001*
	(5.02)	(-2.44)	(3.63)	(-1.66)
Leverage	-0.060***	-0.001	-0.023**	-0.004***
	(-3.32)	(-0.87)	(-2.36)	(-2.59)
ROA		0.006		0.001
		(0.92)		(0.10)
Cash	-0.038**	0.003	-0.016	0.002

	(-2.41)	(0.94)	(-0.79)	(0.44)
Tobin's Q	0.006***	0.001***	0.008***	0.002***
	(2.73)	(5.39)	(4.04)	(4.68)
Tangibility	-0.006	0.035***	-0.003	0.041***
	(-0.86)	(11.75)	(-0.77)	(13.46)
R&D	-0.732***	-0.022	-1.053***	-0.029
	(-3.52)	(-1.09)	(-3.14)	(-1.15)
CAPEX	0.106		0.005	
	(0.97)		(0.10)	
All-In-Drawn	-0.001	-0.000	-0.004***	-0.001*
	(-0.72)	(-0.07)	(-4.55)	(-1.95)
No. of Covenants	0.000	-0.000	0.001	-0.001**
	(0.26)	(-0.86)	(0.61)	(-2.23)
Secured	0.004	-0.001	-0.004	-0.000
	(1.31)	(-0.50)	(-1.59)	(-0.00)
Ln (Maturity)	-0.002	0.001	0.005	0.000
	(-0.30)	(0.97)	(0.96)	(0.12)
Constant	-0.008	0.003	-0.021	0.007
	(-0.32)	(0.44)	(-0.96)	(1.04)
Observations	5984	5984	6053	6053
R^2	0.24	0.47	0.21	0.50

Online Appendix to

"Non-bank loans, corporate investment and firm perfomance"

Sonny Biswas, Neslihan Ozkan and Junyang Yin

Online Appendix A: Whole sample summary statistics

Table A1: Summary statistics

This table reports the summary statistics of key variables for the whole sample, and within which, non-bank loans and bank loans. We winsorize firm level data at the 2nd and 98th percentiles. We exclude observations with extremely large number of lenders. We perform two sample t-test for the difference in means, and Wilcoxon rank-sum test for the difference in medians. ∗, ∗∗ and ∗∗∗ denote significance at the 10%, 5% and 1% levels, respectively.

Panel A. Contract terms

	Whole Sample			Non-bank loan sub-sample			Bank loan sub-sample				
Variable:	N	Mean	Median	N	Mean	Median	N	Mean	Median	t-test	Wilcoxon
Term Loan	36138	0.306	0	4182	0.425	0	31956	0.290	0	-16.75***	-17.81***
Maturity	34460	47.825	59	3986	49.690	51	30474	47.581	59	-5.13***	-2.79***
Secured	36138	0.570	1	4182	0.828	1	31956	0.536	1	-45.12***	-35.85***
No. of Covenants	36138	1.459	1	4182	1.511	1	31956	1.452	1	-2.34**	-0.79
CapexRes	36138	0.172	0	4182	0.319	0	31956	0.153	0	-22.29***	-26.90***
All-in-drawn	33601	2.214	2	3793	3.503	3	29808	2.050	2	-29.52***	-46.55***

Panel B. Firm characteristics

	Whole sample			Non-bank loan sub-sample			Bank loan sub-sample				
Variable:	N	Mean	Median	N	Mean	Median	N	Mean	Median	t-test	Wilcoxon
Total Assets	21433	4902	1043	2508	3150	394	18925	5134	1182	11.29***	22.40***
Size	21144	6.693	6.722	2450	5.931	5.834	18694	6.793	6.825	19.86***	20.20***
Leverage	21112	0.608	0.600	2447	0.688	0.665	18665	0.598	0.592	-15.30***	-15.27***
ROA	20501	0.024	0.040	2340	-0.042	0.002	18161	0.032	0.043	20.54***	26.50***
Tobin's Q	18383	1.819	1.480	2035	1.758	1.353	16348	1.827	1.493	2.65***	8.82***
Cash	20505	0.132	0.056	2344	0.151	0.057	18161	0.130	0.056	-4.03***	-1.77*
Tangibility	20460	0.412	0.313	2339	0.380	0.276	18121	0.416	0.319	4.91***	5.97***
CAPEX	20361	0.088	0.053	2318	0.084	0.047	18043	0.089	0.054	1.63	5.69***
R&D	20548	0.023	0.000	2358	0.026	0.000	18190	0.023	0.000	-2.31**	3.29***

Online Appendix B: Results for un-matched samples

Table B1: Borrower performance following the loan origination

This table examines the relation between non-bank participation and borrower performance following the loan origination. Dependent variables are *ROA* $_{post}$, which is return on assets, and *Tobin's Q* $_{post}$, which is the market to book ratio in term of assets. We use OLS regressions to estimate borrower performance for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if any of a firm-year's facility contains non-bank lead arrangers, and zero otherwise. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*. Loan contract term controls include *All-in-drawn, Ln (Maturity), Secured, Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample			Non-leveraged loan sub-sample			Leveraged loan sub-sample	Non-leveraged loan sub-sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*Tobin's Q* $_{post}$	*Tobin's Q* $_{post}$
Non-bank	-0.033***	-0.024***	-0.017***	-0.067***	-0.021***	-0.008*	-0.053**	-0.024
	(-8.88)	(-6.33)	(-4.32)	(-9.67)	(-4.19)	(-1.78)	(-2.50)	(-0.60)
Size $_{pre}$		0.002**	0.001		0.005***	0.001	-0.027***	-0.015*
		(2.32)	(0.98)		(7.18)	(1.07)	(-4.14)	(-1.74)
Leverage $_{pre}$		0.020***	0.029***		-0.006	-0.002	0.223***	0.228***
		(2.87)	(4.12)		(-0.91)	(-0.30)	(4.33)	(2.82)
ROA $_{pre}$		0.236***	0.214***		0.363***	0.290***	-0.512***	-0.386*
		(14.43)	(12.84)		(16.54)	(10.51)	(-4.79)	(-1.82)
Cash $_{pre}$		-0.045***	-0.045***		-0.061***	-0.054***	-0.125*	-0.379***
		(-4.40)	(-4.35)		(-5.42)	(-4.63)	(-1.87)	(-3.71)
Tobin's Q $_{pre}$		0.008***	0.006***		0.014***	0.015***	0.315***	0.582***

		(3.52)	(2.72)		(8.27)	(8.73)	(16.40)	(26.85)
Tangibility $_{pre}$		0.004	0.004		0.009	0.006	-0.070	0.055
		(0.60)	(0.63)		(1.56)	(1.01)	(-1.62)	(1.03)
R&D $_{pre}$		-0.151***	-0.128***		-0.107**	-0.052	1.907***	1.944***
		(-3.17)	(-2.68)		(-2.44)	(-1.13)	(6.09)	(4.45)
CAPEX $_{pre}$		-0.078***	-0.078***		-0.096***	-0.102***	-0.089	-0.656***
		(-3.43)	(-3.47)		(-4.16)	(-4.08)	(-0.68)	(-3.29)
Term Loan		-0.000	0.007**		-0.010***	-0.006**	-0.012	-0.079***
		(-0.18)	(2.43)		(-4.21)	(-2.51)	(-0.67)	(-3.78)
All-in-drawn			-0.010***			-0.009***	-0.004	-0.010
			(-6.41)			(-4.58)	(-0.58)	(-0.73)
Ln (Maturity)			-0.002			0.006***	0.009	-0.004
			(-0.74)			(3.26)	(0.46)	(-0.23)
No. of Covenants			0.004***			-0.003**	-0.003	-0.037***
			(3.76)			(-2.56)	(-0.52)	(-3.74)
Secured			-0.017***			-0.009***	-0.077***	-0.048**
			(-5.42)			(-3.18)	(-3.45)	(-2.13)
Constant	-0.005	-0.042**	0.015	0.027**	-0.032**	-0.015	0.913***	0.847***
	(-0.29)	(-1.98)	(0.64)	(2.34)	(-2.16)	(-0.83)	(7.82)	(5.97)
Observations	9844	7991	7789	9689	8470	7390	7688	7361
R^2	0.12	0.24	0.26	0.13	0.37	0.35	0.36	0.54

Table B2: Investment following the loan origination

This table examines the relation between non-bank participation and firm investment following the loan origination. In column (1) and (3) the dependent variable is *CAPEX* $_{post}$, which is the post- loan capital expenditure scaled by lagged total assets. In columns (2) and (4), the dependent variable is *R&D* $_{post}$, which is the post-loan research and development expenses scaled by lagged total assets. We use OLS regressions to estimate *CAPEX* $_{post}$ and *R&D* $_{post}$ and run separate regressions for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if any of a firm-year's facility contains non-bank lead arrangers, and zero otherwise. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample		Non-leveraged loan sub-sample	
	(1)	(2)	(3)	(4)
Dependent variable:	*CAPEX* $_{post}$	*R&D* $_{post}$	*CAPEX* $_{post}$	*R&D* $_{post}$
Non-bank	-0.005***	-0.001	0.001	0.000
	(-2.86)	(-1.41)	(0.15)	(0.41)
Size $_{pre}$	-0.003***	-0.000	-0.003***	0.000
	(-5.14)	(-1.40)	(-5.70)	(1.01)
Leverage $_{pre}$	0.002	-0.003**	-0.003	-0.004*
	(0.71)	(-2.15)	(-0.67)	(-1.84)
ROA $_{pre}$	-0.001	-0.003	-0.008	0.005
	(-0.10)	(-0.70)	(-0.49)	(0.68)
Cash $_{pre}$	-0.028***	-0.004*	-0.029***	-0.009**
	(-5.35)	(-1.82)	(-4.16)	(-2.28)
Tobin's Q $_{pre}$	0.003**	-0.001**	0.002*	0.000
	(2.33)	(-2.31)	(1.93)	(0.44)
Tangibility $_{pre}$	0.036***	-0.003***	0.052***	-0.002**
	(6.72)	(-2.97)	(7.78)	(-2.36)
R&D $_{pre}$	-0.007	0.664***	-0.029	0.705***
	(-0.46)	(44.74)	(-1.33)	(39.75)
CAPEX $_{pre}$	0.202***	-0.008**	0.259***	-0.009*
	(10.01)	(-2.09)	(9.28)	(-1.88)
Term Loan	-0.007***	-0.001	-0.005***	-0.001
	(-4.10)	(-1.60)	(-3.25)	(-1.17)
All-in-drawn	-0.001**	0.000	-0.002**	0.001
	(-2.06)	(1.21)	(-2.17)	(0.99)
Ln (Maturity)	0.006***	-0.002***	0.002	-0.001
	(4.22)	(-3.29)	(1.46)	(-1.00)
No. of Covenants	-0.001	-0.001***	-0.001*	-0.000
	(-1.46)	(-3.04)	(-1.77)	(-0.24)

