Is Bank Debt Special for the Transmission of Monetary Policy? Evidence from the Stock Market*

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Abstract

This paper studies the importance of bank lending to firms for the transmission of monetary policy to the real economy. We employ a novel dataset that enables us to measure bank-dependence of firms accurately, and show that the stock prices of bank-dependent firms are significantly more responsive to monetary policy shocks, controlling for firm leverage and financial constraints. We explore the channels through which this effect occurs, and find that bank dependent firms that borrow from financially distressed banks display a much stronger sensitivity to monetary policy shocks. This finding is consistent with an active *bank lending channel*, according to which the strength of a bank's balance sheets matters for monetary policy transmission. We also show that bank dependent firms that hedge against interest rate risk display a much lower sensitivity to monetary policy shocks, consistent with an *interest rate channel* that operates via the pass-through of interest rates, associated with the widespread use of floating-rates in bank loans and credit line agreements. Taken together, these results suggest that bank lending to firms plays an important role in the transmission of monetary policy, but that there is significant heterogeneity across bank dependent firms in their reaction to monetary policy shocks.

Key words: bank lending channel, interest rate channel, monetary policy transmission, financial constraints, bank financial health
JEL classification: E52, G21, G32

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1 Introduction

While there is ample evidence on the importance of monetary policy for real investment, consumption, the valuation of financial assets, and more generally for aggregate economic performance, there is still no consensus on the precise channels through which central banks' interest rate decisions bear implications for the real economy.[1] Given the preeminent role of financial intermediaries in the implementation of monetary policy, and the large share of aggregate savings that they intermediate, an important strand of the finance and macroeconomics literature has been devoted to the exploration of their role.[2] Many of these studies use variation across firms as a source of information and their main challenge lies in the identification of the degree of bank dependence for individual firms.

This paper studies the importance of financial intermediaries in the transmission of monetary policy by identifying whether bank-dependent firms' stock prices are more responsive to monetary policy shocks. We pursue this goal by employing a new and direct measure of bank-dependence, computed as the share of bank debt in a firm's total assets, and provide coverage for publicly-listed firms in the U.S. Our measure of bank-dependence, combined with data on bank financial health, firm financing frictions, and a novel database on interest-rate hedging activities, allows to disentangle the relative importance of the channels through which a bank-centered transmission mechanism might operate.

Using data on U.S. firms, we first show that stock prices of bank-dependent firms react more strongly to monetary policy shock surprises, after controlling for alternative measures of firms' leverage and financial constraints. In particular, a two standard deviation increase in our bank-dependence measure causes the stock price to decrease by between 1.14 and 2.28 percent more in response to a one percentage point surprise increase in federal funds rate. To put things in perspective, we find that the aggregate stock market value decreases by 3.36 percent in response to a one percentage point surprise increase in federal funds rate, meaning that bank-dependence strengthens the effect of the monetary policy on stock prices significantly.

We next explore two channels through which bank lending might matter. As for the first channel, Bernanke and Blinder (1988), Bernanke and Gertler (1995), Stein (1998), Bolton and Freixas (2006) propose alternative theories to explain how financial frictions that affect banks act as an independent source of amplification of monetary policy shocks, a mechanism referred to as the *bank lending channel*. These theories require some failure of the Modigliani-Miller theorem

[1] Examples are Gertler and Gilchrist (1994), Angeloni, Kashyap,and Mojon (2003), Bernanke and Kuttner (2005), Boivin and Giannoni (2006).

[2] Examples are Bernanke and Blinder (1988), Bernanke and Blinder (1992), Stein (1998), Kashyap and Stein (2000), Kishan and Opiela (2000), Van den Heuvel (2002), Bolton and Freixas (2006).

for banks, in the sense that supply of credit by banks is affected by variations in the strength of their balance sheet, which itself depends on monetary policy shifts. Bernanke and Blinder (1992), Kashyap and Stein (1995), Kashyap and Stein (2000), Kishan and Opiela (2000) provide empirical evidence that financially fragile financial intermediaries reduce their supply of loans relatively more following a tightening of monetary policy.

To test for the existence of a bank lending channel, we collect bank balance sheet data and follow Kashyap and Stein (2000) and Kishan and Opiela (2000) to construct several measures of bank financial health. We find that bank dependent firms that borrow from financially distressed banks display a much stronger sensitivity to monetary policy shocks, which is consistent with an active bank lending channel. It might be however that bank health might be associated with, or indeed caused by, the interest rate sensitivity of its borrowers, which would bias the results. To deal with this concern, we design a test based on the idea that if borrowers can raise capital from other sources of finance besides bank borrowing, even if their main lending bank faces financial difficulties, one would not expect bank financial health to matter. To examine this issue, we split the sample depending on whether a firm can access debt capital markets, and show that for firms that can access the bond market, the responsiveness of their stock price to monetary policy surprises does not depend on their exposure to bank financing nor on the financial health of their main bank. This provides further evidence of an active bank lending channel. Using more broad indicators of financial constraints to sort firms does not seem to matter for how bank dependence affects the sensitivity of stock prices to monetary policy shocks, suggesting that access to non-bank debt is an important determinant of the strength of the bank lending channel for a firm.

We then examine a second channel via which banks can act as an independent source of transmission of monetary policy shocks. Monetary policy directly affects firms via the *interest rate channel*, according to which a contractionary monetary policy raises the cost of capital for firms, causing a decline in their investment activity, and a decline in consumption of households. While the interest rate channel operates also outside intermediated finance, it affects the interest rate at which banks finance themselves in their short term, and insofar as their lending is mainly with floating rate contracts, the higher cost of finance for banks translates into higher interest rates for their borrowers. We refer to the latter mechanism as the *pass-through channel*. This channel is likely to be important because most business loan contracts and credit line agreements are written with variable interest rates indexed to a short-term interbank rate, such as LIBOR. However, it is also the case that many firms hedge their interest rate risk by converting their liabilities from floating to fixed rates, via the use of interest-rate swaps and other derivative contracts. Therefore, to test for the pass-through channel it is important to distinguish between firms that hedge their interest rate risk and those that do not.

