Awash with Money: The Real Effects of Institutional Loan Demand Pressure on Corporate Decisions

Santiago Barraza* Andrea Civelli† Alberta Di Giuli‡

ESCP Business School *University of Arkansas* *ESCP Business School*

Abstract

We study the effects of institutional demand pressure for corporate loans on real corporate outcomes. To this end, we propose a novel empirical strategy based on a shift-share estimation approach. We document that an exogenous increase in institutional investors' demand for corporate loans increases the probability a firm obtains new institutional loans, makes public and private value-creating acquisitions, pays dividends, and repurchases stocks. Smaller, unrated, or rated non-investment grade firms benefit the most from the shock. Overall, we show that increases in institutional investors' demand for corporate loans affect real corporate outcomes without hurting allocation efficiency.

Keywords: institutional investors, institutional loans, corporate decisions, dividend payments, stock repurchases, leverage, M&As, capital expenditure, R&D expenditure.

JEL Classification: G21, G23, G31, G32.

*ESCP Business School, Corso Unione Sovietica, 218 bis, Turin (10134), Italy. Email: sbarraza@escp.eu.

†University of Arkansas, Walton College of Business, Department of Economics, Business Building 402, Fayetteville, AR. Email: andrea.civelli@gmail.com.

‡ESCP Business School, Corso Unione Sovietica, 218 bis, Turin (10134), Italy. Email: adigiuli@escp.eu.

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1 Introduction

The trading of loans by institutional investors in the secondary market has increased significantly in recent years (see Ivashina and Sun, 2011; Irani et al., 2021), reaching a volume of $780 billion USD in 2021 (Saunders et al., 2021). Loans are typically originated and administered by one bank, the lead arranger (see Ivashina and Sun, 2011; Gande and Saunders, 2012). After syndication, some bank loans are sold in the secondary market and purchased mainly by non-bank institutional investors, such as insurance companies, mutual funds, and hedge funds. Banks benefit from this secondary market because they can increase their liquidity, better diversify their portfolios, meet regulatory capital requirements, and fund new projects (Berger and Udell, 1993; Irani et al., 2021). For institutional investors, these loans represent an ever-increasing alternative to investing in corporate credit.

From the borrowing firms' standpoint, institutional loans have pros and cons. On the one hand, the literature has shown that increasing institutional demand for loans can lower loan interest rates (Ivashina and Sun, 2011), which could be explained by the interplay between higher institutional demand with an increasing number of loan covenants (Drucker and Puri, 2009) and a sustained level of bank monitoring (Gande and Saunders, 2012).[1] On the other hand, Irani et al. (2021) point out that institutional funding can be volatile, reducing credit availability during times of crisis, as limited access to central bank liquidity might prevent investors from funding new corporate credit at the trough of the credit cycle.

Given the significant rise in institutional loan trading, a natural question arises regarding whether institutional demand pressure can affect not only the amount of corporate borrowing but also the efficiency with which those funds are ultimately allocated:[2] Specifically, does increased funding relax corporate liquidity constraints and allow for value-creating corporate choices, or does it simply grant managers extra resources that can be deployed on value-destroying activities?[3]

[1]Banks have the incentive to monitor firms, even when they resell their part of the loans to institutional investors, as those investors repeatedly buy loans from those banks (Gande and Saunders, 2012).

[2]In our paper, the terms "institutional demand" and "institutional appetite" refer to the supply of funds, i.e. to the institutional demand to purchase corporate loans as opposed to the firms' demand for funding.

[3]If markets are efficient and the investment opportunity sets of firms are unchanged, a higher supply of loans should not affect corporate financing and investment decisions. However, if capital markets are inefficient and investors do not have the same information as the management, they might not provide

Analyzing all US-listed firms on Compustat over 2004-2016, we find that a one-standard-deviation increase (decrease) in institutional demand for loans positively (negatively) affects the probability that a firm takes on new institutional loans by 14.0% of its sample standard deviation, and increases the ratio of loans to (lagged) assets by 10.3% of its sample standard deviation. Firms that are smaller, unrated, and with a non-investment grade rating are the most affected by changes in demand for loans by investors. Increased appetite for corporate loans by institutional investors also positively impacts the probability of firms making value-creating acquisitions of both private and public targets, whereas no effect on capex, R&D expenses, and CEO payment is found. Finally, the institutional appetite for institutional loans positively affects dividend payments and stock repurchases.

Overall, our results suggest that institutional loans alleviate firms' liquidity constraints and allow them to make value-creating corporate choices. We do not find evidence of agency problems in the use of those loans. Our results are consistent with banks remaining good monitors even when loans are sold to institutional investors in the secondary market (Gande and Saunders, 2012).

Our analysis must overcome two main empirical challenges. Firstly, institutional investors' demand for loans is unobservable, which prevents its direct inclusion in a regression model. Secondly, endogeneity is an evident concern given the outcomes of interest. For instance, firms with more investment opportunities can also be more likely to seek out new loans, which confounds the effects of demand for and supply of credit.

To address these issues, our empirical strategy relies on a shift-share approach recently formalized by Borusyak, Hull, and Jaravel, 2022, where identification hinges on the exogeneity of the time-varying component of the shift-share variable.[4] In our paper, the shift (time series) component is the institutional loan demand shock recovered from a VAR model, while the share (cross-sectional) component gauges a firm's reliance on institutional loans for funding, thus capturing its exposure to the shock.[5] While this approach is novel, it

money to invest even when there are investment opportunities. This would result in lower and inefficient borrowing and investment. Furthermore, by raising new debt, firms will have enough money to both invest and pay dividends (or finance the stock repurchases) without using their cash reserves and maintaining or slightly increasing their debt.

[4]This work formalizes identification conditions in empirical settings previously used in the literature, such as in Bartik, 1991; Blanchard and Katz, 1992; Autor, Dorn, and Hanson, 2013; Nunn and Qian, 2014.

[5]In their analysis of the effect of institutional demand pressure on loan pricing, Ivashina and Sun, 2011

builds on previous works combining VAR models with other econometric methods (see, for instance, Blanchard and Perotti, 2002).

Let us define the shift-share variable as $SSV_{i,t-1} = \overline{R}_i \times S^{ID}_{t-1}$. $\overline{R}_i$ captures cross-sectional variation in the corporate reliance on institutional loans. It is defined as the proportion of years in which a firm originates institutional loans during our sample period and is endogenous by construction.[6] S^{ID}_{t-1} is a structural shock recovered from the VAR model, which represents innovations in the institutional demand pressure for corporate loans over time, and it is exogenous by design.

Our VAR model includes the price level of investment opportunities in the market for corporate loans; the quantity of loans newly available for trade in this market; the cost of these new loans to corporate borrowers; and the price of a risk-free asset, proxied by the one-year Treasury bills. In our model, institutional investors go over risk-on/risk-off periods. During risk-on periods, investors are more willing and likely to buy risky assets such as corporate loans, while during risk-off periods, they are more willing and likely to invest in safe assets like Treasury bills instead.

We identify the VAR structural shocks using sign restrictions. The identification strategy of the shocks in the loan market follows approaches previously applied in the economic literature to identify demand and supply shocks in other markets (see, for instance Inoue and Kilian, 2013; Kilian and Murphy, 2012). The critical insight to identify the institutional investors' demand shock lies in recognizing the relation between two markets where loanable funds are traded. The first is the syndicated loan market, where lead banks originate loans to corporate borrowers. The second is the secondary market for syndicated loans, where syndicate participants can trade their loan holdings with institutional investors. Modeling the demand-supply relationship in both markets allows us to not only recover the structural shock to institutional investors' demand but also isolate it from the bank supply

face similar empirical challenges to ours. Their strategy to address them is twofold. On the one hand, they use the time it takes to syndicate a loan (*time-on-the-market*) as a direct measure of institutional demand pressure. On the other hand, they alternatively instrument this variable with the net flow of funds institutional investors receive to confirm their results. In comparison to their approach, our empirical strategy has the appeal of being more general and applicable to different settings to address various research questions, of which the efficiency of corporate allocations is one case.

[6] This measure closely resembles the measure of country-dependence on foreign food aid in the work of Nunn and Qian, 2014

and corporate demand shocks in these markets. We discuss in detail our methodology in section 3.[7]

As a first step in our empirical analysis, we study the effect of our shock on the investors' demand for loans on both the probability a firm receives a loan and its amount. In the analysis, we add standard firm-level accounting and market controls and previous public debt issues. We also control for unobserved heterogeneity using a rich set of fixed effects (Firm and Industry-Year fixed effects). We find that a one-standard-deviation increase in $\overline{R}_i \times S_{t-1}^{ID}$ increases the probability of obtaining an institutional loan by 2.7% (or 14.0% of the standard deviation of the probability of obtaining an institutional loan in our sample) and the ratio of loans to (lagged) assets by 1.1% (or 10.3% of the standard deviation of this ratio in our sample). These effects are sizeable.

As a way of testing the robustness of our analysis, we investigate whether our shock to the institutional demand for loans affects another form of corporate credit investors could fund, namely, bonds. If our identification strategy is correct, our shock should affect institutional loan origination but not that of bonds. Indeed, we find no effect of our shock either on the probability of a firm issuing new bonds or on the amount of new bonds issued.