Secured	-0.004**	0.001	0.002	0.000
	(-2.21)	(1.06)	(1.41)	(0.44)
Constant	0.036***	0.012***	0.040***	0.005*
	(4.32)	(2.65)	(4.73)	(1.68)
Observations	7766	7810	7366	7400
R^2	0.54	0.81	0.60	0.83

Table B3: Loan contract Terms

This table examines the relation between non-bank participation and loan contract terms. Dependent variables are *All-in-drawn*, which is the average loan spread within a deal. *No. of covenants*, which is the total number of financial covenants in a contract, *Secured*, which is a dummy variable equal to one if the contract demands collateral. We use OLS regressions to estimate *All-in-drawn* and *No. of Covenants* and use linear probability regressions to estimate *Secured*, for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if a deal contains non-bank lead arrangers, and zero otherwise. The firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; the loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample			Non-leveraged loan sub-sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	*All-in-drawn*	*No. of Covenants*	*Secured*	*All-in-drawn*	*No. of Covenants*	*Secured*
Non-bank	0.696***	-0.371***	0.101***	1.391***	-0.201***	0.081***
	(15.11)	(-8.15)	(10.02)	(4.33)	(-3.04)	(3.14)
Size $_{pre}$	-0.099***	-0.094***	-0.016***	-0.197***	-0.181***	-0.057***
	(-10.07)	(-7.23)	(-4.62)	(-11.24)	(-15.98)	(-13.16)
Leverage $_{pre}$	0.564***	-0.091	0.099***	0.750***	-0.038	0.185***
	(8.67)	(-1.24)	(5.05)	(5.27)	(-0.37)	(5.26)
ROA $_{pre}$	-1.828***	1.174***	-0.276***	-3.912***	1.311***	-0.355***
	(-14.71)	(8.90)	(-7.89)	(-6.66)	(5.86)	(-4.05)
Cash $_{pre}$	0.171*	-0.081	0.051**	0.354*	-0.294**	0.214***
	(1.90)	(-0.85)	(2.03)	(1.81)	(-2.46)	(5.02)
Tobin's Q $_{pre}$	-0.109***	-0.004	-0.019***	-0.029	-0.059***	-0.030***
	(-6.29)	(-0.19)	(-3.46)	(-0.82)	(-3.13)	(-4.37)
Tangibility $_{pre}$	0.122	0.120	-0.020	-0.134	-0.129	-0.001

	(1.61)	(1.44)	(-0.81)	(-1.31)	(-1.61)	(-0.04)
R&D $_{pre}$	-0.158	-1.993***	0.265**	-0.651	-0.220	-0.029
	(-0.48)	(-4.99)	(2.33)	(-1.12)	(-0.48)	(-0.18)
CAPEX $_{pre}$	-0.289	-0.158	-0.054	0.327	0.033	0.322***
	(-1.39)	(-0.72)	(-0.83)	(0.88)	(0.14)	(3.46)
Term Loan	0.848***	0.236***	0.059***	0.549***	0.046	0.117***
	(26.42)	(6.82)	(5.59)	(7.27)	(1.30)	(7.73)
All-in-drawn		-0.028**	0.012***		-0.029**	0.021**
		(-2.18)	(3.38)		(-2.31)	(2.11)
Ln (Maturity)	-0.453***	0.186***	0.055***	-0.089	0.230***	0.018***
	(-14.61)	(6.45)	(6.20)	(-1.15)	(12.09)	(2.85)
No. of Covenants	-0.023**		0.071***	-0.078***		0.093***
	(-2.16)		(20.34)	(-3.28)		(17.37)
Secured	0.126***	0.912***		0.400***	0.677***	
	(3.48)	(21.63)		(5.73)	(17.76)	
Constant	4.045***	0.667***	0.495***	2.504***	1.642***	0.317***
	(22.41)	(2.80)	(8.33)	(5.57)	(8.03)	(4.54)
Observations	9504	9504	9504	9177	9177	9177
R^2	0.31	0.23	0.16	0.23	0.28	0.29

Table B4: CAPEX Restriction

This table examines the relation between non-bank participation and the imposition of restriction on future investments. Dependent variable is *CapexRes*, which is a dummy variable equal to one if the contract imposes a Max CAPEX covenant, and zero otherwise. We use the ordinary least square estimation for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if a deal contains non-bank lead arrangers, and zero otherwise. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn, Ln (Maturity), Secured, Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample	Non-leveraged loan sub-sample
	(1)	(2)
Dependent variable:	*CapexRes*	*CapexRes*
Non-bank	0.100***	0.008
	(8.20)	(0.63)
Size $_{pre}$	0.002	-0.006***
	(0.67)	(-3.39)
Leverage $_{pre}$	0.065***	-0.019
	(3.42)	(-0.99)
ROA $_{pre}$	-0.149***	-0.055
	(-4.55)	(-1.22)
Cash $_{pre}$	0.011	0.040*
	(0.47)	(1.71)
Tobin's Q $_{pre}$	-0.013**	-0.005
	(-2.40)	(-1.46)
Tangibility $_{pre}$	-0.010	-0.013
	(-0.48)	(-1.07)
R&D $_{pre}$	0.104	0.129
	(1.03)	(1.45)
CAPEX $_{pre}$	-0.105*	-0.090**
	(-1.86)	(-2.50)
Term Loan	-0.000	0.001
	(-0.05)	(0.17)
All-in-drawn	0.027***	0.001
	(8.68)	(0.53)
Ln (Maturity)	-0.013*	-0.007**
	(-1.96)	(-2.28)
No. of Covenants	0.166***	0.063***
	(50.08)	(15.67)
Secured	0.011	0.056***
	(1.23)	(6.04)
Constant	-0.317***	-0.011

	(-6.82)	(-0.44)
Observations	9504	9177
R^2	0.43	0.20

Table B5: Test with binding restrictions using the sub-sample of leveraged loan borrowers.

This table examines the relation between binding restrictions of capital expenditure and post-loan capital expenditure, and performance. Dependent variables are *CAPEX* $_{post}$, which is the post-loan capital expenditure scaled by the assets, *ROA* $_{post}$, which is the post-loan return on assets. We use OLS regressions to estimate capital expenditure and performance following the loan origination, for our sub-sample of leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if any of a firm-year's facility contains any non-bank lead arranger, and zero otherwise. *Bank CapexRes* is a dummy variable, which is equal to one if banks impose covenants on capital expenditure in a year, and zero otherwise. *Non-bank CapexRes* is a dummy variable, which is equal to one if non-banks impose covenants on capital expenditure in a year, and zero otherwise. *Non-bank Strict* is a dummy variable, which is equal to one if non-banks impose binding restrictions on capital expenditure in a year. *Bank Strict* is a dummy variable, which is equal to one if banks impose binding restrictions on capital expenditure in a year, and zero otherwise. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	(1)	(2)	(3)	(4)
Dependent variable:	*CAPEX* $_{post}$	*CAPEX* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$
Non-bank	-0.006***	-0.006***	-0.021***	-0.021***
	(-3.01)	(-3.02)	(-4.33)	(-4.34)
Non-bank Strict		-0.009**		-0.021**
		(-2.27)		(-1.97)
Non-bank CapexRes	0.003	0.009**	0.011	0.024**
	(1.24)	(2.54)	(1.45)	(2.46)
Bank Strict		-0.003		-0.005
		(-1.49)		(-1.00)
Bank CapexRes	-0.002	-0.001	-0.002	0.000
	(-1.20)	(-0.27)	(-0.62)	(0.06)
Size $_{pre}$	-0.003***	-0.003***	0.001	0.001
	(-5.01)	(-4.92)	(1.02)	(1.13)
Leverage $_{pre}$	0.002	0.002	0.030***	0.030***
	(0.52)	(0.52)	(4.09)	(4.09)
ROA $_{pre}$	0.002	0.002	0.220***	0.220***
	(0.26)	(0.26)	(13.28)	(13.26)
Cash $_{pre}$	-0.028***	-0.028***	-0.046***	-0.046***
	(-5.35)	(-5.32)	(-4.45)	(-4.42)
Tobin's Q $_{pre}$	0.003**	0.003**	0.006***	0.006***
	(2.41)	(2.36)	(2.79)	(2.74)
Tangibility $_{pre}$	0.037***	0.037***	0.006	0.006
	(7.02)	(7.02)	(0.91)	(0.90)
R&D $_{pre}$	-0.009	-0.010	-0.133***	-0.135***

	(-0.59)	(-0.64)	(-2.78)	(-2.82)
CAPEX $_{pre}$	0.193***	0.193***	-0.084***	-0.083***
	(10.15)	(10.18)	(-3.72)	(-3.69)
Term Loan	-0.006***	-0.006***	0.007**	0.007**
	(-3.95)	(-3.97)	(2.53)	(2.49)
All-in-drawn	-0.001*	-0.001	-0.009***	-0.009***
	(-1.66)	(-1.52)	(-6.21)	(-6.08)
Ln (Maturity)	0.006***	0.006***	-0.002	-0.003
	(4.23)	(4.17)	(-0.80)	(-0.86)
No. of Covenants	-0.001	-0.001	0.004***	0.004***
	(-1.45)	(-1.46)	(3.21)	(3.20)
Secured	-0.004*	-0.003*	-0.017***	-0.017***
	(-1.87)	(-1.83)	(-5.43)	(-5.40)
Constant	0.035***	0.034***	0.015	0.015
	(4.11)	(4.09)	(0.65)	(0.63)
Observations	7444	7444	7467	7467
R^2	0.55	0.55	0.26	0.26