For this purpose, we collect data from annual 10-K SEC filings using a text search (parsing) algorithm and identify which firms engage in interest rate hedging. Our results on interest-rate hedging activities show that bank dependent firms that hedge against interest rate risk display a much lower sensitivity to monetary policy shocks. This evidence is consistent with an interest rate channel that operates through a pass-through of interest rates from banks to firms, due to the pervasive use of floating rate loans.

Taken together, these results suggest that bank lending to firms plays an important role in the transmission of monetary policy, but that there is significant heterogeneity across bank dependent firms in their reaction to monetary policy shocks. In particular, the extent to which a firm uses interest rate hedging, borrows from a financially distressed bank, or is itself excluded from other sources of debt financing besides bank borrowing, matters importantly for its sensitivity to monetary policy shocks. Therefore, our study is important not only for academic economists and policy makers who are interested in the real effects of the monetary policy, but also for investors who are interested in the exposure of their financial portfolios to monetary policy shocks.

Related Literature

The traditional bank lending channel specifies a very precise way through which monetary policy affects bank lending supply, that is by draining deposits from banks, which they can't substitute for easily (Bernanke and Blinder (1988), Bernanke and Gertler (1995)). However, the bank lending channel should be understood more broadly, to include other mechanisms through which monetary policy affects banks' ability to obtain external finance (Stein (1998), Van den Heuvel (2002)), Bolton and Freixas (2006)).

The existing empirical work has tried to establish whether financially fragile financial intermediaries contract their supply of loans relatively more following a tightening of monetary policy. Bernanke and Blinder (1992) find that a tightening of monetary policy leads to a decline in aggregate bank lending activity. Later studies have found that this impact is stronger for small banks with less liquid balance sheets (Kashyap and Stein (2000)) and for more leveraged banks (Kishan and Opiela (2000)). Ashcraft (2006) also finds evidence consistent with a stronger reaction of loan supply by financially weaker banks, but concludes that this channel has little effect on output, suggesting that either firms can easily substitute away from affected banks, or that only a small subset of firms are bank dependent. Den Haan, Sumner, and Yamashiro (2007) find that following a monetary tightening, bank loans to consumers decrease, while business loans typically increase, and conjecture that this may be due to a change in bank portfolio behavior that favors business loans in response to an unexpected increase in interest rates.

Finding a relationship between the monetary policy shocks and bank loan supply related to

financing frictions at the bank level is a necessary but not sufficient condition for an operative bank lending channel. It must be also that firms should be unable to replace bank loans with other non-bank sources of finance. Several papers have explored whether exogenous shocks to bank capital affect the investment and performance of their borrowers (Kang and Stulz (2000), Khawaja and Mian (2008), Paravisini (2008), Chava and Purnanandam (2008)). This finding suggests that, to the extent that monetary policy shocks could produce results similar in magnitude on bank lending as these bank capital shocks do, banks might play an important role in the transmission of monetary policy.

Most papers have focused on analyzing individual parts of the transmission mechanism, which means that making statements about the strength of the whole mechanism is difficult. An exception is Gertler and Gilchrist (1994) which finds that following a monetary policy contraction, small firms' short-term borrowing declines, while large firms' borrowing expands. Furthermore, the performance of small firms, measured by sales and inventories, deteriorates much more than that of large firms. While this evidence is consistent with a bank lending channel to the extent that small firms depend on bank debt relatively more than large firms, it is also consistent with a broader credit channel in which monetary policy contractions affect the general availability of external finance more for small firms.

Finally, most of the previous papers measure firms' reaction to bank supply shocks using balance sheet variables such as capital expenditures or variations in bank debt. While informative, these analyses might suffer from the problem that these variables are measured a long time after the bank capital shock or monetary policy event occurred, a time during which other mechanisms might come into play. Most closely related to our paper are those studies focusing on the stock value reaction to bank lending supply shocks. Ongena, Smith and Michalsen (2003) use the shock to the banking system in Norway in 1988-1991 and find that the stock price reaction of firms to the distress of banks they were related to was small and short-lived. Carvalho, Ferreira and Matos (2010) however find a strong reaction, using the financial crisis as the source of shock to bank credit supply. Finally, Giannetti and Simonov (2011) study the effect of bank bailouts in Japan in the 1990's on borrowers' stock valuation, finding a strong reaction.

The rest of the paper is structured as follows: Section 2 provides an overview of the database employed in the empirical section and describes the parsing algorithm. Section 2.2 provides comparisons with previous studies. Section 3 presents our tests on the bank lending channel and the pass-through channel. Section 4 concludes.

2 Data

2.1 Description and Summary Statistics

2.1.1 Firm-level data

We obtain firm-level data from the Capital IQ (CIQ) and Compustat databases for the period of 2002-2008. We restrict ourselves to U.S. firms covered on both databases and traded on AMEX, NASDAQ, or NYSE. We remove utilities (SIC codes 4900-4999) and financial firms (SIC codes 6000-6999). We further remove firm-years with negative revenues, and negative or missing assets, obtaining in the end a sample of 34,557 firm-years involving 4,408 unique firms.