Gande and Saunders, 2012 and Ivashina and Sun, 2011 point out that firms that are smaller, non-rated, or non-investment grade rated – i.e., firms that are more likely to be financially constrained – are the ones that rely the most on institutional loans. Therefore, the effect of our shock on the appetite for institutional loans may differ across firms, depending on their ability to obtain (public) debt. As the next step in our analysis, then, we explore which firms benefit the most from higher institutional demand for loans. Consistent with Ivashina and Sun, 2011 and Gande and Saunders, 2012, we find that a shock to the institutional demand for loans affects significantly more the amount of institutional loans raised by firms that are smaller, unrated, and or rated non-investment grade.

Next, we turn to the use of funds. With increased funding availability, managers could invest in projects that they could not otherwise be able to fund due to liquidity constraints. Yet Jensen, 1986's free cash flow narrative predicts that managers with excess funds could

[7] Moreover, this stylized model also delivers as a by-product a neat characterization of the role institutional investors have played in the loan market over the past two decades.

pursue projects for their own gain and at the expense of shareholders, building empires or undertaking value-destroying acquisitions (Harford, 2002, Masulis, 2007). Sub-optimal corporate investment in the face of excess funds could also be more pronounced among overconfident managers (Malmendier and Tate, 2005), and an abundance of resources could result in increased CEO's compensation even when those resources are not tied to CEO's skills or performance (Betrand and Mullainathan, 2001).

Therefore, as a next step in our analysis, we investigate the use of funds raised after a shock to institutional demand for loans, with the underlying idea of testing allocation efficiency. We start by regressing both the amount of money spent in acquisitions and the number of acquisitions made by firms in a given year on $\overline{R}_i \times S_{t-1}^{ID}$. We find that an exogenous increase in institutional loan funding increases the total amount spent by firms in acquisition transactions scaled by lagged assets by 0.02% in a given year (or 2.2% the standard deviation of this variable in our sample). Similarly, a one standard deviation increase in $\overline{R}_i \times S_{t-1}^{ID}$ increases the number of acquisitions made by a firm in a given year by 1.1% (or 2.0% of its standard deviation).[8]

Next, we analyze the effect of an institutional demand shock on internal corporate investments, considering alternatively either capital expenditure or R&D, both scaled by lagged assets. Neither the asymmetric information nor the agency theories provide us with clear-cut guidance on the expected signs of the effect on capital expenditure, which is generally smaller than the size of acquisitions and could be financed with internal resources. Similarly, institutional loan literature does not help us with clear-cut guidance either. Unsurprisingly, we do not find significant effects of $SSV_{i,t-1}$ on either capex or R&D investments.

Our results thus far tell us nothing about whether increased institutional funding leads to value-creating or value-destroying allocation of resources. Therefore, in the next steps of our analysis, we first further investigate the type of deals firms undertake, as acquisitions of private (public) targets are usually value-creating (respectively, value-destroying) (Kathleen Fuller and Stagemoller, 2002), also considering subsidiary targets. We then analyze abnormal returns around merger announcements. We find that the increase in institutional

[8] In untabulated results, we employ an alternative empirical strategy, instrumenting the borrowing outcome and then estimating the effect of increased loan borrowing on acquisitions. The results we obtain are qualitatively the same. We discuss this analysis in greater detail in the methodology section.

loan funding increases both the number and size of the deals firms undertake, irrespective of whether it is a public, private, or subsidiary target. Moreover, the analysis of acquisitions' cumulative abnormal returns (CARs) suggests that these transactions are value-creating, as we find positive signs over different event windows irrespective of whether the target is public, private, or a subsidiary.

Finally, we focus on the right-hand-side of the balance sheet to study the effect of institutional demand for loans on dividend payments and stock repurchases. Agency theories predict that managers would not pay dividends to shareholders or repurchase shares (once all investment opportunities are exploited) as they would rather use funds to undertake value-destroying projects (Grossman and Hart, 1980, Jensen, 1986). We find instead that a shock in the demand for institutional loans positively affects firm dividend payments and stock repurchases.

Along the same lines, in untabulated results, we find a positive effect of the institutional demand shock on leverage, which further supports our lack of evidence for agency problems, as leverage is a powerful tool to reduce the agency costs associated with free cash (Jensen, 1986). Finally, and again consistent with the preceding results, we find no effect of our shock on CEO compensation.

Overall, our findings suggest that an exogenous shock in the supply of institutional loans increases corporate borrowing, especially among those firms that need funds the most. Yet we find no evidence of agency problems in the allocation of those funds.

2 Related Literature

Our paper contributes to several strands of literature. First, it contributes to the growing literature on institutional loans. While previous papers mainly focus on banks' incentives to sell loans (Gorton and Pennacchi, 1995), risk (Barraza and Civelli, 2022), and liquidity (Loutskina, 2011), contract features, pricing and performance of institutional loans (Benmelech, Dlugosz, and Ivashina, 2012, Bord and Santos, 2015, Drucker and Puri, 2009, Guner, 2006, Ivashina and Sun, 2011, Kamstra, G. S. Roberts, and Shao, 2014, Lim, Minton, and Weisbach, 2014 and Nadauld and S.Weisbach, 2012), control rights (Berlin, Nini, and

Yu, 1993), implications for regulators (Culp and Neves, 2017, Irani et al., 2021, A. W. Boot and Thakor, 2019, Shleifer and Vishny, 2010), effect on relationship banking and banking ability to monitor loans (Altman, Gande, and Saunders, 2010,A. W. A. Boot and Thakor, 2000, Gande and Saunders, 2012, Y. Li, Saunders, and Shao, 2015, Parlour and Plantin, 2008, Wang and Xia, 2014), we focus on different real outcomes for the borrowing firms.

Our novel empirical approach also contributes to the literature on econometric methods that identify exogenous shocks in the supply of corporate credit (see Güler et al., 2021 for a comprehensive literature review). We build on the formalization in Borusyak, Hull, and Jaravel, 2022 of shift-share models extensively used in labor economics (Bartik, 1991; Blanchard and Katz, 1992; Autor, Dorn, and Hanson, 2013; Acemoglu and Restrepo, Forthcoming), development economics and international aid (Werker, Ahmed, and Cohen, 2009; Nunn and Qian, 2014; Nizalova and Murtazashvili, 2016), and macroeconomics (Blanchard and Perotti, 2002; C. Romer and D. Romer, 2004; C. Romer and D. Romer, 2017). As in the Borusyak, Hull, and Jaravel, 2022 setting, identification hinges on the exogeneity of the time-varying portion of the shift-share variable, which we obtain by recovering structural innovations from a Bayesian VAR model identified by sign restrictions.

Finally, our paper also contributes to the literature on the real effects on corporate outcomes of shocks to bank credit. The extant literature primarily exploits major adverse, one-time shocks to the supply of credit, such as the 2007-2009 financial crisis or country-specific crises,[9] increases in bank capital requirements (Gropp et al., 2018; Fraisse, Lé, and Thesmar, 2020), change in monetary policy (Abuka et al., 2019; Chakraborty, Goldstein, and MacKinlay, 2020), and default by major companies (Abuka et al., 2019; Chakraborty, Goldstein, and MacKinlay, 2020), and mainly reports negative effect on corporate investments.[10] Evidence on positive shocks to bank credit supply is more scarce and ambiguous: Giannetti

[9] See Almeida et al. (2011); Duchin, Ozbas, and Sensoy (2010); Campello, J. R. Graham, and Harvey (2010); Cingano, Manaresi, and Sette (2016), Jonghe et al. (2020), Carvalho, Ferreira, and Matos (2015); Gan (2007) uses the Japan land crises of the early 1990; Chava and Purnanandam (2011) the 1998 Russian Crisis; Acharya et al. (2018) and Bottero, Lenzu, and Mezzanotti (2020) exploit the European sovereign debt crisis.

[10] Contrary to investment the literature reports mixed results of credit crunches on employment (Popov and Rocholl, 2018; Cingano, Manaresi, and Sette, 2016; Jiménez et al., 2017). Negative effects of reduced credit supply are also reflected in other real outcomes, such as valuations (Gan, 2007), exports (Paravisini et al., 2015), and cash (Berg, 2018, Acharya et al., 2019a).

and Simonov (2013) show that an exogenous increase in bank credit driven by banks bailouts in Japan in the 1990s led to "zombie" lending and to an increases in value-destroying corporate investments; analysing the indirect effect of the European Central Bank's (ECB) Outright Monetary Transactions (OMT) program on banks recapitalization and credit supply, Acharya et al. (2019b) find similar results on "zombie" lending but no effect on investments, while Ferrando, Popov, and Udell (2019) show that the program did improve investments in small firms. In contrast to most previous studies, then, our analysis exploits *both* positive and negative time-varying exogenous variation of loan supply[11] to show significant effects on both right- and left-hand-side items of the balance sheet.

3 Identification of the shock in the demand of institutional loans.

In a typical syndicated loan transaction, a borrower appoints a lead arranger, or a group of them, and extends a mandate to arrange a credit transaction. This mandate generally includes a term sheet setting the basis of the credit conditions sought. Upon a marketing and bidding process, other financial institutions will join the syndicate, and the final terms of the arrangement will be set. A loan facility usually represents one of two main types of loans: term loans or revolver loans. The largest group of term loans are institutional loans, labeled B through K, which have been explicitly designed to be ultimately funded by institutional investors, including characteristics such as bullet repayment and penalties for early loan repayment.