Online Appendix C: Results without facilities for debt repayments

Table C1: Borrower performance following the loan origination

This table examines the relation between non-bank participation and borrower performance following the loan origination. We drop the 'Debt Repayment' loans from our sample. Dependent variables are *ROA* $_{post}$, which is return on assets, and *Tobin's Q* $_{post}$, which is the market to book ratio in term of assets. We use OLS regressions to estimate borrower performance for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if any of a firm-year's facility contains non-bank lead arrangers, and zero otherwise. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*. Loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample			Non-leveraged loan sub-sample			Leveraged loan sub-sample	Non-leveraged loan sub-sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*Tobin's Q* $_{post}$	*Tobin's Q* $_{post}$
Non-bank	-0.026***	-0.024***	-0.016***	-0.046***	-0.031***	-0.013	-0.044	-0.040
	(-4.73)	(-4.96)	(-3.21)	(-4.04)	(-3.52)	(-1.51)	(-1.40)	(-0.46)
Size $_{pre}$		0.003	0.001		0.011***	0.006**	-0.017	-0.057**
		(1.51)	(0.36)		(4.04)	(1.97)	(-1.45)	(-2.36)
Leverage $_{pre}$		0.031***	0.039***		-0.024	-0.027	0.196**	0.327
		(2.61)	(3.28)		(-0.92)	(-0.83)	(2.08)	(1.37)
ROA $_{pre}$		0.252***	0.219***		0.353***	0.276***	-0.738***	-1.066**
		(8.64)	(7.39)		(6.94)	(4.07)	(-3.78)	(-2.14)
Cash $_{pre}$		-0.070***	-0.070***		-0.007	-0.010	0.002	-0.318
		(-3.39)	(-3.36)		(-0.16)	(-0.23)	(0.01)	(-0.91)
Tobin's Q $_{pre}$		0.009**	0.005		0.002	0.001	0.263***	0.463***

		(2.05)	(1.23)		(0.41)	(0.13)	(7.07)	(7.80)
Tangibility $_{pre}$		-0.010	-0.012		0.011	-0.018	-0.060	0.076
		(-0.71)	(-0.80)		(0.46)	(-0.96)	(-0.65)	(0.40)
R&D $_{pre}$		-0.151*	-0.136		-0.239	0.130	2.394***	1.543
		(-1.73)	(-1.53)		(-1.53)	(0.68)	(4.18)	(1.11)
CAPEX $_{pre}$		-0.001	0.000		-0.073	-0.011	-0.291	-0.936
		(-0.02)	(0.01)		(-0.80)	(-0.12)	(-0.88)	(-1.22)
Term Loan			0.013**			0.012	-0.023	-0.082
			(2.19)			(1.04)	(-0.65)	(-0.82)
All-in-drawn			-0.011***			-0.012***	0.005	0.007
			(-4.74)			(-3.41)	(0.43)	(0.33)
Ln (Maturity)			0.001			-0.001	0.039	-0.070
			(0.18)			(-0.16)	(1.15)	(-0.95)
No. of Covenants			0.002			0.006	0.002	-0.037
			(1.23)			(1.27)	(0.18)	(-0.91)
Secured			-0.021***			0.001	-0.032	-0.016
			(-2.72)			(0.06)	(-0.66)	(-0.17)
Constant	0.008	-0.011	0.037	0.009	0.010	0.036	0.964***	1.231**
	(0.14)	(-0.21)	(0.69)	(0.09)	(0.13)	(0.60)	(3.73)	(2.52)
Observations	2082	2061	1997	752	740	578	1964	574
R^2	0.19	0.32	0.35	0.34	0.63	0.65	0.41	0.67

Table C2: Investment following the loan origination

This table examines the relation between non-bank participation and firm investment following the loan origination. We drop the 'Debt Repayment' loans from our sample. In column (1) and (3) the dependent variable is *CAPEX* $_{post}$, which is the post- loan capital expenditure scaled by lagged total assets. In columns (2) and (4), the dependent variable is *R&D* $_{post}$, which is the post-loan research and development expenses scaled by lagged total assets. We use OLS regressions to estimate *CAPEX* $_{post}$ and *R&D* $_{post}$ and run separate regressions for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if any of a firm-year's facility contains non-bank lead arrangers, and zero otherwise. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample		Non-leveraged loan sub-sample	
	(1)	(2)	(3)	(4)
Dependent variable:	*CAPEX* $_{post}$	*R&D* $_{post}$	*CAPEX* $_{post}$	*R&D* $_{post}$
Non-bank	-0.005**	-0.002*	-0.002	-0.000
	(-2.05)	(-1.69)	(-0.41)	(-0.03)
Size $_{pre}$	-0.001	0.001	-0.007***	-0.001
	(-1.57)	(1.40)	(-3.81)	(-1.18)
Leverage $_{pre}$	0.006	-0.005	0.027	-0.002
	(1.28)	(-1.51)	(1.45)	(-0.22)
ROA $_{pre}$	0.012	-0.011	-0.010	-0.003
	(1.08)	(-1.33)	(-0.27)	(-0.12)
Cash $_{pre}$	-0.009	-0.007	-0.008	0.001
	(-1.08)	(-1.19)	(-0.29)	(0.03)
Tobin's Q $_{pre}$	0.002	0.001	0.001	-0.004**
	(0.96)	(0.43)	(0.19)	(-2.02)
Tangibility $_{pre}$	0.043***	-0.005**	0.078***	-0.009**
	(5.55)	(-2.34)	(2.90)	(-2.09)
R&D $_{pre}$	-0.007	0.632***	0.035	0.647***
	(-0.27)	(20.04)	(0.52)	(8.47)
CAPEX $_{pre}$	0.172***	-0.012	0.109	-0.013
	(5.60)	(-1.03)	(1.21)	(-0.41)
Term Loan	-0.006**	-0.002*	-0.004	0.003
	(-2.55)	(-1.77)	(-0.40)	(1.24)
All-in-drawn	-0.000	0.001*	-0.003*	0.000
	(-0.14)	(1.84)	(-1.77)	(0.25)
Ln (Maturity)	0.007***	-0.000	-0.004	-0.000
	(3.31)	(-0.30)	(-0.73)	(-0.05)
No. of Covenants	-0.000	-0.000	-0.002	0.001

	(-0.20)	(-0.99)	(-0.75)	(0.39)
Secured	-0.005	-0.001	0.001	-0.001
	(-1.28)	(-0.33)	(0.10)	(-0.14)
Constant	0.016	-0.010	0.076**	0.020
	(1.09)	(-0.94)	(2.04)	(1.61)
Observations	1994	2003	576	579
R^2	0.57	0.79	0.67	0.86

Table C3: Loan contract Terms

This table examines the relation between non-bank participation and loan contract terms. We drop the 'Debt Repayment' loans from our sample. Dependent variables are *All-in-drawn*, which is the average loan spread within a deal. *No. of covenants*, which is the total number of financial covenants in a contract, *Secured*, which is a dummy variable equal to one if the contract demands collateral. We use OLS regressions to estimate *All-in-drawn* and *No. of Covenants* and use linear probability regressions to estimate *Secured*, for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if a deal contains non-bank lead arrangers, and zero otherwise. The firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; the loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample			Non-leveraged loan sub-sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	*All-in-drawn*	*No. of Covenants*	*Secured*	*All-in-drawn*	*No. of Covenants*	*Secured*
Non-bank	0.653***	-0.299***	0.109***	0.820***	-0.221**	0.081**
	(10.09)	(-4.98)	(7.17)	(3.92)	(-2.51)	(2.29)
Size $_{pre}$	-0.157***	-0.116***	-0.007	-0.391***	-0.082**	-0.060***
	(-6.92)	(-4.62)	(-1.16)	(-3.76)	(-2.35)	(-4.77)
Leverage $_{pre}$	0.571***	0.014	0.052*	-1.164	-0.618**	0.280***
	(4.34)	(0.10)	(1.84)	(-0.54)	(-2.41)	(2.94)
ROA $_{pre}$	-2.110***	1.414***	-0.296***	-9.626***	0.912*	-0.217
	(-7.60)	(5.46)	(-5.24)	(-3.56)	(1.78)	(-1.02)
Cash $_{pre}$	0.317	0.111	0.070	-2.726*	-0.499	0.457***
	(1.33)	(0.57)	(1.51)	(-1.66)	(-1.09)	(2.86)
Tobin's Q $_{pre}$	-0.219***	-0.017	-0.025***	-0.212	-0.001	-0.083***
	(-5.08)	(-0.40)	(-2.76)	(-0.44)	(-0.03)	(-4.23)
Tangibility $_{pre}$	0.140	0.261	-0.026	-0.782	-0.394	0.091

	(0.81)	(1.59)	(-0.67)	(-1.14)	(-1.56)	(0.91)
R&D $_{pre}$	0.357	-1.802**	0.288	-0.121	-0.472	-0.018
	(0.50)	(-2.47)	(1.62)	(-0.03)	(-0.37)	(-0.04)
CAPEX $_{pre}$	-0.118	-0.986*	-0.015	0.540	0.709	0.133
	(-0.18)	(-1.91)	(-0.12)	(0.19)	(0.78)	(0.40)
Term Loan	1.087***	0.228***	0.051***	2.068**	-0.023	0.142***
	(13.90)	(3.42)	(2.76)	(2.20)	(-0.18)	(2.99)
All-in-drawn		0.007	0.004		-0.019**	0.007**
		(0.39)	(0.78)		(-2.26)	(2.41)
Ln (Maturity)	-0.573***	0.247***	0.055***	-0.983	0.232***	0.026
	(-7.98)	(4.51)	(3.54)	(-1.38)	(3.56)	(0.99)
No. of Covenants	0.009		0.054***	-0.438**		0.073***
	(0.39)		(9.70)	(-2.04)		(3.69)
Secured	0.083	0.879***		1.210*	0.525***	
	(0.79)	(10.41)		(1.95)	(3.76)	
Constant	4.777***	0.054	0.449***	10.816**	0.592	0.551***
	(12.04)	(0.12)	(3.13)	(2.23)	(0.94)	(3.28)
Observations	2580	2580	2580	737	737	737
R^2	0.34	0.26	0.20	0.39	0.40	0.55

Table C4: CAPEX Restriction

This table examines the relation between non-bank participation and the imposition of restriction on future investments. We drop the 'Debt Repayment' loans from our sample. Dependent variable is *CapexRes*, which is a dummy variable equal to one if the contract imposes a Max CAPEX covenant, and zero otherwise. We use the ordinary least square estimation, for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if a deal contains non-bank lead arrangers, and zero otherwise. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample	Non-leveraged loan sub-sample
	(1)	(2)
Dependent variable:	*CapexRes*	*CapexRes*
Non-bank	0.095***	0.000
	(6.08)	(0.00)
Size $_{pre}$	0.007	0.001
	(1.30)	(0.15)
Leverage $_{pre}$	0.060*	0.014
	(1.72)	(0.26)
ROA $_{pre}$	-0.326***	-0.198*
	(-4.83)	(-1.79)
Cash $_{pre}$	0.036	-0.035
	(0.75)	(-0.49)
Tobin's Q $_{pre}$	-0.014	0.003
	(-1.43)	(0.32)
Tangibility $_{pre}$	-0.058	0.020
	(-1.45)	(0.48)
R&D $_{pre}$	-0.014	0.197
	(-0.07)	(0.84)
CAPEX $_{pre}$	-0.119	0.066
	(-1.02)	(0.49)
Term Loan	-0.014	0.003
	(-0.84)	(0.10)
All-in-drawn	0.018***	-0.001
	(3.91)	(-0.73)
Ln (Maturity)	-0.010	-0.008
	(-0.74)	(-0.75)
No. of Covenants	0.194***	0.069***
	(35.97)	(5.32)
Secured	0.008	0.087***
	(0.42)	(3.05)
Constant	-0.227***	-0.075

	(-2.74)	(-0.79)
Observations	2580	737
R^2	0.51	0.43

Table C5: Test with binding restrictions using the sub-sample of leveraged loan borrowers.