CIQ compiles detailed information on capital structure and debt structure by going through financial footnotes contained in firms' 10K Securities and Exchange Commission (SEC) filings. Most importantly for our purposes, firms provide detailed information on the drawn and undrawn portions of their credit lines in the liquidity and capital resources section under the management discussion, or in the financial footnotes explaining debt obligations, and CIQ compiles this data. 10K filings typically also contain information on pricing and maturity of credit lines, but this data is not collected by CIQ. We use the information of CIQ to construct a dummy for the presence of a credit line, which is equal to one if the firm has a positive amount of credit lines reported in the 10K. We also construct a measure of the amount of credit lines expressed as a percentage of book assets. We compute the ratio of cash and investments (Compustat item 1) over total book assets (item 6 - item 1). Complete definitions can be found in the appendix. Following standard procedures, all variables are winsorized at the 0.5% in both tails of the distribution. Table 1 provides some descriptive statistics for the balance sheet variables we are using in our study.

[TABLE 1 ABOUT HERE]

2.1.2 Bank-level data

The exposure of each firm to its lenders' financial health is calculated as the average financial health ratio of the banks with which a firm has borrowed from in the previous 5 years, weighted by the share lent by each bank during those years. The construction of this variable proceeds in two steps. First, we calculate a firm-bank-year variable of the exposure of each firm that year to each bank. LPC Dealscan reports the lending allocations for banks in a syndicate, but only does so for around a third of observations. We thus estimate a simple model of bank allocations that only depends on (i) the status of the bank as lead lender or participant, (ii) the number of lead banks, and (iii) the number of participant banks. For consistency, once we have estimated the model, we apply the estimates to all observations, including the ones for which we had data.

Next, we calculate for each firm and year the share that each bank has in all of the lending done in the previous 5 years (not including the current year), and this share is calculated using the estimated allocations and the total loan amounts. If we cannot find the relevant financial health indicator for the bank, we substitute it by its nearest parent bank with available data. If we cannot find a parent bank with available data, we eliminate that bank and adjust, for each firm-year, the shares of the other banks proportionally so that the add up to 100%.

As a final step, we multiply the exposure variable times the financial health of the bank, to construct a firm-year variable that captures the weighted average health of the banks a firm is borrowing from. We build our measures of financial health from the quarterly FFIEC Call Reports, which all regulated U.S. commercial banks are required to file, and also directly from the filings of foreign banks. In the case of the U.S., because some banks are owned by a common holding company, we aggregate the bank-level data for banks with common ownership by summing Call Report data at the holding company level for multi-bank holding companies (see Cornetta, McNuttb, Strahan, and Tehranian (2011)). We use several indicators of financial health. The Bank Deposit Ratio is calculated as Total Deposits (Call Report item RCFD2200) over Total Assets (Call Report item RCFD2170), where Total Deposits are defined as the sum of (i) total transaction accounts, (ii) total non-transaction accounts (which includes money market deposit accounts) and (iii) the sum of non-interest-bearing deposits and interest-bearing deposits. The Bank Liquidity Ratio variable is calculated as liquid assets (cash, federal funds sold, reverse Repos, and securities excluding MBS/ABS securities, all from Call Reports), divided by total assets. The Bank Capital Ratio variable is calculated as the book value of capital divided by total assets. Finally, lender size is calculated as total assets.

2.1.3 Interest Rate Hedging Data

We collect data on interest rate hedging activities of U.S. firms using a text-search algorithm that scans 10-K corporate filings with the U.S. Securities and Exchange Commission (SEC). Disclosure of derivative hedging is mandatory under the 1998 Financial Reporting Release (FRR) No. 48 of the SEC and the 2001 SFAS No. 133. We do a detailed search of multiple phrases consistent with usage of interest rate derivatives (such as "hedge against interest rate", "hedge interest rate", "interest rate swap"), and then, for those filings for which we have a preliminary reading consistent with interest rate hedging, we make sure we do not collect false positives by checking that we cannot find any of a long list of phrases capturing a negative statement about the practice of interest rate hedging (such as "not use any interest-rate swaps", "not use interest-rate swaps", "not currently use any interest-rate swaps", "not hedge interest rate", "not use derivative financial instruments as a hedge against interest rate", "termination of interest rate swap", "fixed to floating interest rate

swap", or "do not currently use interest rate swap").

The following are two examples of hedging: In fiscal year 2008, BioFuel Energy Corp reports that: "We are subject to interest rate risk in connection with our bank facility. Under the facility, our bank borrowings bear interest at a floating rate based, at our option, on LIBOR or an alternate base rate. Pursuant to our bank facility, we are required to hedge no less than 50% of our interest rate risk until all obligations and commitments under the facility are paid and terminated. In September 2007, the Operating Company, through its subsidiaries, entered into an interest rate swap for a two-year period. The contract is for $60.0 million principal with a fixed interest rate of 4.65%, payable by the Operating Company and the variable interest rate, the one-month LIBOR, payable by the third party."

Similarly, in fiscal year 2006 Netsmart Technologies reports: "In October 2005, we entered into a revolving credit and term loan agreement with the Bank of America (...). This financing provides us with a five-year term loan of $2.5 million. The term loan bears interest at LIBOR plus 2.25%. We have entered into an interest rate swap agreement with the Bank for the amount outstanding under the term loan whereby we converted our variable rate on the term loan to a fixed rate of 7.1% in order to reduce the interest rate risk associated with these borrowings."

2.1.4 Stock Returns and Monetary Policy Data

The data of our empirical study fall into three categories: Stock returns for the individual firms and the aggregate equity market, balance-sheet variables that allows us to control for bank dependence and other financial constraint measures, and changes in federal funds rate to capture shocks to U.S. monetary policy. We use the CRSP database to obtain the daily stock returns of the publicly listed companies, excluding the less liquid penny stocks, and use the total return on the CRSP value-weighted index as a measure of U.S. aggregate equity returns.