To study the effect of changes in the institutional demand for corporate loans on corporate outcomes, we resort to a shift-share identification strategy recently formalized by Borusyak, Hull, and Jaravel, 2022, where identification hinges on the exogeneity of the time-varying portion of the shift-share variable. In our study, this variable is the structural shock of institutional demand pressure for corporate loans recovered from a Bayesian VAR model

[11]One exception is the study by Becker and Ivashina (2014) who analyses the shifts from bank to bond financing of firms that have previously relied mainly on bank (bond) credit and interpret those as negative shifts in supply of bank (bond) financing.

identified by sign restrictions. On the other hand, the time-invariant portion of the shift-share variable captures the cross-sectional variation in the corporate reliance on institutional loans, which is assumed to be endogenous. Specifically, corporate reliance on institutional loans is the proportion of years in which a firm originates institutional loans during the sample period.

To identify the structural shocks in the loan market, we adopt a strategy that follows others previously applied in the economic literature to identify demand and supply shocks – see, for instance, Kilian and Murphy (2012) and Inoue and Kilian (2013) for illustrative applications in the oil market. In our case, identification exploits the relationships between demand and supply functions in two distinct, yet closely related markets for loanable funds. The first market is the syndicated loan market, where banks originate loans to corporate borrowers.[12] The second market is where syndicate participants sell these corporate loans to investors, and investors trade the loans among themselves.[13] Institutional investors such as insurance companies, pension funds, and mutual funds make up most of the market participants. Each of these two markets entails a set of demand and supply functions whose behavior we use to define the sign restrictions in the VAR model.

A further relevant element in the identification of institutional investors' demand shocks is their time-varying preference to take on risk. In our model, institutional investors go over risk-on / risk-off periods. During risk-on periods, investors are more willing and likely to buy risky assets such as corporate loans, while during risk-off periods, they are more willing and likely to invest in safe assets like Treasury bills instead.

Banks and firms, respectively, can also change their supply of and demand of credit over time. For instance, banks can increase their supply of loans when more deposits are available to fund the syndication process. And corporations can increase their loan demand when investment opportunities abound.

Lastly, we identify a fourth shock. In our baseline model, this is a monetary policy

[12]This is also known as the *pro rata* market, as banks distribute portions of the loans among syndicate participants (many of them banks as well) on a pro-rata basis.

[13]This latter market, in fact, combines what is often known as the *primary* and *secondary* markets for syndicated loans. In the primary market, investors buy loans from originating banks and other syndicate participants. In the secondary market, investors trade the loans among themselves.

shock.[14] Below, we will discuss how these elements translate into a matrix of sign restrictions.

Let the VAR model of interest include the price level of investment opportunities in the market for corporate loans, proxied by the S&P/LSTA U.S. Leveraged Loan 100 B/BB Rating Index (SPBDRL) [15]; the quantity of newly available for trade loans in this market, proxied by the volume of term loans labeled B through K originated by banks (from Dealscan); the cost of these new loans to corporate borrowers, proxied by their spread at origination; and the price of a risk-free asset, proxied by the one-year Treasury bills. [16] The vector of endogenous variables takes the form:

$$Y_t = \begin{bmatrix} LoanPrice_t \\ LoanVol_t \\ LoanSpread_t \\ TBillPrice_t \end{bmatrix} \tag{1}$$

The pth-order reduced-form model can be written as:

$$Y_t = \sum_{k=1}^{p} B_k Y_{t-k} + u_t \tag{2}$$

where B_k is a matrix of parameters and the reduced-form VAR residuals are collected in u_t.

The matrix A_0 is the structural impact multiplier matrix that represents the linear relationship between the structural shocks w_t and the reduced-form errors u_t:

$$u_t = A_0 w_t \tag{3}$$

In order to identify the structural innovations w_t, we impose sign restrictions on A_0

[14]In unreported robustness tests, this is a residual shock that collects all other time-varying innovations not explicitly identified by the preceding three.

[15]We measure the price of loans in the secondary market using the S&P/LSTA U.S. Leveraged Loan 100 B/BB Rating Index (ticker SPBDRL) sponsored by Standard & Poors and the Loan Syndications and Trading Association.

[16]To construct an index reflecting the price of the safe asset we use the 1-Year Treasury Constant Maturity Rate (GS1) from FRED. We use the quarterly average of the monthly rate to construct the GS1 Price Index as the present value of a 1-year (bullet) T-Bill with face value of $100, and then take the log of it.

such that:

$$\begin{bmatrix} u_t^{lp} \\ u_t^{lv} \\ u_t^{ls} \\ u_t^{tp} \end{bmatrix} = \begin{bmatrix} + & - & - & - \\ + & + & + & - \\ - & - & + & + \\ - & - & - & - \end{bmatrix} \begin{bmatrix} w_t^{ID} \\ w_t^{BS} \\ w_t^{CD} \\ w_t^{MP} \end{bmatrix} \tag{4}$$

The superscripts *lp*, *lv*, *ls*, and *tp* on the vector of reduced-form errors stand for institutional loan price, institutional loan volume, spread on the institutional loans, and T-Bill price, respectively. The superscripts *ID*, *BS*, *CD*, and *MP* in the vector of structural shocks label the innovations on institutional demand for loans, bank supply of institutional loans, corporate demand for loans, and monetary policy, respectively.

The sign restrictions on the first column of A_0 represent the effect of a positive shock in institutional investors' demand for risky assets. Intuitively, it corresponds with investors' change in sentiment or willingness to accept more risks, shifting from safe assets towards risky ones such as corporate loans. This shock increases the price of corporate loans ($a_{1,1}$) and the volume of loans that can be originated ($a_{2,1}$) while it decreases the spread on loans charged to corporations ($a_{3,1}$) (as in Ivashina and Sun, 2011) and the price of the safe asset ($a_{4,1}$), as its relative attractiveness decreases.

The second column of A_0 shows the effects of an increase in the supply of institutional loans driven by banks. This increases the volume of loan origination ($a_{2,2}$), decreases the spread on the loans ($a_{3,2}$), and, with more loans available for trading, also decreases their price in the market ($a_{1,2}$). As banks shift their portfolio from safe towards risky assets, the price of T-Bills also decreases ($a_{4,2}$).

The third column of A_0 shows the effects of an increase in corporate demand for syndicated loans. This increases both the volume originated ($a_{2,3}$) and the spread on the loans ($a_{3,3}$). With more corporate loans originated and available in the market for trade, their price decreases ($a_{1,3}$), implying an increase in future yields of the risky asset. The price of the safe asset decreases as well ($a_{4,3}$), as its yield also increases to maintain the equilibrium relationship with the risky asset. Lastly, the fourth column of A_0 corresponds to a monetary tightening shock, which increases yields and decreases prices of both the risky and safe assets

($a_{1,4}$ and $a_{4,4}$), decreasing loan origination ($a_{2,4}$) and increasing its cost ($a_{3,4}$).

We estimate Model (2) with a constant, lag order $p = 4$, and using Bayesian techniques that assume a normal-Wishart prior distribution scheme.[17] For estimation, we use the econometric package developed by Dieppe, Legrand, and Roye (2016). Data are quarterly for the period 2001:Q4-2019:Q4.

The structural analysis of this exercise offers some valuable insights. The first one is providing strong support to the finding in Ivashina and Sun (2011) that institutional investors play an important role in determining conditions in the loan market, which at the same time strengthens our identification strategy by sign restrictions. Specifically, the forecast error variance decomposition (FEVD) analysis, illustrated in Figure A1 in the Appendix, indicates that the institutional demand shock accounts for 36% of the fluctuation in the volume of institutional loan originations and 54% of the fluctuation in the corresponding loan spread over a one-year forecasting horizon.

The historical decomposition (HD), introduced in Figure A2 in the Appendix, provides a second noteworthy insight. That is, the institutional investors demand shock accounts, to a large extent, for the institutional loan market conditions observed in three specific periods: the credit expansion preceding the financial crisis, the credit contraction during the financial crisis, and a more recent loosening cycle starting in late 2016. The crisis period contraction is remarkably well aligned with recent evidence from Irani et al. (2021), who show that non-bank investors in the syndicated loan market were associated with a significant contraction in credit availability both in terms of the extensive and intensive margins.

4 Empirical Methodology

4.1 Reduced-Form Identification

In our equation of interest, a corporate outcome is a function of shocks to the institutional demand for corporate loans. It takes the form:

[17] See Canova (2007) for technical details.

$$Outcome_{i,t} = \beta \times SSV_{i,t-1} + X_{i,t-1}\Gamma + \alpha_i + \delta_t + \upsilon_{i,t} \tag{5}$$

where subscripts i and t stand for the i-th firm and period t. $X_{i,t-1}$ is a vector of lagged firm-level controls. α_i is a vector of firm fixed effects, which allows us to control for the average individual effects of unobservables on $Outcome_{i,t}$. δ_t is a vector of time-fixed effects. And, finally, $\upsilon_{i,t}$ is the usual error term.