This table examines the relation between binding restrictions of capital expenditure and post-loan capital expenditure, and performance. We drop the 'Debt Repayment' loans from our sample. Dependent variables are *CAPEX* $_{post}$, which is the post-loan capital expenditure scaled by the assets, *ROA* $_{post}$, which is the post-loan return on assets. We use OLS regressions to estimate capital expenditure and performance following the loan origination, for our sub-sample of leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if any of a firm-year's facility contains any non-bank lead arranger, and zero otherwise. *Bank CapexRes* is a dummy variable, which is equal to one if banks impose covenants on capital expenditure in a year, and zero otherwise. *Non-bank CapexRes* is a dummy variable, which is equal to one if non-banks impose covenants on capital expenditure in a year, and zero otherwise. *Non-bank Strict* is a dummy variable, which is equal to one if non-banks impose binding restrictions on capital expenditure in a year. *Bank Strict* is a dummy variable, which is equal to one if banks impose binding restrictions on capital expenditure in a year, and zero otherwise. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	(1)	(2)	(3)	(4)
Dependent variable:	*CAPEX* $_{post}$	*CAPEX* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$
Non-bank	-0.005*	-0.005*	-0.024***	-0.024***
	(-1.84)	(-1.85)	(-3.91)	(-3.92)
Non-bank Strict		-0.008**		-0.018
		(-1.99)		(-1.61)
Non-bank CapexRes	0.005	0.010**	0.021**	0.032***
	(1.23)	(2.31)	(2.30)	(2.93)
Bank Strict		-0.000		-0.007
		(-0.02)		(-0.67)
Bank CapexRes	-0.001	-0.001	-0.005	-0.002
	(-0.31)	(-0.25)	(-0.75)	(-0.17)
Size $_{pre}$	-0.001	-0.001	0.000	0.001
	(-1.56)	(-1.51)	(0.18)	(0.28)
Leverage $_{pre}$	0.005	0.005	0.042***	0.043***
	(1.05)	(1.11)	(3.56)	(3.63)
ROA $_{pre}$	0.014	0.014	0.217***	0.216***
	(1.26)	(1.22)	(7.35)	(7.32)
Cash $_{pre}$	-0.004	-0.004	-0.064***	-0.064***
	(-0.51)	(-0.48)	(-3.10)	(-3.05)
Tobin's Q $_{pre}$	0.002	0.002	0.003	0.003
	(0.72)	(0.69)	(0.69)	(0.63)
Tangibility $_{pre}$	0.044***	0.044***	-0.009	-0.009
	(5.71)	(5.71)	(-0.60)	(-0.61)
R&D $_{pre}$	-0.016	-0.016	-0.154*	-0.154*

	(-0.61)	(-0.61)	(-1.72)	(-1.72)
CAPEX $_{pre}$	0.165***	0.165***	0.006	0.007
	(5.29)	(5.28)	(0.13)	(0.15)
Term Loan	-0.006**	-0.006**	0.014**	0.014**
	(-2.22)	(-2.27)	(2.39)	(2.35)
All-in-drawn	-0.001	-0.001	-0.011***	-0.011***
	(-0.58)	(-0.52)	(-4.80)	(-4.75)
Ln (Maturity)	0.000**	0.000**	-0.000	-0.000
	(2.39)	(2.34)	(-0.84)	(-0.91)
No. of Covenants	-0.001	-0.001	0.001	0.001
	(-0.56)	(-0.53)	(0.24)	(0.26)
Secured	-0.003	-0.003	-0.017**	-0.017**
	(-0.81)	(-0.82)	(-2.22)	(-2.22)
Constant	0.038***	0.037***	0.049	0.048
	(2.92)	(2.90)	(1.02)	(0.99)
Observations	1923	1923	1926	1926
R^2	0.56	0.56	0.35	0.35

Table C6: Summary Statistics for Loan Purposes

This table presents the distribution of a selection of the most common loan purposes on the facility level, for the bank borrowers, bank borrowers who are matched with non-bank borrowers, and non-bank borrowers.

	Purpose of bank loans (un-matched)		Purpose of bank loans(matched)		Purpose of non-bank loans	
Primary Purpose	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Acquisition Line	1408	5.28	205	5.79	176	5.36
Capital Expenditure	127	0.48	26	0.73	24	0.73
Corporate Purposes	11093	41.6	1358	38.35	1034	31.5
CP Backup	1528	5.73	101	2.85	39	1.19
Debt Repayment	3247	12.18	451	12.74	562	17.12
Debtor-in-possess	165	0.62	62	1.75	79	2.41
Dividend Recap	36	0.14	12	0.34	18	0.55
Equipment Purchase	113	0.42	22	0.62	24	0.73
Exit Financing	97	0.36	38	1.07	36	1.1
LBO	476	1.79	100	2.82	126	3.84
Project Finance	155	0.58	23	0.65	31	0.94
Recap.	61	0.23	17	0.48	17	0.52
Spinoff	114	0.43	27	0.76	7	0.21
Stock Buyback	192	0.72	21	0.59	18	0.55
Takeover	2979	11.17	353	9.97	376	11.45
Working Capital	4525	16.97	687	19.4	683	20.8
Other	131	0.49	14	0.4	6	0.18

Online Appendix D: Results without non-bank lead arrangers

Table D1: Borrower performance following the loan origination

This table examines the relation between non-bank participation and borrower performance following the loan origination. Dependent variables are *ROA* $_{post}$, which is return on assets, and *Tobin's Q* $_{post}$, which is the market to book ratio in term of assets. We use OLS regressions to estimate borrower performance for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if any of a firm-year's facility contains any non-bank participant, but not lead arranger, and zero otherwise. We drop the loans with non-banks as lead arrangers. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*. Loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample			Non-leveraged loan sub-sample			Leveraged loan sub-sample	Non-leveraged loan sub-sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*Tobin's Q* $_{post}$	*Tobin's Q* $_{post}$
Non-bank	-0.002	-0.002	0.000	-0.003	-0.004*	-0.003	-0.017	-0.003
	(-0.71)	(-0.70)	(0.04)	(-1.34)	(-1.65)	(-1.24)	(-0.82)	(-0.14)
Size $_{pre}$		0.002	-0.000		0.003**	-0.001	-0.017	-0.051***
		(1.09)	(-0.10)		(2.51)	(-1.13)	(-1.61)	(-3.87)
Leverage $_{pre}$		0.020**	0.030***		-0.011	0.003	0.202***	0.457***
		(2.04)	(3.04)		(-1.00)	(0.28)	(3.04)	(3.98)
ROA $_{pre}$		0.192***	0.164***		0.245***	0.169***	-0.304	0.262
		(5.98)	(5.04)		(5.05)	(4.38)	(-1.56)	(0.60)
Cash $_{pre}$		-0.049***	-0.044**		-0.044**	-0.022	-0.334***	-0.381**
		(-2.92)	(-2.55)		(-2.13)	(-1.18)	(-3.27)	(-2.01)
Tobin's Q $_{pre}$		0.014***	0.013***		0.025***	0.025***	0.382***	0.551***

		(4.01)	(3.59)		(8.14)	(9.81)	(10.43)	(15.79)
Tangibility $_{pre}$		0.008	0.010		0.020**	0.021**	-0.046	-0.020
		(0.93)	(1.16)		(2.27)	(2.43)	(-0.90)	(-0.29)
R&D $_{pre}$		-0.207**	-0.227**		-0.159**	-0.141**	1.200*	1.519*
		(-2.24)	(-2.44)		(-2.30)	(-2.21)	(1.93)	(1.74)
CAPEX $_{pre}$		-0.113***	-0.116***		-0.138***	-0.141***	-0.090	-0.385
		(-3.61)	(-3.66)		(-3.64)	(-3.83)	(-0.60)	(-1.37)
Term Loan		-0.007**	0.000		-0.015***	-0.010***	-0.017	-0.036
		(-2.17)	(0.02)		(-4.40)	(-2.83)	(-0.72)	(-1.25)
All-in-drawn			-0.010***			-0.015***	-0.000	-0.132***
			(-4.97)			(-3.82)	(-0.04)	(-4.60)
Ln (Maturity)			-0.006			0.007***	0.039*	-0.005
			(-1.46)			(2.84)	(1.69)	(-0.20)
No. of Covenants			0.001			-0.003**	0.009	-0.026*
			(0.55)			(-2.23)	(1.14)	(-1.79)
Secured			-0.009**			-0.004	-0.071**	0.006
			(-2.14)			(-1.06)	(-2.50)	(0.19)
Constant	-0.010	-0.043*	0.023	0.010	-0.035	-0.020	0.501***	0.793***
	(-0.50)	(-1.91)	(0.83)	(0.37)	(-1.29)	(-0.67)	(3.61)	(3.27)
Observations	3055	3035	2974	2924	2911	2694	2921	2685
R^2	0.18	0.26	0.27	0.21	0.39	0.42	0.35	0.60