One problem associated with estimating the market's reaction to monetary policy changes is that the equity market is not likely to respond to anticipated policy actions. To deal with this issue, Bernanke and Kuttner (2005) adopt a method, proposed by Kuttner (2001), that separates the unexpected, or "surprise," component from the anticipated component of a monetary policy change—specifically, a change in the federal funds target rate. The identification of the surprise element in the target rate change relies on the price of 30-day federal funds futures contracts, a price which encompasses market expectations of the effective federal funds rate. We follow this method because federal funds futures outperform target rate forecasts based on other financial market instruments or based on alternative methods, such as sophisticated time series specifications and monetary policy rules.[3]

[3]See Evans (1998) and Gürkaynak, Sack and Swanson (2007). Another advantage of looking at one-day changes

Following Bernanke and Kuttner's analysis, we define an event as either an FOMC meeting or an announced change in the funds target rate. Kuttner (2001) and Bernanke and Kuttner (2005) obtain the corresponding surprise change in the target rate by first calculating the change in the rate implied by the corresponding futures contract, given by 100 minus the futures contract price, and then scaling this result by a factor associated with the number of days of the month in which the event occurred. Accordingly, the unanticipated target rate change, for an event taking place on day d of month m, is given by

$$\Delta i^u = \frac{D}{D-d}(f^0_{m,d} - f^0_{m,d-1}),$$

where $f^0_{m,d} - f^0_{m,d-1}$ is the change in the current-month implied futures rate, and D is the number of days in the month. To suppress the end-of-month noise in the federal funds rate, the unscaled change in the implied futures rate is used as the measure of target rate surprise when the event occurs on the last three days of the month. If the event happens on the first day of the month, $f^1_{m-1,D}$ is used instead of $f^0_{m,d-1}$. The expected federal funds rate change is defined as the difference between the actual change minus the surprise:

$$\Delta i^e = \Delta i - \Delta i^u,$$

where Δi is the actual federal funds rate change. The data for the decomposition of the federal funds target rate changes can be obtained from Kenneth Kuttner's webpage.[4] Kuttner's dataset contains futures-based funds rate surprises on event days from February 1994 to June 2008 for two reasons. First, starting in February 1994, the FOMC's policy of announcing target rate changes at pre-scheduled dates virtually eliminated the timing ambiguity associated with rate changes prior to this time period. Second, after June 2008, the Federal Reserve switched from announcing a specific target rate to announcing a range for the target rate.

2.2 Preliminary Analysis and Sub-sample Robustness

Because the time periods for our monetary policy and bank-dependence data overlaps only for the period of 2002-2008, this section provides the preliminary analysis of the data to convince the reader that our subsample is reasonably representative of the full sample. Table 2 shows the relationship between aggregate stock returns and monetary policy shocks for the period from February 1994 to June 2008. Our main result from this table is similar to the result in Bernanke and Kuttner (2005). In particular, we find that a 1 percent surprise increase in federal funds target rate creates a 3.4

in near-dated federal funds futures is that federal funds futures do not exhibit predictable time-varying risk premia (and forecast errors) over daily frequencies. See, for example, Piazzesi and Swanson (2008).

[4] http://econ.williams.edu/people/knk1/research

percent surprise decrease in stock prices.

[TABLE 2 ABOUT HERE]

Table 3 repeats the same regression for the panel of individual firms. Panel A uses the full sample as in Table 3, whereas panel B uses the subsample for which we can match our one-year lagged CIQ data with the stock return data. After excluding the outliers, which are the same as those in Table 2, the estimation coefficients are not perfectly identical but they are pretty similar to the coefficient in Table 2, suggesting that our sample, though limited by construction, is representative enough. We use the same sample of FOMC announcement dates in our detailed analysis of bank-dependence in the next section.

[TABLE 3 ABOUT HERE]

3 Empirical Results

This section presents our main empirical results using regression specifications that are variations of the regressions proposed in Table 3 where we interact the surprise change in federal funds target rate with several variables of interest.

3.1 Is Bank Debt Special?

We first focus on whether bank debt is special for the transmission of monetary policy and hence we are primarily interested in whether stock prices of firms that depend more on bank debt as a source of financing are more responsive to monetary policy surprises. Table 4 provides an affirmative response to this question, using two different measures of bank dependence. Our first measure ([A]BankDebt/At) is the ratio of the bank debt to total assets whereas our second measure ([B]BankDebt/At) also includes undrawn credit lines in the numerator.

The first four columns of Table 4 show that under both bank dependence measures the stock prices of more bank-dependent firms are more responsive to monetary policy surprises, even after controlling for other firm characteristics. In particular, a one percent increase in our bank-dependence measure causes the stock price to increase by 5 to 10 basis points more in response to a one percentage point surprise decrease in federal funds rate. Equivalently, a two standard deviation (0.23) increase in our bank- dependence measure causes the stock price to increase by between 1.14 and 2.28 percentage points more in response to a one percentage point surprise decrease in federal funds rate.

[TABLE 4 ABOUT HERE]

Earlier papers have explicitly focused on the external margin using different measures to discretely classify firms as bank-dependent or not bank-dependent.[5] Therefore, for the sake of completeness, we also look at the effect of *external* and *internal margins* of bank-dependence. For this purpose, we define a dummy variable ("Has Bank Debt") that is equal to one if the firm has any source of bank debt either excluding ([A]) or including ([B]) undrawn credit lines, and zero otherwise. Columns five and six of Table 4 present the results. Our results for intensive margin, i.e. the share of bank debt in total assets in lines 5 and 6, are somewhat smaller than our results in the first four columns but still statistically and economically significant. Moreover, we also find that the extensive margin, i.e. whether the firm has any source of bank debt, also plays a significant role. In particular, having any sort of bank reliance seems to cause the stock price to increase by 2 to 3 percentage points more in response to a one percentage point surprise decrease in federal funds rate. These results suggest that not only the external margin, i.e. whether the firm relies on bank-debt or not, but also the internal margin, i.e. how much the firm relies on bank debt, plays a significant role in monetary policy transmission.

While these results are suggestive of potential transmission mechanisms and complement the existing literature, they leave the exact transmission mechanism at work as an open question which we turn to next.