$SSV_{i,t-1}$, defined as $\overline{R}_i \times S^{ID}_{t-1}$, is a shift-share variable, providing both cross-sectional and time variation, and β is our coefficient of interest. $\overline{R}_i$ is the proportion of years in which the firm secures institutional loans.[18] It is computed as $\overline{R}_i = \frac{1}{T}\sum_{t=1}^{T} Borrowed_{i,t}$, where $Borrowed_{i,t}$ takes on value one if firm i obtains at least one institutional loan during year t, and zero otherwise.

S^{ID}_{t-1} is the key element providing exogeneity to our shift-share variable (Borusyak, Hull, and Jaravel, 2022), and it stands for the one-year lagged annual institutional demand shock. For precision and estimation feasibility within a Bayesian context, our VAR model is built at a quarterly frequency. We aggregate the quarterly shocks recovered from the VAR model to obtain the annual shocks, following the procedure proposed by Holm, Paul, and Tischbirek, 2021.

Conveniently, and as noted by Nunn and Qian, 2014, $SSV_{i,t-1} = \overline{R}_i \times S^{ID}_{t-1}$ in equation (5) can be thought of in terms of a difference-in-differences setting where $\overline{R}_i$ measures the firm-level exposure to treatment, while S^{ID}_{t-1} gauges the time-varying intensity of the treatment itself. Thus, $SSV_{i,t-1}$ provides a measure of the intensity of treatment firm i receives over time.

In our first set of tests, $Outcome_{i,t}$ is $Loans_{i,t}$, which we measure alternatively as the amount borrowed in year t by firm i scaled by lagged assets of firm i, or with a binary variable indicating whether the firm i obtains institutional loans in year t. We use these tests to establish that institutional demand pressure exogenously affects corporate lending.

In the baseline specifications, we employ firm- and time-fixed effects δ_t to control for unobserved, time-varying factors affecting all firms similarly in a given period. Still,

[18] This variable follows closely in spirit $\overline{D}_{ir}$ in Equation (4) of Nunn and Qian, 2014.

unobserved shocks may exist such that they affect industries differently at any given point in time. For this reason, in alternative specifications, we use an industry-specific (Fama and French 17-industry classification) time-fixed effect vector $\delta_{j,t}$ instead of δ_t, where $\delta_{j,t}$ controls for time-varying unobserved factors that might affect firms in the same j-th industry similarly.

Finally, we control for standard firm-level lagged variables, namely size (assets), return on asset (ROA), leverage (debt over assets), cash over assets, fixed assets over assets, and Tobin's Q as those variables are well-known predictors of debt and investments outcomes (see, for instance, Rajan and Zingales, 1995; J. Graham, Leary, and M. Roberts, 2015). As having a rating strongly affects the ability of a firm to borrow (Faulkender and Petersen, 2005), we also control for the availability of a credit rating. When a rating is available, we use a dichotomic variable to signal a non-investment grade rating. To allow for the possibility that a firm's current borrowing from institutional investors could be influenced by recent public borrowing, we include in our controls the recent (lagged) amount of bonds issued scaled by the firm's assets. Finally, standard errors are robust to heteroskedasticity, clustered at the firm level.

4.2 Data and Measures

Analyzing the effect of institutional corporate loans on corporate outcomes requires data on loans, on corporate accounting and market values, and on firm acquisitions. In this section, we describe the data sets used in the empirical analysis.

We build our sample starting with all non-financial firms in Standard and Poor's Compustat from 2004 to 2016.[19] We obtain data on accounting and firm stock prices, respectively, from Compustat Fundamentals Annual and CRSP dataset. We rely on the Loan Pricing Corporation DealScan database for information on new syndicated bank loans. To map loan originations to public firms in our sample, we also use the DealScan-Compustat link file from Chava and M. R. Roberts, 2008, whose last complete year is 2016, which explains the ending year of our panel. For data on public debt issues and acquisitions, we

[19] Non-financial firms are those with (non-missing) Standard Industrial Classification (SIC) code below 6000 or above 6999.

turn to Refinitiv. All variables are winsorized at the 1% and 99% level.

These data requirements yield a sample of 40,131 firm-years from 2004 to 2016. Table 1 presents the descriptive statistics. Companies issue institutional loans and bonds 4% and 12% of the firm-years in our sample, respectively. Our firms make an acquisition every 5 years on average, invest 6% of their (lagged) assets in capex and R&D, and pay dividends and repurchase stocks amounting to 1% and 2% of their lagged assets, respectively. The average firm has a size of 3.73 billion current dollars, a leverage of 28% (total book value of debt over lagged assets), and on average 30% of the firm-years in our sample have a rating. Descriptive statistics are in line with recent papers on corporate financing (see Colla, Ippolito, and K. Li (2013) among the many).

5 Main Results

5.1 Corporate Borrowing

As a first step in our empirical analysis, we study the effect of an institutional investors' demand shock on both the probability of a firm receiving a loan and the amount borrowed. Specifically, in Table 2, Columns 1 and 2, our dependent variable is the total amount of institutional loans borrowed by a firm in a year scaled by lagged assets. In Column 1, we control for firm-level characteristics (lagged log asset, leverage, Tobin's Q, ROA, cash over asset ratio, and fixed asset ratio). We also control for the availability of a firm rating, adding a dummy equal to one if the firm was rated in the previous year and zero otherwise, and another dummy equal to one if the firm was rated non-investment grade and zero otherwise. Finally, we control for the lagged amount of bonds issued over twice-lagged assets. We add firm- and year-fixed effects to our regression to control for unobserved time-invariant firm-level characteristics and time-varying factors affecting all firms similarly in a given period. Results show that our $SSV_{i,t-1}$ variable positively and significantly affects the amount of institutional loans obtained in a year scaled by lagged assets. In Column 2, we add an industry-specific (Fama and French 17-industry classification) time-fixed effect vector to control for time-varying unobserved factors that might affect industries differently over time. Our $SSV_{i,t-1}$ variable remains positively significant at the 1% level.

In Columns 3 and 4, the dependent variable is the probability of obtaining institutional loans. We follow the same reasoning as on Columns 1 and 2 in the use of controls. Our results show that $SSV_{i,t-1}$ positively and significantly affects the probability of obtaining an institutional loan. The economic effect is also sizeable: a one-standard-deviation increase in $SSV_{i,t-1}$ increases the amount of institutional loans borrowed scaled by lagged asset by 1.1% (or 10.3% of the standard deviation of institutional loans amount over the lagged assets in our sample) and the probability of obtaining an institutional loan by 2.7% (or 14.0% of the standard deviation of the probability of having an institutional loan in our sample). Thus, our first set of results confirms that $SSV_{i,t-1}$, which proxies for loan demand pressure from institutional investors, indeed increases the institutional loans borrowed by a firm.

We consider the possibility that $SSV_{i,t-1}$ might capture the appetite of institutional investors for different types of risky investments and not just institutional loans. Ideally, however, and as our aim is to proxy specifically for demand pressure for institutional loans, our $SSV_{i,t-1}$ should not be related to other types of investments. Therefore, in Table 3, we investigate whether $SSV_{i,t-1}$ affects another form of risky debt institutional investors could buy, namely, corporate bonds. Specifically, in Columns 1 and 2 of Table 3, the dependent variable is the amount of funds firms raise by issuing bonds scaled by lagged assets, while in Columns 3 and 4, the dependent variable is the probability of issuing bonds. We use the same controls as in Table 2. Reassuringly, we find no effect of $SSV_{i,t-1}$ on either the amount raised or the probability of raising public debt.

Firms that are smaller, non-rated, or non-investment grade rated are the ones that rely the most on institutional loans (see Gande and Saunders, 2012 Ivashina and Sun, 2011). Therefore, the effect of our shock in the appetite for institutional loans may be different for those firms which might be ex ante more financially constrained and have less access to (public) debt. Thus, as the next step in our analysis, we explore which firms benefit the most from the increase in appetite for institutional loans. We create dummy variables based on median industry-year lagged size (asset), availability of rating, and rating grade, and we interact our shock with those dummies.

Specifically, in Table 4, Column 1, we analyze whether a shock in institutional demand for loans affects firms of different sizes differently. We include a dummy variable $HSize$ equal to one if the firm's lagged asset is above the lagged industry-year median asset and zero otherwise, and the interaction terms $\overline{R}_i \times HSize$, $S_{t-1}^{ID} \times HSize$, and $SSV_{i,t-1} \times HSize$. Besides $SSV_{i,t-1}$, our variable of interest is $SSV_{i,t-1} \times HSize$, which speaks to the marginal effect of the shock on large firms, and we report the coefficients for both of them. $SSV_{i,t-1} \times HSize$ is negative and strongly significant which, together with the positive and significant coefficient on $S_{i,t-1}$, implies that smaller firms are significantly more positively affected by an exogenous increase in demand for institutional loans.

In Columns 2 and 3, we study whether firms with easier access to debt, as proxied by the availability of a credit rating and a high credit rating, benefit the least from the shock in the demand for institutional loans. As all regressions already include *Rated*, a dummy equal to one if a firm had a rating in the previous year and zero otherwise, in Column 2, we add the interaction terms $\overline{R}_i \times Rated$, $S_{t-1}^{ID} \times Rated$, and finally, $SSV_{i,t-1} \times Rated$, of our interest. $SSV_{i,t-1}$ remains positive and significant and $SSV_{i,t-1} \times Rated$ enters negative and strongly significant in the regression. Thus, firms without a rating benefit the most from the increase in institutional demand for loans.