Table D2: Investment following the loan origination

This table examines the relation between non-bank participation and firm investment following the loan origination. We drop the 'Debt Repayment' loans from our sample. In column (1) and (3) the dependent variable is *CAPEX* $_{post}$, which is the post- loan capital expenditure scaled by lagged total assets. In columns (2) and (4), the dependent variable is *R&D* $_{post}$, which is the post-loan research and development expenses scaled by lagged total assets. We use OLS regressions to estimate *CAPEX* $_{post}$ and *R&D* $_{post}$ and run separate regressions for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if any of a firm- year's facilities contains any non-bank participant, but not lead arranger, and zero otherwise. We drop the loans with non-banks as lead arrangers. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample		Non-leveraged loan sub-sample	
	(1)	(2)	(3)	(4)
Dependent variable:	*CAPEX* $_{post}$	*R&D* $_{post}$	*CAPEX* $_{post}$	*R&D* $_{post}$
Non-bank	-0.003	-0.001**	-0.000	-0.001
	(-1.62)	(-2.10)	(-0.22)	(-1.25)
Size $_{pre}$	-0.002**	0.000	-0.003***	-0.000
	(-2.36)	(1.07)	(-3.69)	(-0.04)
Leverage $_{pre}$	0.012**	-0.001	-0.001	-0.001
	(2.13)	(-0.86)	(-0.19)	(-0.72)
ROA $_{pre}$	-0.018	-0.007	-0.021	0.003
	(-1.06)	(-1.13)	(-0.61)	(0.25)
Cash $_{pre}$	-0.044***	0.000	0.000	-0.006
	(-3.85)	(0.07)	(0.03)	(-1.06)
Tobin's Q $_{pre}$	0.004**	-0.001*	0.002	-0.001
	(2.01)	(-1.69)	(1.14)	(-0.76)
Tangibility $_{pre}$	0.027***	-0.002**	0.046***	-0.002**
	(3.74)	(-2.29)	(5.31)	(-2.04)
R&D $_{pre}$	0.014	0.713***	-0.067*	0.778***
	(0.40)	(22.90)	(-1.87)	(23.67)
CAPEX $_{pre}$	0.252***	0.001	0.381***	-0.002
	(8.41)	(0.52)	(8.09)	(-0.53)
Term Loan	-0.006**	-0.001	-0.007***	-0.001
	(-2.51)	(-1.04)	(-3.53)	(-1.55)
All-in-drawn	-0.003**	0.000	-0.003*	-0.001*
	(-2.51)	(1.00)	(-1.70)	(-1.85)
Ln (Maturity)	0.007***	-0.000	0.002	-0.000
	(3.63)	(-0.50)	(1.46)	(-0.31)

No. of Covenants	-0.001*	-0.000*	-0.000	-0.000
	(-1.87)	(-1.75)	(-0.46)	(-1.31)
Secured	-0.006**	0.001	-0.001	0.002**
	(-2.17)	(1.49)	(-0.62)	(2.37)
Constant	0.023*	0.003	0.027*	0.004
	(1.86)	(0.90)	(1.74)	(1.12)
Observations	2966	2983	2689	2696
R^2	0.58	0.85	0.73	0.84

Table D3: Loan contract Terms

This table examines the relation between non-bank participation and loan contract terms. We drop the 'Debt Repayment' loans from our sample. Dependent variables are *All-in-drawn*, which is the average loan spread within a deal. *No. of covenants*, which is the total number of financial covenants in a contract, *Secured*, which is a dummy variable equal to one if the contract demands collateral. We use OLS regressions to estimate *All-in-drawn* and *No. of Covenants* and use linear probability regressions to estimate *Secured*, for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if a deal contains any non-bank participant, but not lead arranger, and zero otherwise. We drop the loans with non-banks as lead arrangers. The firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; the loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample			Non-leveraged loan sub-sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	*All-in-drawn*	*No. of Covenants*	*Secured*	*All-in-drawn*	*No. of Covenants*	*Secured*
Non-bank	0.061	0.234***	0.097***	0.006	0.322***	0.013
	(1.46)	(4.80)	(6.86)	(0.30)	(9.80)	(1.06)
Size $_{pre}$	-0.143***	-0.155***	-0.018***	-0.106***	-0.198***	-0.037***
	(-8.89)	(-7.12)	(-2.87)	(-7.23)	(-10.76)	(-5.44)
Leverage $_{pre}$	0.661***	-0.051	0.132***	0.392***	0.228	0.060
	(6.50)	(-0.43)	(4.24)	(3.97)	(1.49)	(1.17)
ROA $_{pre}$	-2.448***	0.599**	-0.247***	-0.265	0.698	-0.714***
	(-9.86)	(2.01)	(-3.10)	(-0.99)	(1.10)	(-4.23)
Cash $_{pre}$	0.398**	-0.183	0.114**	0.449***	-0.082	0.033
	(2.08)	(-0.90)	(2.19)	(3.50)	(-0.33)	(0.40)
Tobin's Q $_{pre}$	-0.094***	0.005	-0.030**	-0.156***	-0.093**	0.000
	(-2.62)	(0.12)	(-2.56)	(-7.90)	(-2.47)	(0.02)
Tangibility $_{pre}$	0.130	0.052	0.007	-0.137*	-0.179	-0.036

	(1.20)	(0.43)	(0.20)	(-1.80)	(-1.58)	(-0.85)
R&D $_{pre}$	-0.630	-1.798**	0.152	0.341	0.853	-0.141
	(-0.81)	(-1.97)	(0.57)	(0.83)	(0.90)	(-0.46)
CAPEX $_{pre}$	0.076	-0.209	-0.102	0.234	0.101	0.751***
	(0.24)	(-0.64)	(-0.91)	(1.03)	(0.24)	(4.38)
Term Loan	0.712***	0.234***	0.074***	0.329***	0.093*	0.050**
	(14.35)	(4.25)	(4.31)	(8.65)	(1.85)	(2.29)
All-in-drawn		-0.035*	0.017**		0.102*	0.141***
		(-1.72)	(2.57)		(1.72)	(6.56)
Ln (Maturity)	-0.306***	0.143***	0.085***	0.019	0.157***	0.003
	(-5.78)	(3.17)	(5.63)	(1.12)	(5.47)	(0.23)
No. of Covenants	-0.027*		0.081***	0.030**		0.089***
	(-1.66)		(15.22)	(1.98)		(9.85)
Secured	0.161***	0.997***		0.286***	0.622***	
	(2.70)	(15.94)		(6.67)	(9.66)	
Constant	3.880***	0.864**	0.312***	1.019***	2.267***	0.348**
	(6.23)	(2.09)	(2.87)	(5.70)	(6.13)	(2.05)
Observations	3813	3813	3813	3277	3277	3277
R^2	0.29	0.29	0.24	0.59	0.35	0.35

Table D4: CAPEX Restriction

This table examines the relation between non-bank participation and the imposition of restriction on future investments. We drop the 'Debt Repayment' loans from our sample. Dependent variable is *CapexRes*, which is a dummy variable equal to one if the contract imposes a Max CAPEX covenant, and zero otherwise. We use the ordinary least square estimation for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if a deal contains any non-bank participant, but not lead arranger, and zero otherwise. We drop the loans with non-banks as lead arrangers. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample	Non-leveraged loan sub-sample
	(1)	(2)
Dependent variable:	*CapexRes*	*CapexRes*
Non-bank	0.012	-0.014**
	(0.95)	(-2.30)
Size $_{pre}$	0.003	-0.004
	(0.51)	(-1.21)
Leverage $_{pre}$	0.075**	0.048
	(2.31)	(1.43)
ROA $_{pre}$	-0.235***	-0.035
	(-2.85)	(-0.38)
Cash $_{pre}$	-0.001	-0.041
	(-0.02)	(-0.97)
Tobin's Q $_{pre}$	-0.002	0.002
	(-0.15)	(0.29)
Tangibility $_{pre}$	0.015	0.005
	(0.48)	(0.31)
R&D $_{pre}$	0.330	0.163
	(1.32)	(0.91)
CAPEX $_{pre}$	-0.164*	-0.051
	(-1.79)	(-0.81)
Term Loan	0.010	0.003
	(0.67)	(0.26)
All-in-drawn	0.033***	0.012
	(5.78)	(1.15)
Ln (Maturity)	-0.018*	0.000
	(-1.67)	(0.05)
No. of Covenants	0.161***	0.050***
	(30.80)	(8.23)
Secured	0.023	0.071***
	(1.59)	(4.67)

Constant	-0.345***	-0.153**
	(-4.58)	(-2.54)
Observations	3813	3277
R^2	0.43	0.22

Table D5: Test with binding restrictions using the sub-sample of leveraged loan borrowers.

This table examines the relation between binding restrictions of capital expenditure and post-loan capital expenditure, and performance. We drop the 'Debt Repayment' loans from our sample. Dependent variables are *CAPEX* $_{post}$, which is the post-loan capital expenditure scaled by the assets, *ROA* $_{post}$, which is the post-loan return on assets. We use OLS regressions to estimate capital expenditure and performance following the loan origination for our sub-sample of leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if any of a firm-year's facility contains any non-bank participant, but not lead arranger, and zero otherwise. We drop the loans with non-banks as lead arrangers. *Bank CapexRes* is a dummy variable, which is equal to one if banks impose covenants on capital expenditure in a year, and zero otherwise. *Non-bank CapexRes* is a dummy variable, which is equal to one if non-banks impose covenants on capital expenditure in a year, and zero otherwise. *Non-bank Strict* is a dummy variable, which is equal to one if non-banks impose binding restrictions on capital expenditure in a year. *Bank Strict* is a dummy variable, which is equal to one if banks impose binding restrictions on capital expenditure in a year, and zero otherwise. Firm level control variables include the pre-loan *Size*, *Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	(1)	(2)	(3)	(4)
Dependent variable:	*CAPEX* $_{post}$	*CAPEX* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$
Non-bank	-0.003	-0.003	-0.001	-0.001
	(-1.31)	(-1.31)	(-0.22)	(-0.20)
Non-bank Strict		0.002		0.010
		(0.48)		(1.31)
Non-bank CapexRes	-0.001	-0.002	0.002	-0.003
	(-0.27)	(-0.56)	(0.44)	(-0.41)
Bank Strict		-0.003		-0.020*
		(-0.49)		(-1.69)
Bank CapexRes	0.001	0.003	-0.007	0.003
	(0.39)	(0.70)	(-0.98)	(0.36)
Size $_{pre}$	-0.002**	-0.002**	-0.000	-0.000
	(-2.28)	(-2.31)	(-0.06)	(-0.14)
Leverage $_{pre}$	0.011*	0.011*	0.029***	0.029***
	(1.94)	(1.94)	(2.85)	(2.85)
ROA $_{pre}$	-0.014	-0.014	0.156***	0.156***
	(-0.83)	(-0.83)	(4.86)	(4.88)
Cash $_{pre}$	-0.043***	-0.043***	-0.044**	-0.043**
	(-3.82)	(-3.82)	(-2.51)	(-2.48)
Tobin's Q $_{pre}$	0.004**	0.004**	0.013***	0.012***
	(2.08)	(2.08)	(3.39)	(3.32)
Tangibility $_{pre}$	0.028***	0.028***	0.008	0.008
	(3.89)	(3.89)	(0.89)	(0.89)