3.2 Why is bank debt special?

3.2.1 Tests on the Bank Lending Channel

This section aims to shed light on why bank debt is special. For this purpose, we first dissect bank debt into its components, revolving credit and term loans. While revolving credit is typically short-term floating-rate debt that is used for funding a firm's day-to-day operations, term loans are more likely to be longer-term fixed-rate debt geared towards use of capital outlays. Because of these differences, monetary policy should have greater affect on the terms of revolving credit than on the terms of term loans. As a result, we should expect that firms that are more dependent on revolving credit should be more responsive to monetary policy than the firms that are more dependent on term loans.

[TABLE 5 ABOUT HERE]

Our results in Table 5 are largely in line with this expectation since the relationship between revolving credit and reaction of stock prices is much more robust and sizable than the relationship between term loans and reaction of stock prices. This result seems to hold regardless of whether

[5] Popular measures are small versus large firms as in Gertler and Gilchrist (1994) or firm ratings as in Kashyap, Lamont, and Stein (1994).

the share of revolving credit excludes undrawn credit ([A]) or includes it ([B]), and regardless of whether we control for additional firm characteristics (columns 2,4,5, and 6) or the external margin (columns 5 and 6).

These results might suggest that it is not the bank dependence that matters in itself but rather that the relatively short-term nature of bank credit and hence its responsiveness to changes in interest rates that plays the major role. We test this hypothesis by looking at whether firms that have more short-term debt relative to their assets are more responsive to monetary policy surprises in general. However, we do not find any evidence of this debt maturity channel. In particular, Table 9 in the Appendix shows that firms that rely more on short-term debt are less responsive to monetary policy shocks regardless of whether we look at the extensive or intensive margin and this relationship is not statistically significant. This result further strengthens our original contention that bank lending is special. However, we do not totally rule out the interest rate pass-through channel based on this evidence and take a closer look at this channel through the lens of firms' hedging behavior at the end of this section.

Next, we provide a test of the traditional bank lending channel which argues that banks' supply of credit is affected by variations in their balance sheet health induced by monetary policy shifts. For this purpose, Table 6 looks at whether the reaction of a bank-dependent firm's stock price to monetary policy is affected by the health of its lenders, as measured by lender's size, capital ratio, liquidity ratio, and deposit ratio. Our results in the third and fourth lines of each panel suggest that, at least in the external margin in columns 3 and 4, the stock prices of bank-dependent firms are affected less by monetary policy surprises if their banks are healthier which is clearly in line with bank lending channel.

[TABLE 6 ABOUT HERE]

It is possible that the first two columns of Table 6 do not provide a statistically significant result for the internal margin of bank-dependence because some of these bank-dependent firms may better be able to substitute bank debt with alternative sources of debt financing, in particular bonds. In order to analyze this issue further, we run the same internal-margin regressions in the first two columns of Table 6 after sorting firms into two groups depending on whether they have credit ratings (columns 1 and 2 of Table 7.1) and whether they have any outstanding bonds (columns 3 and 4 of Table 7.1) because unrated firms or firms with no bonds are more likely to be unable to substitute bank debt with bonds. Our results in the third line of each panel indicate that the internal margin plays a large and statistically significant role for the firms that are unrated or have no bonds. Therefore, we conclude that how much the firm relies on bank debt matters for its stock price reaction to monetary policy surprises if its lenders are not healthy and the firm does not have

access to other sources of debt financing.

For completeness, we also do a similar analysis for financially constrained (small and young) firms versus financially unconstrained (large and old) firms. While the difference between the reaction of these firms has the right sign as seen in the third line of each panel in Section 2 of Table 6, these results are not as strong since firm size and age is a more indirect measure of a firm's ability to substitute bank debt with other sources of debt.

[TABLE 7 ABOUT HERE]

3.2.2 Tests on the Pass-Through Channel

Finally, we further analyze the pass-through channel by looking at the relationship between hedging behavior of the firms and their stock price reaction to monetary policy surprises. For this purpose, we separate the firms into two groups, "Hedgers" and "NoHedgers", depending on whether or not they engage in any activity to hedge themselves against interest rate risk. If there is an interest rate pass-through channel of the monetary policy transmission trough banks, we should expect that firms that are more bank-dependent should be more responsive to monetary policy surprises if they do not hedge against interest rate risk. Indeed, the first two columns of Table 8 (first line in each panel) confirms our intuition. Moreover, the same columns (third line in each panel) also reveal another intuitive result that further amplifies this outcome: Firms that depend on an unhealthy bank are more responsive to monetary policy surprises if they do not hedge against interest rate risk. Finally, columns 3 to 10 confirm that the same results survive even when we look at the subgroups of firms that are less able to switch to other sources of debt financing (unrated and no-bonds) or that are more financially constrained (small and young).

[TABLE 8 ABOUT HERE]

4 Conclusion

This paper has explored the role that financial intermediaries' lending activity to firms plays in the transmission of monetary policy to the real economy. We have shown that stock prices of bank-dependent firms are significantly more responsive to monetary policy shocks, controlling for alternative measures of firm leverage and financial constraints. We have also shown that there are two channels through which this effect could occur, the classic bank lending channel and a variation of the interest rate channel associated to the rapid pass-through of policy rates to lending rates. Our results suggest that bank lending to firms plays an important role in the transmission of monetary policy.

Our results also suggest that there is significant heterogeneity across bank dependent firms in their reaction to monetary policy shocks, and for this reason our study is important not only for academic economists and policy-makers who are interested in the real effects of the monetary policy, but also for investors who are interested in the exposure of their financial portfolios to monetary policy shocks.

This research has stressed the difference between bank and non-bank liabilities. Future research could explore whether other forms of external finance, such as publicly traded debt, non-bank private debt, or trade credit, are themselves special for the transmission of monetary policy.