Finally, in Column 3, we add the interaction term $SSV_{i,t-1} \times NonIG$ (all regressions already include a dummy variable $NonIG$ equal to one if the firm had a rating below investment rating in the previous year and zero otherwise) of our interest, and the interaction terms $\overline{R}_i \times NonIG$ and $S_{t-1}^{ID} \times NonIG$ as controls. In Column 3, we restrict our sample to firms that have a rating available. Both $SSV_{i,t-1}$ and $SSV_{i,t-1} \times NonIG$ have positive and significant effects on the amount of institutional loan raised: firms with a non-investment rating benefit significantly from the exogenous shock in demand for institutional loans. In line with Gande and Saunders, 2012 and Ivashina and Sun, 2011 findings and statements, we find that the shock affects the amount of institutional loans of funds raised significantly more for firms that are smaller, unrated, and rated non-investment grade.

5.2 Corporate Investment

In light of the previous findings, a shock in the availability, or alternatively, a shortage of institutional loans, might affect the liquidity constraints of firms and consequently the likelihood and amount of new investments. On the other hand, abundant resources might be wasted by managers who pursue their objectives instead of those of the shareholders (Jensen, 1986, Grossman and Hart, 1980). Analyzing a different kind of cash windfall obtained by 11 firms from winning or settling lawsuits, Blanchard, Lopez-de-Silanes, and Shleifer, 1994 find that, indeed, managers embark on behaviors that are consistent with agency theory: they acquire firms, do not pay dividends or repurchase shares and keep the cash inside the firm. Similarly, Beschwitz, 2018 exploit a German tax reform that allowed firms to sell their equity stakes tax-free and find that companies use the cash windfall from the equity sold to make value-destroying acquisitions. Our setting is different as previous papers would predict that banks maintain a monitoring role, even when loans are sold to institutional inventors and traded in the secondary market (Gande and Saunders, 2012).

To understand whether resources from a shock in institutional investors' demand for loans leads to sub-optimal investment behavior and waste of money, we analyze different corporate outcomes: acquisitions and investments in tangible and intangible assets, dividend payments and stock repurchases, and CEO salaries.

We start by regressing our shock variable on both the probability and the amount of acquisition made by firms, as managers might undertake value-destroying acquisitions (Harford, 2002, Masulis, 2007) to build corporate empires. In Table 5, we follow our usual empirical strategy. Our dependent variable, in this case, is the amount paid in M&A deals by an acquiring firm in a specific year scaled by its lagged assets (Columns 1 and 2) and the number of M&A deals made by an acquiring firm in a particular year (Columns 3 and 4). Our controls follow the usual pattern introduced in Table 2. We find that our shock in demand for institutional loans significantly affects both the amount and the number of deals made by firms as $SSV_{i,t-1}$ is positive and significant in all regressions of Table 5.

In this table, we have regressed directly the acquisitions variable on $SSV_{i,t-1}$. In untabulated results, we use a two-step procedure where we instrument either the amount borrowed or the probability of obtaining an institutional loan with $SSV_{i,t-1}$, and we analyze the effect of the instrumented loan variables on the corporate acquisition outcomes. Instrumented institutional loans positively and significantly affect both the amount spent in M&A transactions and the number of transactions, consistent with the results we report here.

Following the same reasoning of Table 4, we analyze whether firms that are smaller, unrated, or rated non-investment grade are affected more by the institutional demand shock in their acquisition activity. Specifically, in Table 6, Column 1 we include in our regression a dummy variable $HSize$ equal to one if the firm's lagged assets are above the lagged industry-year median asset and zero otherwise, and the interaction terms $SSV_{i,t-1} \times HSize$, $\overline{R}_i \times HSize$, and $S_{t-1}^{ID} \times HSize$. Our variable of interest, besides $SSV_{i,t-1}$, is $SSV_{i,t-1} \times HSize$, which is negative and significant in our regression, providing evidence that smaller firms are more affected than bigger ones by shocks in demand for institutional loans not only when it comes to amounts obtained of institutional loans (scaled by assets), but also in the acquisitions they undertake.

In Columns 2 and 3, we focus on how the institutional demand shock affects firms with different access to debt as proxied by the availability of a rating and high rating grade in their acquisitions activity. As all regressions already include a dummy equal to one if a firm had a rating in the previous year and zero otherwise, in Column 2, we add interaction terms $\overline{R}_i \times Rated$ and $S_{t-1}^{ID} \times Rated$ as controls, and $SSV_{i,t-1} \times Rated$, which is the one of our interest together with $SSV_{i,t-1}$. $SSV_{i,t-1}$ is strongly positive, and $SSV_{i,t-1} \times Rated$ is strongly negative: firms without a rating invest significantly more in acquisitions after a shock of institutional demand for loans.

Finally, in Column 3, we add an interaction term $SSV_{i,t-1} \times NonIG$ (all regressions already include a dummy variable $NonIG$ equal to one if the firm had a rating below investment rating in the previous year and zero otherwise), and the interaction terms $\overline{R}_i \times NonIG$ and $S_{t-1}^{ID} \times NonIG$ as controls. In Column 3, we restrict our sample to firms that have a rating available. $SSV_{i,t-1} \times NonIG$ is not significant in this case.

Overall, the results in Table 6 confirm our expectations: the shock in the institutional demand for loans affects more firms that are smaller and non-rated and that, therefore, might be more in need of funds. Those firms invest significantly more in acquisitions than larger and rated firms following a shock in institutional demand for loans. In untabulated results, we find a similar pattern when considering the number of M&A deals rather than the amount spent on those deals.

Next, we turn to the analysis of internal investments: capex and R&D expenses.

Neither asymmetric information nor agency theories help us predict the effect of institutional demand pressure for loans on capex or R&D expenses, which are generally smaller than amounts spent in acquisitions and might be financed with internal resources. We test the effect of demand for institutional loans on internal investments in Table 7. In Columns 1 and 2, our dependent variable is the amount of capital expenditures over lagged assets, while in Columns 3 and 4, the dependent variable is the ratio of R&D expenses over lagged assets. We find no effect of our $SSV_{i,t-1}$ on either type of investment (in Column 2, $SSV_{i,t-1}$ enters the regression negatively, but with a small coefficient and only weakly significant). Exploiting the heterogeneity of our firms in terms of size and firms does not lead us to any significant findings either. Overall, we find no significant effects of $SSV_{i,t-1}$ on the internal investments of firms.

Both agency models and asymmetric information theories are in line with our findings on M&A activities: for the former models, managers, having superior information and available funds, waste them building empires for their own gains and at the expense of shareholders; for the latter theories, smaller and unrated firms suffer from asymmetric information and are less able to borrow from more standard bank or public debt; hence, when they obtain funds from institutional investors, they can invest in value-creating projects. To disentangle the two explanations, in our analysis, we first study further the type of deals firms undertake, as acquisitions of private (public) targets are usually value-creating (destroying) Kathleen Fuller and Stagemoller, 2002. Second, we analyze abnormal returns around merger announcements of those different types of acquisitions.

In Table 8, we analyze the amount firms spent each year on acquiring respectively public, private, or subsidiary targets and the number of acquisitions of those different types of firms. In Columns 1 through 3, the dependent variable is the sum of the amount paid in M&A transactions a firm participates in as an acquirer in a given year (scaled by lagged asset) of Public (Column 1), Private (Column 2), and Subsidiary (Column 3) targets, respectively. In Columns 4 through 6, the dependent variable is the number of M&A transactions a firm participates in as an acquirer in a given year of Public (Column 4), Private (Column 5), and Subsidiary (Column 6) targets, respectively. $SSV_{i,t-1}$ is positively and significantly related to mergers amounts in the acquisitions of all different types of targets, while our shock significantly affects the number of deals involving private and subsidiary targets but not public ones.

In Table 9, we analyze the abnormal returns of acquisitions made by firms that have obtained an institutional loan the same year the deal was announced (Panel A) or the same year or the previous year the deal was announced (Panel B). Naturally, we cannot rule out the acquisitions have been funded in other ways. In our sample, we have 154 public deals, 433 private deals, and 485 acquisitions of subsidiaries. We employ different event time windows for the measure of the CAR: (-1;1), (-1;3), (-5;5), (-10; 10), and (-20;20) dates around the announcement.

Consistent with private deals and acquisitions of subsidiaries being on average value creating (Kathleen Fuller and Stagemoller, 2002), we find significantly positive abnormal returns for those types of deals for all the event time windows. Interestingly, on Panel B, even for public deals CARs are positive and significantly higher than 0, with the exception of CARs for windows (-10;10) and (-20;20), where the abnormal returns are positive but not significantly different than 0. The results are similar if we focus only on deals that are announced in the same year of the borrowing of the institutional loan (Panel A). Overall, the evidence suggests that demand pressure for institutional loans is related with value-creating deals.