R&D $_{pre}$	-0.002	-0.002	-0.239**	-0.240**
	(-0.06)	(-0.06)	(-2.47)	(-2.47)
CAPEX $_{pre}$	0.237***	0.237***	-0.113***	-0.114***
	(8.10)	(8.09)	(-3.49)	(-3.50)
Term Loan	-0.007***	-0.007***	0.000	0.000
	(-2.94)	(-2.91)	(0.08)	(0.12)
All-in-drawn	-0.002*	-0.002*	-0.009***	-0.009***
	(-1.70)	(-1.69)	(-4.56)	(-4.59)
Ln (Maturity)	0.008***	0.008***	-0.005	-0.006
	(4.27)	(4.21)	(-1.25)	(-1.38)
No. of Covenants	-0.002**	-0.002**	0.001	0.001
	(-2.02)	(-2.01)	(0.92)	(0.95)
Secured	-0.007**	-0.007**	-0.010**	-0.010**
	(-2.51)	(-2.52)	(-2.24)	(-2.29)
Constant	0.018	0.019	0.020	0.022
	(1.49)	(1.52)	(0.71)	(0.82)
Observations	2825	2825	2833	2833
R^2	0.58	0.58	0.27	0.27

Online Appendix E: Results with only non-bank lead arrangers to define non-bank loans

Table E1: Borrower performance following the loan origination

This table examines the relation between non-bank participation and borrower performance following the loan origination. Dependent variables are *ROA* $_{post}$, which is return on assets, and *Tobin's Q* $_{post}$, which is the market to book ratio in term of assets. We use OLS regressions to estimate borrower performance for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if more than haft of a firm-year's contracts contain only non-bank lead arrangers, and zero otherwise. The control group is the firms who only borrow from banks during a year. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*. Loan contract term controls include *All-in-drawn, Ln (Maturity), Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample			Non-leveraged loan sub-sample			Leveraged loan sub-sample	Non-leveraged loan sub-sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*Tobin's Q* $_{post}$	*Tobin's Q* $_{post}$
Non-bank	-0.026***	-0.027***	-0.017**	-0.040*	-0.028	0.007	-0.041	0.205
	(-3.49)	(-3.85)	(-2.24)	(-1.65)	(-1.59)	(0.39)	(-0.94)	(1.58)
Size $_{pre}$		0.005*	0.003		0.009*	-0.006	-0.027*	-0.095*
		(1.71)	(0.98)		(1.68)	(-0.85)	(-1.69)	(-1.80)
Leverage $_{pre}$		0.019	0.024		0.042	0.035	0.205*	0.338
		(1.12)	(1.39)		(1.05)	(0.64)	(1.95)	(0.96)
ROA $_{pre}$		0.213***	0.202***		0.320***	0.369***	-0.749***	-1.428**
		(6.42)	(5.98)		(5.22)	(3.76)	(-3.65)	(-2.32)
Cash $_{pre}$		-0.017	-0.023		0.022	-0.063	0.164	-0.384
		(-0.71)	(-1.02)		(0.58)	(-1.15)	(1.22)	(-0.94)
Tobin's Q $_{pre}$		0.002	-0.002		0.001	-0.024**	0.220***	0.308***

		(0.27)	(-0.30)		(0.11)	(-2.14)	(5.65)	(3.74)
Tangibility $_{pre}$		0.009	0.011		0.067*	0.004	-0.068	0.703*
		(0.44)	(0.53)		(1.86)	(0.10)	(-0.52)	(1.74)
R&D $_{pre}$		-0.202**	-0.148		-0.460**	0.065	1.493**	0.776
		(-2.04)	(-1.49)		(-2.53)	(0.26)	(2.42)	(0.45)
CAPEX $_{pre}$		-0.020	-0.019		-0.163	0.128	-0.289	-1.437
		(-0.29)	(-0.28)		(-1.53)	(0.74)	(-0.70)	(-0.91)
Term Loan		0.013*	0.017**		-0.016	-0.003	-0.033	-0.067
		(1.74)	(2.14)		(-0.75)	(-0.13)	(-0.79)	(-0.39)
All-in-drawn			-0.009***			-0.001	0.014	0.008
			(-2.84)			(-0.29)	(1.08)	(0.27)
Ln (Maturity)			0.001			-0.006	-0.003	-0.087
			(0.11)			(-0.40)	(-0.07)	(-0.83)
No. of Covenants			0.007***			0.015	-0.009	-0.032
			(2.70)			(1.55)	(-0.63)	(-0.44)
Secured			-0.018*			-0.038*	-0.039	-0.351**
			(-1.91)			(-1.89)	(-0.62)	(-2.38)
Constant	-0.016	-0.031	0.012	-0.045	-0.068	-0.049	1.200***	1.170*
	(-0.31)	(-0.62)	(0.21)	(-0.47)	(-0.63)	(-0.36)	(4.40)	(1.72)
Observations	1649	1626	1562	453	441	281	1546	280
R^2	0.19	0.31	0.34	0.45	0.71	0.81	0.41	0.77

Table E2: Investment following the loan origination

This table examines the relation between non-bank participation and firm investment following the loan origination. We drop the 'Debt Repayment' loans from our sample. In column (1) and (3) the dependent variable is *CAPEX* $_{post}$, which is the post- loan capital expenditure scaled by lagged total assets. In columns (2) and (4), the dependent variable is *R&D* $_{post}$, which is the post-loan research and development expenses scaled by lagged total assets. We use OLS regressions to estimate *CAPEX* $_{post}$ and *R&D* $_{post}$ and run separate regressions for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if more than haft of a firm-year's contracts contain only non-bank lead arrangers, and zero otherwise. The control group is the firms who only borrow from banks during a year. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample		Non-leveraged loan sub-sample	
	(1)	(2)	(3)	(4)
Dependent variable:	*CAPEX* $_{post}$	*R&D* $_{post}$	*CAPEX* $_{post}$	*R&D* $_{post}$
Non-bank	-0.008**	-0.001	0.000	0.006
	(-2.52)	(-0.81)	(0.02)	(0.97)
Size $_{pre}$	-0.001	-0.000	-0.008***	-0.001
	(-0.71)	(-0.29)	(-2.60)	(-0.58)
Leverage $_{pre}$	-0.010*	-0.003	0.032	0.009
	(-1.77)	(-0.57)	(1.50)	(0.39)
ROA $_{pre}$	0.003	0.002	0.057*	0.023
	(0.32)	(0.22)	(1.79)	(0.78)
Cash $_{pre}$	-0.021**	-0.002	-0.001	0.003
	(-2.42)	(-0.27)	(-0.04)	(0.14)
Tobin's Q $_{pre}$	0.003*	0.000	-0.005	-0.002
	(1.73)	(0.03)	(-1.11)	(-0.53)
Tangibility $_{pre}$	0.043***	-0.001	0.109**	-0.000
	(4.32)	(-0.33)	(2.55)	(-0.03)
R&D $_{pre}$	0.005	0.580***	0.092	0.486***
	(0.20)	(19.04)	(1.17)	(5.28)
CAPEX $_{pre}$	0.148***	-0.036**	0.006	-0.070
	(4.20)	(-2.12)	(0.05)	(-1.15)
Term Loan	-0.002	-0.003	-0.009	-0.004
	(-0.54)	(-1.42)	(-0.81)	(-0.55)
All-in-drawn	0.001	0.001	-0.001	0.001
	(0.70)	(1.44)	(-0.40)	(0.81)
Ln (Maturity)	0.004*	0.001	0.003	-0.001
	(1.81)	(0.48)	(0.41)	(-0.26)

No. of Covenants	0.001	-0.001*	0.000	0.001
	(0.74)	(-1.66)	(0.09)	(0.43)
Secured	-0.004	0.001	-0.007	-0.007
	(-0.95)	(0.43)	(-0.93)	(-0.91)
Constant	0.040**	-0.008	0.079**	0.008
	(2.54)	(-0.71)	(2.05)	(0.37)
Observations	1553	1567	281	282
R^2	0.56	0.78	0.77	0.89

Table E3: Loan contract Terms

This table examines the relation between non-bank participation and loan contract terms. We drop the 'Debt Repayment' loans from our sample. Dependent variables are *All-in-drawn*, which is the average loan spread within a deal. *No. of covenants*, which is the total number of financial covenants in a contract, *Secured*, which is a dummy variable equal to one if the contract demands collateral. We use OLS regressions to estimate *All-in-drawn* and *No. of Covenants* and use linear probability regressions to estimate *Secured*, for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if a contract contains only non-bank lead arrangers, and zero otherwise. The control group is the contracts that only contain bank lenders. The firm level control variables include the pre-loan *Size*, *Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; the loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample			Non-leveraged loan sub-sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	*All-in-drawn*	*No. of Covenants*	*Secured*	*All-in-drawn*	*No. of Covenants*	*Secured*
Non-bank	0.918***	-0.491***	0.166***	1.585***	-0.143	0.097
	(13.40)	(-6.51)	(9.75)	(3.21)	(-0.77)	(1.36)
Size $_{pre}$	-0.149***	-0.059**	-0.025***	-0.256	-0.039	-0.103***
	(-5.23)	(-2.10)	(-3.78)	(-1.51)	(-0.59)	(-4.08)
Leverage $_{pre}$	0.568***	0.082	-0.006	0.452	0.020	0.317**
	(3.64)	(0.51)	(-0.20)	(0.30)	(0.05)	(2.12)
ROA $_{pre}$	-1.232***	0.846***	-0.140***	-6.952***	0.691	0.233
	(-5.46)	(3.77)	(-2.81)	(-3.64)	(1.02)	(0.91)
Cash $_{pre}$	-0.090	-0.122	-0.039	-1.330	-0.668	0.411**
	(-0.43)	(-0.73)	(-0.86)	(-0.85)	(-1.44)	(2.12)
Tobin's Q $_{pre}$	-0.117**	-0.019	-0.002	0.396	0.121	-0.096**
	(-2.57)	(-0.45)	(-0.20)	(1.37)	(1.31)	(-2.32)
Tangibility $_{pre}$	0.108	0.114	-0.029	-1.245	-0.398	-0.040