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Table I
Descriptive Statistics

This table provides summary statistics respectively for the entire sample, for the sample of firms that have bank debt (either as drawn revolving credit or term loans) and for the sample of firms that do not have bank debt. The entire sample consists of non-utilities (excluding SIC codes 4900-4949) and non-financials (excluding SIC codes 6000-6999) U.S. firms covered by both Capital IQ, CRISP and Compustat from 2002 to 2008. We have removed firm-years with 1) negative revenues, 2) missing assets, 3) assets smaller than 10 million, and 4) We discard the penny stocks, conventionally defined as those with stock price less than $5. After the above filters, the sample consists of 4,408 unique firms. Please refer to the appendix for variables definitions. All variables are winsorized at the 1% in both tails of the distribution. The last two columns test for differences between samples of firms with and without bank debt using the unequal variances t-test and the two-sample Wilcoxon rank-sum (Mann-Whitney) test.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Entire Sample		Firms with Bank Debt		Firms without Bank Debt		With versus Without Bank Debt	
	Mean	Median	Mean	Median	Mean	Median	t-test p-value	MW
Cash/ Assets	0.211	0.125	0.088	0.038	0.271	0.204	160.179 0.000	148.824
Credit Lines/Assets	0.097	0.071	0.124	0.102	0.084	0.048	-60.217 0.000	-84.887
Profitability	0.059	0.079	0.067	0.078	0.055	0.079	-15.286 0.000	-2.001
Size (Total Assets)	2450.9	509.4	1630.3	582.9	2850.9	475.7	29.786 0.000	-7.120
Book Leverage	0.194	0.148	0.321	0.276	0.132	0.041	-126.608 0.000	-156.056
Market Leverage	0.160	0.098	0.275	0.230	0.106	0.025	-137.230 0.000	-155.056
Tangibility	0.248	0.176	0.321	0.250	0.213	0.148	-70.582 0.000	-73.163
Bank Loan %	0.066	0.002	0.192	0.154	0.005	0.000	-264.949 0.000	-279.824
Unrated	0.691	1.000	0.645	1.000	0.714	1.000	22.195 0.000	22.578
Non-Div. Payer	0.670	1.000	0.678	1.000	0.666	1.000	-3.777 0.000	-3.765
Observations	105441		34557		70884			

Table 2

The Daily Response of Value-weighted CRSP index February 4, 1994 to June 25, 2008

The table reports the results from regressions of the 1-day CRSP value-weighted equity return on the surprise and expected components of the change in the Federal funds target rate, all expressed in percentage terms. Following Bernanke and Kuttner (2005), the outliers are those dates for which the Cook's D statistics is greater than 0.1 in the second equation. The outliers are October 15, 1998, January 3, 2001, March 20, 2001, April 18, 2001, Sep 17, 2001, January 22, 2008, and March 18, 2008. Parentheses contain robust standard errors. The asterisks denote *** for p<0.01, ** for p<0.05, * for p<0.1.

VARIABLES	(1)	(2)	(3) No outliers	(4) No outliers
Expected		-0.114		0.421
		(0.800)		(0.422)
Surprise		-1.686		-3.359**
		(2.505)		(1.639)
Change	-0.453		-0.058	
	(0.722)		(0.435)	
Constant	0.302***	0.271**	0.248***	0.213**
	(0.113)	(0.111)	(0.089)	(0.090)
Observations	122	122	115	115

Table 3

The Response of Daily Equity Prices to Federal Funds Rate Changes at the firm level

The table reports the results from panel regressions of the daily equity returns on the surprise and expected components of the change in the Federal funds target rate, all expressed in percentage terms. The outliers are the same as in the table with the daily CRSP value-weighted return regressions. Parentheses contain robust standard errors. All regressions include an unreported constant term. The asterisks denote *** for p<0.01, ** for p<0.05, * for p<0.1.

Panel A: February 4, 1994 to June 25, 2008

	(1)	(2)	(3)	(4)
VARIABLES			No outliers	No outliers
Expected		-0.231***		0.207***
		(0.024)		(0.025)
Surprise		-1.480***		-2.671***
		(0.073)		(0.083)
Change	-0.500***		-0.169***	
	(0.022)		(0.022)	
Observations	565,317	565,317	536,357	536,357
Number of gvkey	12,463	12,463	12,458	12,458

Panel B: January 29, 2003 to June 25, 2008

	(1)	(2)	(3)	(4)
VARIABLES			No outliers	No outliers
Expected		-1.165***		0.125***
		(0.034)		(0.035)
Surprise		1.283***		-4.767***
		(0.079)		(0.185)
Change	-0.714***		-0.188***	
	(0.033)		(0.034)	
Observations	180,570	180,570	173,067	173,067
Number of gvkey	6,248	6,248	6,246	6,246

Table 4
Is Bank Debt Special?