5.3 Corporate Payout

An alternative use of firms' resources is their distribution in the form of dividends or the repurchase of stocks. Firms might rationally raise debt to pay dividends and repurchase stocks in case they want to adjust their capital structure Mensa, Michaely, and Schmalz, Forthcoming. On the other hand, agency theories predict that managers would not pay dividends to shareholders or repurchase shares (once all investment opportunities are exploited) as they would rather use funds in value-destroying acquisitions (Grossman and Hart, 1980; Jensen, 1986). Also, repurchase of stocks, in case the management owns some equity, either in stocks or through stock options, increase the relative ownership of management and aligns the interests of management and shareholders (Jensen and Meckling, 1976).

In Table 10, we analyze the effect of the shock in demand for institutional loans on dividends and stock repurchases. In Columns 1 and 2, the dependent variable is the amount of dividend paid over lagged assets, while in Columns 3 and 4, it is the amount of stock repurchased over lagged assets. We employ our usual controls. We find that a shock in the demand for institutional loans positively and significantly affects firms' dividend payments and stock repurchases. When we exploit the heterogeneity of our firms in unreported results, we find that the effect of the shock in the demand for institutional loans on stock repurchases is significantly stronger in smaller and unrated firms.

Finally, in untabulated results, we see a positive effect of an institutional demand shock on leverage. This further supports the lack of evidence of agency problems, as leverage is a powerful tool in reducing agency costs of free cash Jensen, 1986. Furthermore, we also find no effect of the shock on CEOs compensation.

Overall, our findings suggest that a shock in demand for institutional loans increases borrowing of those loans, especially from those firms that need funds the most (smaller and unrated, or rate non-investment grade). On the other hand, we find no evidence of agency problems in how new funds are deployed.

6 Conclusion

We propose a shift-share approach to study the causal effect of shocks on the institutional demand for corporate loans on major corporate decisions. Consistent with previous findings, we show that those shocks cause increases in corporate borrowing. The effects are more pronounced among firms facing higher financing frictions, namely smaller and unrated firms and those rated below investment grade.

Our study on the use of new institutional loans yields a positive message. Funds are used to finance value-creating corporate acquisitions, increase dividend payments, stock repurchases, and leverage with no apparent evidence of management rent extraction.

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Tables

Descriptive Statistics

	Mean	Median	SD	Obs.
Financing variables				
Inst. Loan Dummy	0.04	0.00	0.19	40,131
Bond Dummy	0.12	0.00	0.32	40,131
Shock				
$\overline{R}_i$	0.04	0.00	0.11	40,131
$SSV_{i,t-1} = \overline{R}_i \times S^{ID}_{t-1}$	-0.01	0.00	0.29	40,131
Corporate outcomes				
M&A Deals	0.19	0.00	0.54	40,131
M&A Amount /L1(TA)	0.03	0.00	0.12	40,131
Capex/L1(TA)	0.06	0.03	0.09	40,131
R&D/L1(TA)	0.06	0.00	0.15	40,131
Div/L1(TA)	0.01	0.00	0.03	40,131
Stock Rep./L1(TA)	0.02	0.00	0.05	40,131
Firm characteristic control variables				
Assets (Bn.)	3.73	0.34	15.46	40,131
Leverage	0.28	0.18	0.57	40,131
Cash Ratio	0.20	0.12	0.22	40,131
F.A. Ratio	0.26	0.16	0.24	40,131
ROA	-0.10	0.03	0.45	40,131
Q	1.82	1.47	1.14	40,131
S&P Rated	0.29	0.00	0.45	40,131
S&P Invt. Grade	0.13	0.00	0.33	40,131
S&P Non-Invt. Grade	0.16	0.00	0.36	40,131

Table 1: The table provides descriptive statistics (mean, median, standard deviation, and number of observations) for our sample of firm-years from 2004 to 2016.

Institutional Loans				
	(1) Inst. Loans/ L1(TA)	(2) Inst. Loans/ L1(TA)	(3) Inst. Loans Dummy	(4) Inst. Loans Dummy
$SSV_{i,t-1}$	0.039***	0.039***	0.092***	0.092***
	(0.004)	(0.004)	(0.006)	(0.007)
Observations	40,131	40,131	40,131	40,131
Controls	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	No	Yes	No
Ind.-Year F.E.	No	Yes	No	Yes
No. Clusters	5419	5419	5419	5419

Table 2: In Columns (1) and (2), the dependent variable is the dollar amount of institutional loans obtained by a firm scaled by its lagged total assets; in Columns (3) and (4), the dependent variable is a binary variable taking on value one if the firm obtains institutional loan(s) in a given year and zero otherwise). $SSV_{i,t-1} = \overline{R}_i \times S^{ID}_{t-1}$. All specifications include as controls the one-year lagged values of the log of total assets, cash ratio, fixed assets ratio, leverage, ROA, Q, bonds issued in the previous year scaled by assets two years before, an indicator variable of whether the firm had a long-term issuer credit rating from S&P and another one of whether that rating was non-investment grade. Standard errors clustered at the firm level are shown in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

	Bonds			
	(1)	(2)	(3)	(4)
	BondsAmt L1(TA)	BondsAmt /L1(TA)	Bonds Dummy	Bonds Dummy
$SSV_{i,t-1}$	0.006	0.005	-0.005	-0.003
	(0.004)	(0.003)	(0.007)	(0.007)
Observations	40,131	40,131	40,131	40,131
Controls	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	No	Yes	No
Ind.-Year F.E.	No	Yes	No	Yes
No. Clusters	5419	5419	5419	5419

Table 3: In Columns (1) and (2), the dependent variable is the dollar amount of bonds issued by a firm scaled by its lagged total assets; in Columns (3) and (4), the dependent variable is a binary variable taking on value one if the firm issued bonds and zero otherwise. $SSV_{i,t-1} = \overline{R}_i \times S^{ID}_{t-1}$. All specifications include as controls the one-year lagged values of the log of total assets, cash ratio, fixed assets ratio, leverage, ROA, Q, bonds issued in the previous year scaled by assets two years before, an indicator variable of whether the firm had a long-term issuer credit rating from S&P and another one of whether that rating was non-investment grade. Standard errors clustered at the firm level are shown in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Institutional Loans: Financial Constraints			
	(1) Inst. Loans/ L1(TA)	(2) Inst. Loans/ L1(TA)	(3) Inst. Loans L1(TA)
$SSV_{i,t-1}$	0.081***	0.062***	0.014***
	(0.012)	(0.007)	(0.006)
$SSV_{i,t-1} \times HSize$	-0.047***		
	(0.012)		
$SSV_{i,t-1} \times Rated$		-0.028***	
		(0.008)	
$SSV_{i,t-1} \times NonIG$			0.019***
			(0.007)
Observations	40,131	40,131	11,367
Controls	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes
Ind.-Year F.E.	Yes	Yes	Yes
No. Clusters	5419	5419	1470

Table 4: The dependent variable is the dollar amount of institutional loans obtained by a firm scaled by its lagged total assets. $SSV_{i,t-1} = \overline{R}_i \times S^{ID}_{t-1}$ is the shift-share variable. Column 1 includes a dummy variable $HSize$ (equal to one if the firm's lagged assets are above the lagged industry-year median assets and zero otherwise), interaction terms $\overline{R}_i \times HSize$ and $S^{ID}_{t-1} \times HSize$ and, lastly, the interaction term $SSV_{i,t-1} \times HSize$, of our interest, reported here. Column 2 includes a dummy variable *Rated* (equal to one if the firm had an S&P rating the previous year and zero otherwise), interaction terms $\overline{R}_i \times Rated$ and $S^{ID}_{t-1} \times Rated$ and, lastly, interaction term $SSV_{i,t-1} \times Rated$, of our interest, reported here. Column 3 includes a dummy variable Non-Investment Grade Rating, $NonIG$, (equal to one if the firm had an S&P rating below investment rating in the previous year and zero otherwise), interaction terms $\overline{R}_i \times NonIG$ and $S^{ID}_{t-1} \times NonIG$ and, lastly, interaction term $SSV_{i,t-1} \times NonIG$, of our interest, reported here. In Column 3, we restrict our sample to firms that have a rating available. All specifications include as controls the one-year lagged values of the log of total assets, cash ratio, fixed assets ratio, leverage, ROA, Q, bonds issued in the previous year scaled by assets two years before, an indicator variable of whether the firm had a long-term issuer credit rating from S&P and another one of whether that rating was non-investment grade. Standard errors clustered at the firm level are shown in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Mergers				
	(1) M&A L1(TA)	(2) M&A L1(TA)	(3) M&A Deals	(4) M&A Deals
$SSV_{i,t-1}$	0.009***	0.009***	0.038***	0.038***
	(0.002)	(0.002)	(0.009)	(0.009)
Observations	40,131	40,131	40,131	40,131
Controls	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	No	Yes	No
Ind.-Year F.E.	No	Yes	No	Yes
No. Clusters	5419	5419	5419	5419