	(0.55)	(0.65)	(-0.68)	(-1.16)	(-1.00)	(-0.23)
R&D $_{pre}$	0.146	-1.566**	0.302**	-7.064	0.114	-0.613
	(0.23)	(-2.56)	(2.23)	(-1.17)	(0.07)	(-0.83)
CAPEX $_{pre}$	-0.123	-0.276	0.031	0.774	-0.263	0.015
	(-0.20)	(-0.51)	(0.27)	(0.19)	(-0.20)	(0.03)
Term Loan	0.985***	0.339***	0.020	2.185***	0.129	0.103
	(11.67)	(4.11)	(1.08)	(3.34)	(0.57)	(1.06)
All-in-drawn		0.009	0.002		-0.051	0.019
		(0.38)	(0.37)		(-1.53)	(1.58)
Ln (Maturity)	-0.562***	0.169**	0.024	-0.273	0.265**	0.019
	(-7.56)	(2.52)	(1.50)	(-0.84)	(2.53)	(0.45)
No. of Covenants	0.010		0.054***	-0.344		0.061*
	(0.38)		(8.73)	(-1.39)		(1.89)
Secured	0.044	1.057***		0.790	0.378*	
	(0.37)	(9.63)		(1.50)	(1.87)	
Constant	4.591***	-0.107	0.788***	3.756	0.193	0.931***
	(11.92)	(-0.25)	(9.06)	(1.22)	(0.15)	(3.29)
Observations	1900	1900	1900	334	334	334
R^2	0.39	0.26	0.26	0.93	0.57	0.63

Table E4: CAPEX Restriction

This table examines the relation between non-bank participation and the imposition of restriction on future investments. We drop the 'Debt Repayment' loans from our sample. Dependent variable is *CapexRes*, which is a dummy variable equal to one if the contract imposes a Max CAPEX covenant, and zero otherwise. We use the ordinary least square estimation for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if a contract contains only non-bank lead arrangers, and zero otherwise. The control group is the contracts that only contain bank lenders. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	Leveraged loan sub-sample	Non-leveraged loan sub-sample
	(1)	(2)
Dependent variable:	*CapexRes*	*CapexRes*
Non-bank	0.137***	0.010
	(7.00)	(0.21)
Size $_{pre}$	0.006	-0.033**
	(0.79)	(-2.38)
Leverage $_{pre}$	0.044	0.058
	(1.10)	(0.63)
ROA $_{pre}$	-0.205***	0.183
	(-3.77)	(1.37)
Cash $_{pre}$	-0.065	0.105
	(-1.56)	(0.92)
Tobin's Q $_{pre}$	-0.018*	0.004
	(-1.65)	(0.18)
Tangibility $_{pre}$	-0.036	0.006
	(-0.82)	(0.07)
R&D $_{pre}$	0.106	0.006
	(0.68)	(0.02)
CAPEX $_{pre}$	0.057	-0.107
	(0.45)	(-0.33)
Term Loan	-0.043**	-0.106*
	(-2.18)	(-1.93)
All-in-drawn	0.019***	0.019**
	(3.26)	(2.31)
Ln (Maturity)	0.007	0.048
	(0.43)	(1.60)
No. of Covenants	0.183***	0.114***
	(29.78)	(4.50)
Secured	0.041*	-0.031
	(1.69)	(-0.62)

Constant	-0.352***	-0.244
	(-4.20)	(-1.61)
Observations	1900	334
R^2	0.51	0.54

Table E5: Test with binding restrictions using the sub-sample of leveraged loan borrowers.

This table examines the relation between binding restrictions of capital expenditure and post-loan capital expenditure, and performance. We drop the 'Debt Repayment' loans from our sample. Dependent variables are *CAPEX* $_{post}$, which is the post-loan capital expenditure scaled by the assets, *ROA* $_{post}$, which is the post-loan return on assets. We use OLS regressions to estimate capital expenditure and performance following the loan origination for our sub-sample of leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if more than haft of a firm-year's contracts contain only non-bank lead arrangers, and zero otherwise. The control group is the firms who only borrow from banks during a year. *Bank CapexRes* is a dummy variable, which is equal to one if banks impose covenants on capital expenditure in a year, and zero otherwise. *Non-bank CapexRes* is a dummy variable, which is equal to one if non-banks impose covenants on capital expenditure in a year, and zero otherwise. *Non-bank Strict* is a dummy variable, which is equal to one if non-banks impose binding restrictions on capital expenditure in a year. *Bank Strict* is a dummy variable, which is equal to one if banks impose binding restrictions on capital expenditure in a year, and zero otherwise. On the deal level, a deal is called a "*Non-bank deal*" if it contains only non-bank lead arrangers. Firm level control variables include the pre-loan *Size, Leverage, ROA, Cash, Tobin's Q, Tangibility, R&D, and CAPEX*; loan contract term controls include *All-in-drawn*, *Ln (Maturity)*, *Secured*, *Term Loan* and *No. of covenants*. Industry × year fixed effects are included in our regressions. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. Industry dummies are based on the 12 Fama-French industries.

	(1)	(2)	(3)	(4)
Dependent variable:	*CAPEX* $_{post}$	*CAPEX* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$
Non-bank	-0.008**	-0.008**	-0.022**	-0.022**
	(-2.03)	(-2.03)	(-2.43)	(-2.43)
Non-bank Strict		-0.012**		-0.022
		(-2.30)		(-1.51)
Non-bank CapexRes	0.002	0.010*	0.010	0.025*
	(0.47)	(1.78)	(0.87)	(1.66)
Bank Strict		-0.006		-0.028
		(-0.87)		(-1.52)
Bank CapexRes	-0.000	0.003	-0.006	0.011
	(-0.08)	(0.56)	(-0.49)	(0.73)
Size $_{pre}$	-0.001	-0.001	0.003	0.003
	(-0.80)	(-0.66)	(0.81)	(0.89)
Leverage $_{pre}$	-0.010*	-0.010	0.032*	0.033*
	(-1.69)	(-1.63)	(1.83)	(1.90)
ROA $_{pre}$	0.005	0.004	0.214***	0.213***
	(0.44)	(0.40)	(6.17)	(6.15)
Cash $_{pre}$	-0.021**	-0.021**	-0.023	-0.022
	(-2.30)	(-2.23)	(-0.96)	(-0.91)
Tobin's Q $_{pre}$	0.003	0.003	-0.001	-0.002
	(1.63)	(1.54)	(-0.26)	(-0.35)
Tangibility $_{pre}$	0.044***	0.045***	0.014	0.015

	(4.35)	(4.39)	(0.69)	(0.73)
R&D $_{pre}$	0.007	0.005	-0.133	-0.136
	(0.26)	(0.21)	(-1.33)	(-1.36)
CAPEX $_{pre}$	0.137***	0.137***	-0.036	-0.036
	(3.83)	(3.83)	(-0.55)	(-0.54)
Term Loan	-0.003	-0.003	0.016*	0.016**
	(-0.86)	(-0.88)	(1.94)	(1.97)
All-in-drawn	0.001	0.001	-0.008**	-0.008**
	(0.45)	(0.54)	(-2.37)	(-2.29)
Ln (Maturity)	0.004*	0.004	0.002	0.001
	(1.70)	(1.61)	(0.21)	(0.09)
No. of Covenants	0.001	0.001	0.006*	0.006*
	(0.54)	(0.49)	(1.95)	(1.85)
Secured	-0.007	-0.007	-0.016*	-0.015*
	(-1.43)	(-1.40)	(-1.69)	(-1.67)
Constant	0.046***	0.045***	0.005	0.006
	(2.72)	(2.68)	(0.09)	(0.10)
Observations	1490	1490	1499	1499
R^2	0.55	0.55	0.35	0.35

Online Appendix F: Results with matching on industry and year in the non-leveraged sample

Table F1: Borrower performance following the loan origination

This table examines the relation between non-bank participation and borrower performance following the loan origination. Dependent variables are *ROA* $_{post}$, which is return on assets, and *Tobin's Q* $_{post}$, which is the market to book ratio in term of assets. We use OLS regressions to estimate borrower performance for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if any of a firm-year's facility contains non-bank lead arrangers, and zero otherwise. Industry×year fixed effects are included in our regressions. Industry dummies are based on the 12 Fama-French industries. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Leveraged loan sub-sample			Non-leveraged loan sub-sample			Leveraged	Non-leveraged
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*ROA* $_{post}$	*Tobin's Q* $_{post}$	*Tobin's Q* $_{post}$
Non-bank	-0.026***	-0.026***	-0.020***	-0.034***	-0.013*	-0.011**	-0.041	-0.084
	(-5.33)	(-5.66)	(-4.07)	(-3.87)	(-1.95)	(-2.07)	(-1.56)	(-1.51)
Size $_{pre}$		0.002	0.001		0.009***	0.000	-0.019*	-0.071***
		(1.24)	(0.54)		(3.95)	(0.18)	(-1.79)	(-3.05)
Leverage $_{pre}$		0.027**	0.036***		0.015	0.022	0.240***	0.267
		(2.45)	(3.20)		(0.65)	(0.77)	(2.95)	(1.19)
ROA $_{pre}$		0.213***	0.197***		0.389***	0.430***	-0.470***	-0.549
		(7.94)	(7.16)		(8.07)	(6.68)	(-2.93)	(-1.11)
Cash $_{pre}$		-0.050***	-0.053***		-0.011	-0.039	-0.073	-0.133
		(-2.78)	(-2.88)		(-0.34)	(-1.15)	(-0.67)	(-0.47)
Tobin's Q $_{pre}$		0.012***	0.009**		0.009*	0.001	0.280***	0.547***
		(3.02)	(2.33)		(1.91)	(0.25)	(8.99)	(9.29)
Tangibility $_{pre}$		0.008	0.010		0.018	-0.012	-0.067	0.202