This table examines the effect of monetary policy changes on daily returns and how they vary with a firm's bank debt exposure. [A]BankDebt/At is defined as bank debt (term loans plus drawn revolving credit) over book value of assets. [B]BankDebt/At is defined as bank debt (term loans plus drawn revolving credit) plus undrawn revolving credit over book value of assets. We only report "Surprise and the terms interacted with "Surprise". All regressions also include (unreported) a constant term, as well as LnAssets, Book Leverage, Profitability and Tangibility not interacted. All firm characteristics are lagged by one year and winsorized at 1%. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(1)	(2)	-3	(4)	(5)	(6)
Surprise	-4.061***	1.555*	-3.192***	2.029**	1.502*	2.177**
	(-16.43)	(1.739)	(-10.58)	(2.245)	(1.675)	(2.377)
[A]BankDebt/At	-5.277**	-10.95***				
	(-2.575)	(-4.511)				
[B]BankDebt/At			-7.842***	-9.849***		
			(-5.738)	(-6.517)		
Has Bank Debt					-2.094***	-3.045***
					(-3.673)	(-4.671)
Has Bank Debt*([A]BankDebt/At)					-5.792**	
					(-2.071)	
Has Bank Debt*([B]BankDebt/At)						-3.986**
						(-2.168)
LnAssets		-1.137***		-1.103***	-1.027***	-0.923***
		(-8.343)		(-8.212)	(-7.329)	(-6.728)
Book Leverage		4.807***		4.853***	4.714***	3.928***
		(3.836)		(4.195)	(3.705)	(3.521)
Profitability		-7.591***		-6.363***	-7.887***	-6.783***
		(-3.434)		(-2.858)	(-3.556)	(-3.045)
Tangibility		2.778***		2.931***	3.185***	3.238***
		(2.798)		(2.974)	(3.184)	(3.273)
Observations	97,818	97,550	97,799	97,531	97,550	97,531
R-squared	0.005	0.007	0.005	0.008	0.008	0.009
Number of gvkey	3,429	3,423	3,428	3,422	3,423	3,422
Firm FE	YES	YES	YES	YES	YES	YES

Table 5
Breakdown between Revolving Credit and Term Loans

This table provides a breakdown of bank debt into term loans and revolving credit. TermLoans/At is defined as term loans over book value of assets. [A]Rev.Credit/At is defined as drawn revolving credit over book value of assets. [A]Rev.Credit/At is defined as drawn plus undrawn revolving credit over book value of assets. We only report "Surprise and the terms interacted with "Surprise". All regressions also include (unreported) a constant term, as well as LnAssets, Book Leverage, Profitability and Tangibility not interacted. All firm characteristics are lagged by one year and winsorized at 1%. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	wret	wret	wret	wret	wret	wret
Surprise	-3.956***	1.682*	-3.035***	2.026**	1.607*	2.175**
	(-15.82)	(1.877)	(-9.950)	(2.244)	(1.787)	(2.379)
TermLoans/At	-2.503	-7.911***	-2.008	-7.186**		
	(-0.973)	(-2.733)	(-0.783)	(-2.512)		
[A]Rev.Credit/At	-12.30***	-17.98***				
	(-3.345)	(-4.614)				
[B]Rev.Credit/At			-10.89***	-10.98***		
			(-6.594)	(-6.401)		
Has Bank Debt					-1.875***	-2.964***
					(-3.202)	(-4.503)
HasBankDebt*(TermLoans/At)					-3.906	-2.443
					(-1.250)	(-0.820)
HasBankDebt*([A]Rev.Credit/At)					-11.75***	
					(-2.658)	
HasBankDebt*([B]Rev.Credit/At)						-4.850**
						(-2.343)
LnAssets		-1.149***		-1.087***	-1.049***	-0.919***
		(-8.414)		(-8.112)	(-7.444)	(-6.723)
Book Leverage		4.622***		4.399***	4.587***	3.691***
		(3.641)		(3.694)	(3.579)	(3.199)
Profitability		-7.333***		-6.212***	-7.654***	-6.675***
		(-3.316)		(-2.786)	(-3.447)	(-2.990)
Tangibility		3.011***		2.979***	3.315***	3.258***
		(3.018)		(3.029)	(3.304)	(3.299)
Observations	97,818	97,550	97,799	97,531	97,550	97,531
R-squared	0.005	0.008	0.005	0.008	0.008	0.009
Number of gvkey	3,429	3,423	3,428	3,422	3,423	3,422
Firm FE	YES	YES	YES	YES	YES	YES

Table 6
Lenders' Financial Health

This table examines the role of a lender's financial health. Lender financial health is measured in four different ways: lender size (logarithm of lender assets), lender capital ratio, lender liquidity ratio, lender deposit ratio. BankDebt/At is defined as bank debt (term loans plus drawn revolving credit) over book value of assets [A]. We only report "Surprise and the terms interacted with "Surprise". All regressions also include (unreported) a constant term, as well as LnAssets, Book Leverage, Profitability and Tangibility not interacted. All firm and lender characteristics are lagged by one year and winsorized at 1%. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)
Panel A: Lender Size				
BankDebt/At	-7.086***	-11.29***		
	(-2.779)	(-4.257)		
Lender Size	0.136**	0.0321	-0.0938	-0.125
	(2.121)	(0.436)	(-0.998)	(-1.265)
(BankDebt/At)*(Lender Size)	0.487	0.485		
	(1.605)	(1.623)		
HasBankDebt*(Lender Size)			0.373***	0.373***
			(3.331)	(3.349)
Panel B: Lender Capital Ratio				
BankDebt/At	-6.975***	-11.50***		
	(-2.742)	(-4.350)		
Lender Capital Ratio	17.68	-8.381	-17.53	-29.04
	(1.396)	(-0.582)	(-0.927)	(-1.479)
(BankDebt/At)*(Lender Capital Ratio)	0.853	0.869		
	(1.425)	(1.479)		
HasBankDebt*(Lender Capital Ratio)			0.589***	0.597***
			(2.638)	(2.699)
Panel C: Lender Liquidity Ratio				
BankDebt/At	-5.940**	-9.515***		
	(-2.400)	(-3.782)		
Lender Ratio	25.01***	19.02**	4.815	4.987
	(2.687)	(2.078)	(0.423)	(0.456)
(BankDebt/At)*(Lender Ratio)	0.565	0.458		
	(1.171)	(1.001)		
HasBankDebt*(Lender Ratio)			0.362**	0.336**
			(2.491)	(2.378)
Panel D: Lender Deposit Ratio				
BankDebt/At	-6.486***	-10.88***		
	(-2.660)	(-4.261)		
Lender Ratio	4.105**	0.538	-2.197	-3.727
	(2.107)	(0.236)	(-0.789)	(-1.270)
(BankDebt/At)*(Lender Ratio)	0.130	0.134		
	(1.424)	(1.493)		
HasBankDebt*(Lender Ratio)			0.0998***	0.103***
			(2.983)	(3.100)
Observations	59,282	59,110	59,282	59,110
Number of gvkey	2,064	2,063	2,064	2,063
Firm Controls	NO	YES	NO	YES
Firm FE	YES	YES	YES	YES