Table 5: In Columns (1) and (2), the dependent variable is the sum of the amount paid in M&A transactions a firm participates in as an acquirer in a given year (scaled by lagged asset). In Columns (3) and (4), the dependent variable is the number of M&A transactions a firm participates in as an acquirer in a given year. $SSV_{i,t-1} = \overline{R}_i \times S^{ID}_{t-1}$ is the shift-share variable. All specifications include as controls the one-year lagged values of the log of total assets, cash ratio, fixed assets ratio, leverage, ROA, Q, bonds issued in the previous year scaled by assets two years before, an indicator variable of whether the firm had a long-term issuer credit rating from S&P and another one of whether that rating was non-investment grade. Standard errors clustered at the firm level are shown in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Mergers: Financial Constraints			
	(1) M&A/ L1(TA)	(2) M&A/ L1(TA)	(3) M&A/ L1(TA)
$SSV_{i,t-1}$	0.027***	0.023***	0.005
	(0.007)	(0.005)	(0.005)
$SSV_{i,t-1} \times HSize$	-0.020***		
	(0.007)		
$SSV_{i,t-1} \times Rated$		-0.018***	
		(0.006)	
$SSV_{i,t-1} \times NonIG$			-0.001
			(0.006)
Observations	40,131	40,131	11,367
Controls	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes
Ind.-Year F.E.	Yes	Yes	Yes
No. Clusters	5419	5419	1470

Table 6: The dependent variable is the amount spent on M&A transactions a firm participates in as an acquirer in a given year, scaled by lagged assets. $SSV_{i,t-1} = \overline{R}_i \times S^{ID}_{t-1}$. Column 1 includes a dummy variable $HSize$ (equal to one if the firm's lagged assets are above the lagged industry-year median assets and zero otherwise), interaction terms $\overline{R}_i \times HSize$ and $S^{ID}_{t-1} \times HSize$, and the interaction term $SSV_{i,t-1} \times HSize$, of our interest, reported here. Column 2 includes a dummy variable *Rated* (equal to one if the firm had an S&P rating in the previous year and zero otherwise), an interaction term $SSV_{i,t-1} \times Rated$, interaction terms $\overline{R}_i \times Rated$ and $S^{ID}_{t-1} \times Rated$. Column 3 includes a dummy variable Non-Investment Grade Rating, $NonIG$ (equal to one if the firm had an S&P rating below investment in the previous year and zero otherwise), interaction terms $\overline{R}_i \times NonIG$ and $S^{ID}_{t-1} \times NonIG$, and the interaction term $SSV_{i,t-1} \times NonIG$ of our interest, reported here. In Column 3, we restrict our sample to firms that have a rating available. All specifications include as controls the one-year lagged values of the log of total assets, cash ratio, fixed assets ratio, leverage, ROA, Q, bonds issued in the previous year scaled by assets two years before, an indicator variable of whether the firm had a long-term issuer credit rating from S&P and another one of whether that rating was non-investment grade. Standard errors clustered at the firm level are shown in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Investments				
	(1) Capex/ L1(TA)	(2) Capex/ L1(TA)	(3) R&D/ L1(TA)	(4) R&D/ L1(TA)
$SSV_{i,t-1}$	-0.001	-0.002*	-0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.000)
Observations	40,131	40,131	40,131	40,131
Controls	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	No	Yes	No
Ind.-Year F.E.	No	Yes	No	Yes
No. Clusters	5419	5419	5419	5419

Table 7: In Columns (1) and (2), the dependent variable is the ratio of capital expenditures over lagged total assets; In Columns (3) and (4), the research and development expenditure over lagged total assets. $SSV_{i,t-1} = \overline{R}_i \times S^{ID}_{t-1}$. All specifications include as controls the one-year lagged values of the log of total assets, cash ratio, fixed assets ratio, leverage, ROA, Q, bonds issued in the previous year scaled by assets two years before, an indicator variable of whether the firm had a long-term issuer credit rating from S&P and another one of whether that rating was non-investment grade. Standard errors clustered at the firm level are shown in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Mergers - Target Types						
	Public M&A/ L1(TA)	Private M&A/ L1(TA)	Subs M&A/ L1(TA)	Public M&A Deals	Private M&A Deals	Subs M&A Deals
$SSV_{i,t-1}$	0.001**	0.002**	0.002**	0.005	0.015**	0.015**
	(0.001)	(0.001)	(0.001)	(0.004)	(0.006)	(0.007)
Observations	40,131	40,131	40,131	40,131	40,131	40,131
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Ind.-Year F.E.	No	No	No	No	No	No
No. Clusters	5419	5419	5419	5419	5419	5419

Table 8: In Columns (1-3), the dependent variable is the sum of the amount paid in M&A transactions a firm participates in as an acquirer in a given year (scaled by lagged asset) of Public (Column 1), Private (Column 2) and Subsidiaries (Column 3) targets. In Columns (4-6), the dependent variable is the number of M&A transactions a firm participates in as an acquirer in a given year of Public (Column 4), Private (Column 5), and Subsidiaries (Column 6) targets. $SSV_{i,t-1} = \overline{R}_i \times S^{ID}_{t-1}$. All specifications include as controls the one-year lagged values of the log of total assets, cash ratio, fixed assets ratio, leverage, ROA, Q, bonds issued in the previous year scaled by assets two years before, an indicator variable of whether the firm had a long-term issuer credit rating from S&P and another one of whether that rating was non-investment grade. Standard errors clustered at the firm level are shown in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

M&A Deals: Cumulative Abnormal Returns

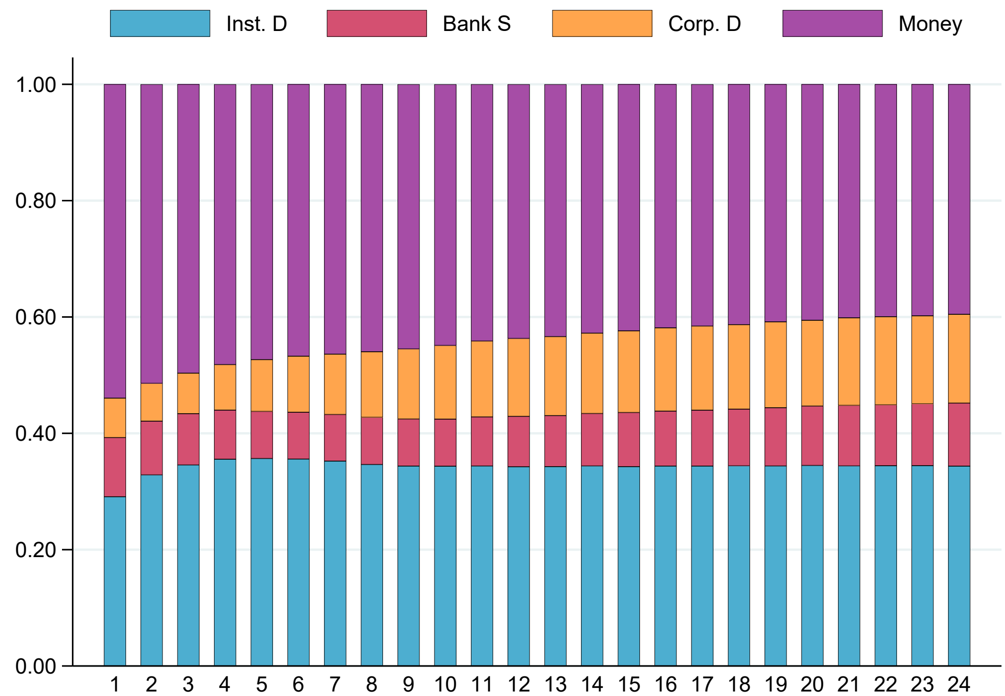
Event Window (Days)	-/+1	-/+ 3	-/+ 5	-/+ 10	-/+ 20
Panel A: Institutional Borrowing in *year* = 0					
All Targets					
CAR	2.67	2.91	2.52	2.38	3.10
t-stat	6.23	5.96	4.58	3.71	3.94
Deals	480	480	480	480	476
Private Targets					
CAR	2.09	2.7	1.94	1.95	2.16
t-stat	3.15	3.19	2.12	1.92	1.69
Deals	171	171	171	171	169
Public Targets					
CAR	1.53	1.89	1.16	1.26	0.85
t-stat	1.60	1.96	1.06	0.95	0.51
Deals	83	83	83	83	83
Subsidiary Targets					
CAR	3.60	3.51	3.57	3.17	4.77
t-stat	5.36	4.79	4.19	3.14	3.91
Deals	227	227	227	227	225
Panel B: Institutional Borrowing in *year* = 0 or *year* = −1					
All Targets					
CAR	2.09	2.18	2.13	2.22	3.00
t-stat	9.13	8.06	6.91	5.94	6.26
Deals	1070	1068	1068	1066	1056
Private Targets					
CAR	1.77	1.97	1.71	2.06	2.91
t-stat	5.37	4.53	3.54	3.62	3.84
Deals	433	432	432	430	424
Public Targets					
CAR	1.81	2.01	2.07	1.49	1.34
t-stat	2.77	2.89	2.70	1.57	1.11
Deals	154	154	154	154	154
Subsidiaty Targets					
CAR	2.53	2.47	2.62	2.66	3.73
t-stat	7.07	6.21	5.57	4.61	5.17
Deals	485	484	484	484	480

Table 9: Mean cumulative abnormal returns (CARs) for M&A deals in which the acquirer borrowed institutional loans in the same year ($year = 0$) of the transaction (Panel A) or, alternatively, in the same or previous year ($year = 0$ or $year = -1$) of the transaction (Panel B). CARs are estimated using the market-adjusted model and displayed in percentage points. t-stat is the cross-sectional t-statistic for Cumulative Abnormal Return at the end of the event window. Deals are all finalized transactions in which the acquirer obtained at least 50% of ownership after the deal with sufficient data to estimate CARs. Period 2002–2016.