		(0.58)	(0.78)		(0.90)	(-0.77)	(-0.82)	(1.27)
R&D $_{pre}$		-0.255***	-0.218**		-0.402***	-0.040	2.348***	2.630*
		(-2.95)	(-2.51)		(-2.59)	(-0.21)	(4.30)	(1.95)
CAPEX $_{pre}$		-0.085**	-0.086**		-0.055	0.013	-0.223	-1.296**
		(-2.04)	(-2.03)		(-0.72)	(0.17)	(-0.88)	(-2.06)
Term Loan		0.006	0.013**		-0.024**	-0.007	-0.050	-0.025
		(1.24)	(2.33)		(-2.29)	(-0.75)	(-1.61)	(-0.33)
All-in-drawn			-0.008***			-0.006**	0.007	-0.020
			(-3.31)			(-2.06)	(0.69)	(-1.06)
Ln (Maturity)			-0.000			-0.000	0.000	-0.001
			(-0.63)			(-0.04)	(0.26)	(-0.57)
No. of Covenants			0.004**			-0.006	-0.005	-0.035
			(2.09)			(-1.56)	(-0.48)	(-0.96)
Secured			-0.020***			-0.006	-0.039	-0.014
			(-2.89)			(-0.62)	(-0.84)	(-0.17)
Constant	-0.013	-0.032	0.007	-0.089	-0.093	-0.076	1.032***	0.780***
	(-0.31)	(-0.83)	(0.17)	(-1.23)	(-1.15)	(-1.38)	(4.99)	(2.70)
Observations	2501	2475	2409	793	783	605	2380	604
R^2	0.17	0.29	0.31	0.35	0.66	0.65	0.38	0.67

Table F2: Investment following the loan origination

This table examines the relation between non-bank lending and the post-loan firm investment. The dependent variable is $CAPEX_{post}$ in Columns (1) and (3), and $R\&D_{post}$ in columns (2) and (4). We use OLS estimation for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which equals one if a deal contains a non-bank lead, and zero otherwise. Industry×year fixed effects are included in our regressions. Industry dummies are based on the 12 Fama-French industries. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Leveraged loan sub-sample		Non-leveraged loan sub-sample	
	(1)	(2)	(3)	(4)
Dependent variable:	$CAPEX_{post}$	$R\&D_{post}$	$CAPEX_{post}$	$R\&D_{post}$
Non-bank	-0.005**	-0.002*	-0.002	-0.001
	(-2.19)	(-1.85)	(-0.51)	(-0.82)
$Size_{pre}$	-0.002***	0.000	-0.006***	0.000
	(-2.87)	(0.38)	(-3.40)	(0.01)
$Leverage_{pre}$	0.004	-0.004	0.023	-0.008
	(0.91)	(-1.41)	(1.35)	(-0.84)
ROA_{pre}	0.010	-0.001	-0.029	0.013
	(0.90)	(-0.18)	(-1.06)	(0.80)
$Cash_{pre}$	-0.022***	-0.004	-0.065***	0.002
	(-3.05)	(-0.77)	(-3.26)	(0.22)
$Tobin's\ Q_{pre}$	0.004**	-0.000	-0.004	0.000
	(2.08)	(-0.30)	(-1.41)	(0.20)
$Tangibility_{pre}$	0.046***	-0.003*	0.062***	-0.005
	(5.84)	(-1.81)	(2.74)	(-1.35)
$R\&D_{pre}$	0.000	0.651***	0.123*	0.649***
	(0.01)	(23.38)	(1.93)	(9.43)
$CAPEX_{pre}$	0.129***	-0.011	0.240***	-0.037*
	(4.62)	(-1.21)	(3.01)	(-1.86)
Term Loan	-0.005**	-0.002*	-0.002	0.004
	(-2.15)	(-1.81)	(-0.45)	(1.19)
All-in-drawn	-0.001	0.001	-0.003**	0.000
	(-1.04)	(1.45)	(-2.32)	(0.17)
Ln (Maturity)	0.000*	-0.000	-0.000	-0.000
	(1.65)	(-0.38)	(-0.27)	(-1.09)
No. of Covenants	0.000	-0.001	-0.006**	0.000
	(0.23)	(-1.37)	(-2.03)	(0.27)
Secured	-0.003	-0.003	0.005	0.006
	(-0.98)	(-1.57)	(0.89)	(1.63)
Constant	0.045***	0.002	0.073***	0.005
	(3.90)	(0.24)	(2.91)	(0.55)

Observations	2401	2415	603	606
R^2	0.53	0.80	0.61	0.88

Table F3: Loan contract Terms

This table examines the relation between non-bank lending and contract terms. Dependent variables are *All-in-drawn*, which is the average loan spread within a deal. *No. of covenants*, which is the total number of financial covenants in a contract, *Secured*, which is a dummy variable equal to one if the contract demands collateral. We use OLS regressions to estimate *All-in-drawn* and *No. of Covenants* and use linear probability regressions to estimate *Secured*, for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if a deal contains non-bank lead arrangers, and zero otherwise. Industry×year fixed effects are included in our regressions. Industry dummies are based on the 12 Fama-French industries. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Leveraged loan sub-sample			Non-leveraged loan sub-sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	*All-in-drawn*	*No. of Covenants*	*Secured*	*All-in-drawn*	*No. of Covenants*	*Secured*
Non-bank	0.625***	-0.398***	0.107***	0.928***	-0.081	0.067**
	(10.14)	(-7.37)	(8.02)	(4.22)	(-1.02)	(2.31)
Size $_{pre}$	-0.152***	-0.113***	-0.017***	-0.398***	-0.133***	-0.059***
	(-7.38)	(-4.70)	(-3.20)	(-4.84)	(-4.15)	(-5.30)
Leverage $_{pre}$	0.662***	0.047	0.073***	0.823	-0.348	0.226**
	(5.03)	(0.37)	(2.97)	(0.51)	(-1.34)	(2.55)
ROA $_{pre}$	-1.823***	1.075***	-0.233***	-10.217***	1.611***	-0.567***
	(-7.59)	(4.77)	(-5.05)	(-3.49)	(3.08)	(-3.16)
Cash $_{pre}$	0.229	-0.008	0.012	-1.878	-0.639*	0.269**
	(1.06)	(-0.05)	(0.33)	(-1.19)	(-1.85)	(2.04)
Tobin's Q $_{pre}$	-0.208***	0.003	-0.025***	-0.208	-0.127**	-0.046***
	(-5.70)	(0.09)	(-3.19)	(-0.52)	(-2.36)	(-2.65)
Tangibility $_{pre}$	0.149	0.171	-0.025	-1.454	-0.444**	-0.016
	(0.91)	(1.14)	(-0.71)	(-1.53)	(-2.00)	(-0.20)

R&D $_{pre}$	0.163	-1.857***	0.226	-1.586	1.940	-0.309
	(0.25)	(-2.99)	(1.51)	(-0.33)	(1.34)	(-0.59)
CAPEX $_{pre}$	-0.312	-0.782*	0.051	3.221	0.517	0.125
	(-0.60)	(-1.74)	(0.50)	(0.97)	(0.68)	(0.47)
Term Loan	1.131***	0.301***	0.050***	1.756**	-0.015	0.149***
	(15.56)	(5.05)	(3.20)	(2.44)	(-0.13)	(3.45)
All-in-drawn		-0.016	0.005		-0.018***	0.007***
		(-0.86)	(1.06)		(-2.67)	(3.07)
Ln (Maturity)	-0.611***	0.221***	0.062***	-0.883	0.188***	0.023
	(-9.21)	(4.32)	(4.44)	(-1.28)	(3.40)	(1.07)
No. of Covenants	-0.021		0.047***	-0.385		0.067***
	(-0.85)		(9.53)	(-1.56)		(3.96)
Secured	0.104	0.808***		1.164	0.543***	
	(1.07)	(10.16)		(1.58)	(4.09)	
Constant	4.872***	0.224	0.474***	7.482**	2.133***	0.557***
	(14.11)	(0.59)	(4.20)	(2.02)	(2.75)	(2.73)
Observations	3118	3118	3118	787	787	787
R^2	0.32	0.24	0.18	0.34	0.37	0.54

Table F4: CAPEX Restriction

This table examines the relation between non-bank lending and the imposition of restriction on future investments. Dependent variable is *CapexRes*, which is a dummy variable equal to one if the contract imposes a Max CAPEX covenant, and zero otherwise. We use the ordinary least square estimation for our sub-samples of leveraged loan borrowers and non-leveraged loan borrowers. *Non-bank* is a dummy variable, which is equal to one if a deal contains non-bank lead arrangers, and zero otherwise. Industry×year fixed effects are included in our regressions. Industry dummies are based on the 12 Fama-French industries. *t*-Statistics are based on robust standard errors clustered at the firm level. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Leveraged loan sub-sample	Non-leveraged loan sub-sample
	(1)	(2)
Dependent variable:	*CapexRes*	*CapexRes*
Non-bank	0.109***	0.003
	(7.81)	(0.18)
Size $_{pre}$	0.003	-0.009
	(0.55)	(-1.35)
Leverage $_{pre}$	0.057*	0.040
	(1.77)	(0.65)
ROA $_{pre}$	-0.284***	-0.154
	(-4.71)	(-1.17)
Cash $_{pre}$	0.031	-0.006
	(0.69)	(-0.08)
Tobin's Q $_{pre}$	-0.013	-0.000
	(-1.39)	(-0.03)
Tangibility $_{pre}$	-0.073**	0.032
	(-2.11)	(0.66)
R&D $_{pre}$	0.039	0.167
	(0.24)	(0.53)
CAPEX $_{pre}$	-0.081	-0.043
	(-0.79)	(-0.28)
Term Loan	-0.015	0.000
	(-0.95)	(0.01)
All-in-drawn	0.016***	-0.001
	(3.82)	(-0.54)
Ln (Maturity)	-0.014	0.014
	(-1.19)	(1.49)
No. of Covenants	0.190***	0.082***
	(40.14)	(6.67)
Secured	0.031*	0.094***
	(1.69)	(3.10)
Constant	-0.234***	-0.277***

	(-3.33)	(-2.91)
Observations	3118	787
R^2	0.50	0.44