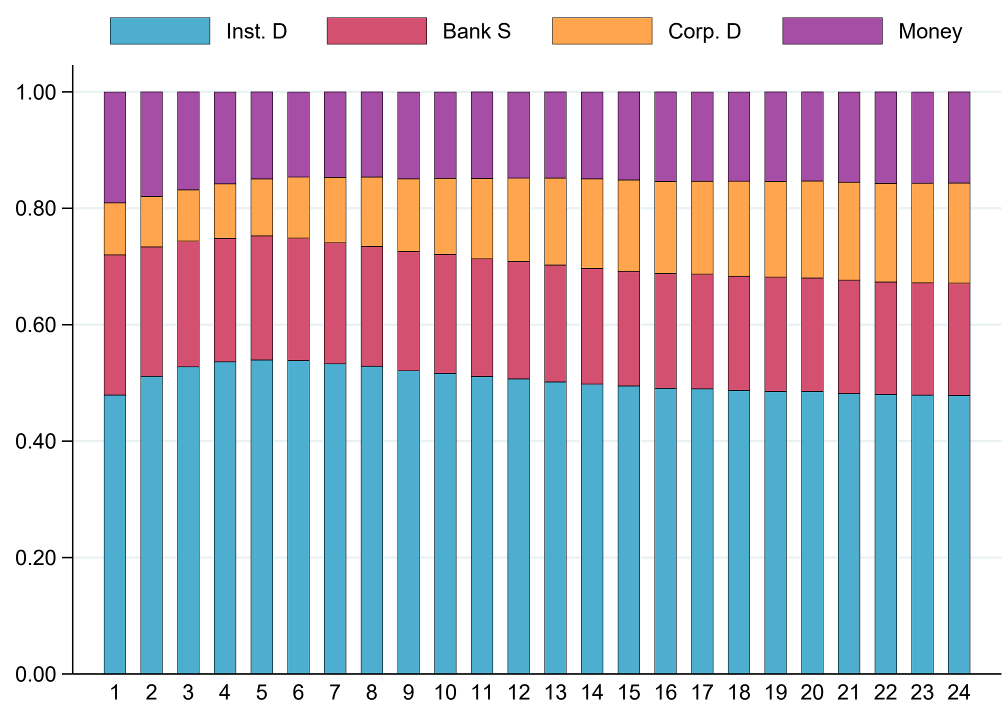
Dividends and Stock Repurchases				
	(1) Dividends/ L1(TA)	(2) Dividends/ L1(TA)	(3) Stock Rep./ L1(TA)	(4) Stock Rep./ L1(TA)
$SSV_{i,t-1}$	0.001***	0.001***	0.002***	0.002***
	(0.000)	(0.000)	(0.001)	(0.001)
Observations	40,131	40,131	40,131	40,131
Controls	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	No	Yes	No
Ind.-Year F.E.	No	Yes	No	Yes
No. Clusters	5419	5419	5419	5419

Table 10: Dependent variable in columns (1) and (2) is cash dividend payments scaled by lagged total assets. The dependent variable in columns (3) and (4) is stock repurchases scaled by lagged total assets. $SSV_{i,t-1} = \overline{R}_i \times S^{ID}_{t-1}$. All specifications include as controls the one-year lagged values of the log of total assets, cash ratio, fixed assets ratio, leverage, ROA, Q, bonds issued in the previous year scaled by assets two years before, an indicator variable of whether the firm had a long-term issuer credit rating from S&P and another one of whether that rating was non-investment grade. Standard errors clustered at the firm level are shown in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Appendix

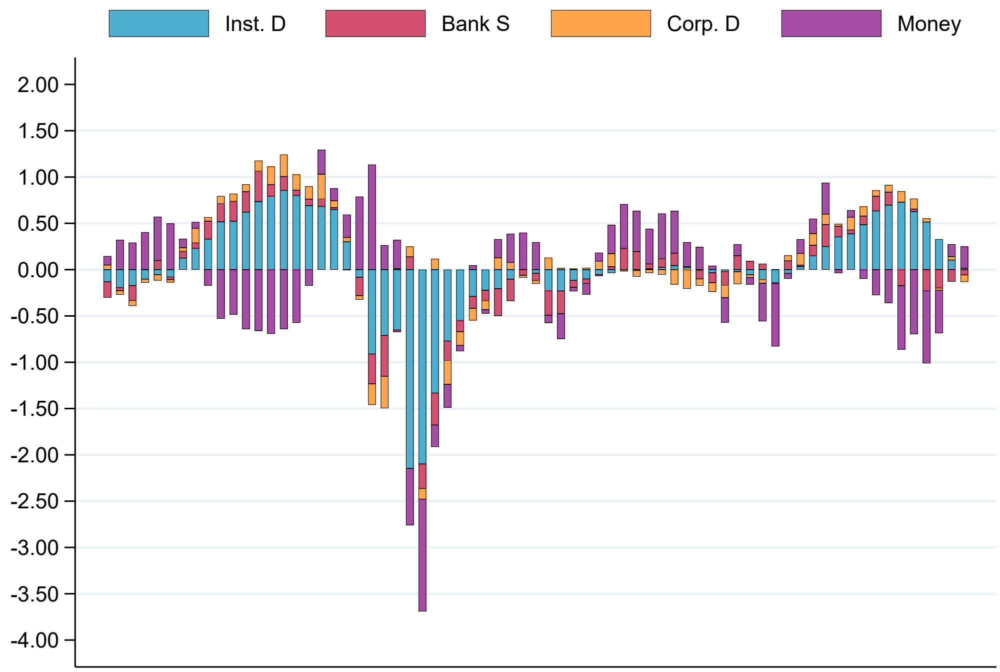


(a) FEVD of Institutional Loan Origination Amount

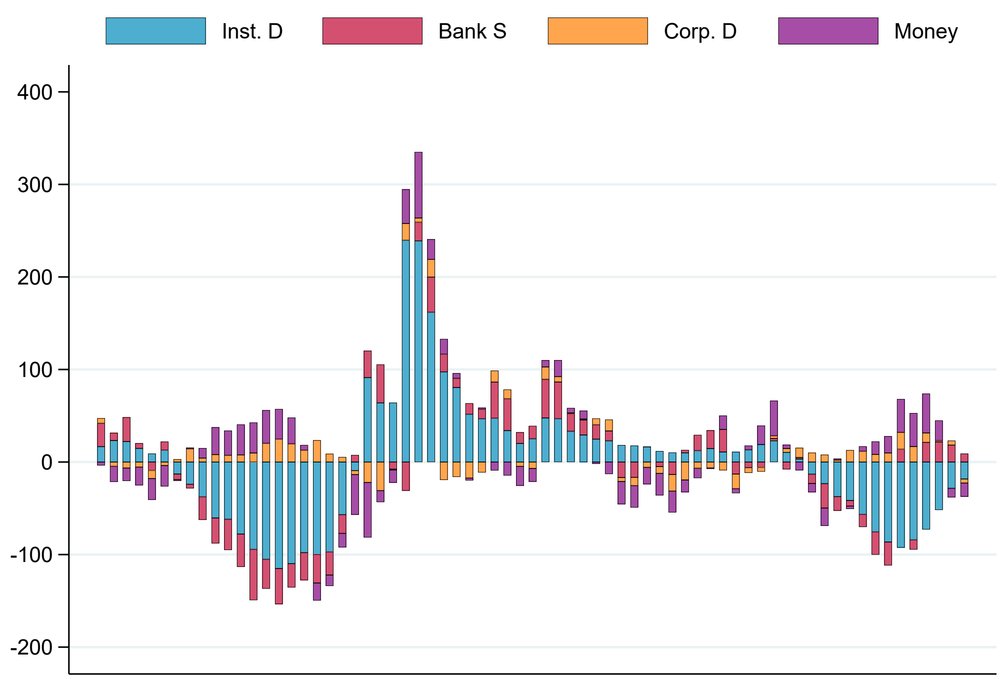


(b) FEVD of All-In Spread Drawn on Institutional Loans

Figure A1: Forecast Error Variance Decomposition of Institutional Loan Origination Amount and All-In Spread on Originations of Institutional Loans. Inst. D is Institutional Investors Demand Shock. Bank S is Bank Supply Shock. Corp. D is Corporate Demand Shock. Money is Monetary Tightening Shock. The model is estimated using Bayesian techniques with data for 2001:Q4-2019:Q4. The lag order is $p = 4$. The x-axis represents quarters.



(a) Historical Decomposition of Institutional Loan Origination Amount



(b) Historical Decomposition of All-In Spread Drawn on New Institutional Loans

Figure A2: Historical Decomposition of Institutional Loan Origination Amount and All-In Spread on Originations of Institutional Loans. Inst. D is Institutional Investors Demand Shock. Bank S is Bank Supply Shock. Corp. D is Corporate Demand Shock. Money is Monetary Tightening Shock. The model is estimated using Bayesian techniques with data for 2001:Q4-2019:Q4. The lag order is $p = 4$.