Table 7
Lender Health, Bank Dependence and Financial Constraints

This table examines the role of a lender's financial health in relation with bank dependence and financial constraints. Lender financial health is measured in four different ways: lender size (logarithm of lender assets), lender capital ratio, lender liquidity ratio, lender deposit ratio. BankDebt/At is defined as bank debt (term loans plus drawn revolving credit) over book value of assets [A]. We only report "Surprise and the terms interacted with "Surprise". All regressions also include (unreported) a constant term, as well as LnAssets, Book Leverage, Profitability and Tangibility not interacted. All firm and lender characteristics are lagged by one year and winsorized at 1%. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Set 1: Non-Bank versus Bank Dependent Firms

	(1) Unrated	(2) Rated	(3) NoBond	(4) Bonds
Panel A: Lender Size				
BankDebt/At	-17.36***	-2.886	-15.47***	-2.016
	(-4.234)	(-0.716)	(-3.842)	(-0.512)
Lender Size	-0.101	0.258	-0.156	0.301**
	(-1.136)	(1.345)	(-1.545)	(2.303)
BankDebt/At * Lender Size	0.990***	-1.10	0.918**	-0.275
	(2.708)	(-1.388)	(2.180)	(-0.571)
Panel B: Lender Capital Ratio				
BankDebt/At	-17.97***	-2.598	-15.08***	-2.953
	(-4.407)	(-0.639)	(-3.807)	(-0.748)
Lender Capital Ratio	-33.85*	27.24	-41.72**	37.38
	(-1.950)	(0.731)	(-2.128)	(1.457)
BankDebt/At * Lender Capital Ratio	1.955***	-2.450	1.626**	-0.459
	(2.751)	(-1.516)	(2.029)	(-0.477)
Panel C: Lender Liquidity Ratio				
BankDebt/At	-12.12***	-2.741	-11.33***	-0.620
	(-3.304)	(-0.667)	(-2.972)	(-0.160)
Lender Liquidity Ratio	9.307	70.67**	7.157	59.74***
	(0.962)	(2.358)	(0.699)	(3.022)
BankDebt/At * Lender Liquidity Ratio	0.731	-1.587	0.800	-0.796
	(1.406)	(-1.197)	(1.257)	(-1.049)
Panel D: Lender Deposit Ratio				
BankDebt/At	-16.17***	-3.091	-14.57***	-2.053
	(-4.081)	(-0.775)	(-3.748)	(-0.536)
Lender Deposit Ratio	-3.269	7.210	-5.084*	9.415**
	(-1.185)	(1.166)	(-1.731)	(2.173)
BankDebt/At * Lender Deposit Ratio	0.269**	-0.373	0.256**	-0.0965
	(2.475)	(-1.346)	(1.974)	(-0.645)
Observations	31,343	27,767	19,263	39,847

Set 2: Financially Constrained versus Financially Unconstrained Firms

	(1) Small	(2) Large	(3) Young	(4) Old
Panel A: Lender Size				
BankDebt/At	-14.57***	-6.181	-15.00***	-11.34***
	(-3.431)	(-1.553)	(-2.758)	(-3.590)
Lender Size	-0.0605	0.0405	-0.177	0.0708
	(-0.630)	(0.283)	(-1.247)	(0.789)

BankDebt/At * Lender Size	0.574	-0.313	0.858	0.455
	(1.560)	(-0.388)	(1.416)	(1.314)
Panel B: Lender Capital Ratio				
BankDebt/At	-14.83***	-5.811	-15.76***	-11.39***
	(-3.514)	(-1.443)	(-2.864)	(-3.638)
Lender Capital Ratio	-25.87	-9.943	-50.59*	-0.862
	(-1.390)	(-0.344)	(-1.809)	(-0.0493)
BankDebt/At * Lender Capital Ratio	1.069	-0.976	1.791	0.736
	(1.485)	(-0.597)	(1.439)	(1.096)
Panel C: Lender Liquidity Ratio				
BankDebt/At	-11.99***	-4.763	-9.322*	-11.00***
	(-3.168)	(-1.214)	(-1.758)	(-3.718)
Lender Liquidity Ratio	11.12	31.60	15.38	17.64*
	(1.058)	(1.454)	(0.806)	(1.664)
BankDebt/At * Lender Liquidity Ratio	0.598	-0.893	0.418	0.740
	(1.144)	(-0.704)	(0.446)	(1.429)
Panel D: Lender Deposit Ratio				
BankDebt/At	-13.33***	-6.607*	-14.51***	-10.79***
	(-3.271)	(-1.684)	(-2.725)	(-3.584)
Lender Deposit Ratio	-1.876	-0.527	-5.169	1.697
	(-0.646)	(-0.115)	(-1.104)	(0.638)
BankDebt/At * Lender Deposit Ratio	0.136	-0.0901	0.260	0.112
	(1.236)	(-0.328)	(1.394)	(1.090)
Observations	29,334	29,776	14,104	45,006

Table 8
The Role of Hedging

This table examines the role of hedging in relation with a lender's financial health, bank dependence and financial constraints. Hedgers are firms that report having hedged their interest rate risk in their 10K annual report. Lender financial health is measured in four different ways: lender size (logarithm of lender assets), lender capital ratio, lender liquidity ratio, lender deposit ratio. BankDebt/At is defined as bank debt (term loans plus drawn revolving credit) over book value of assets [A]. We only report "Surprise and the terms interacted with "Surprise". All regressions also include (unreported) a constant term, as well as LnAssets, Book Leverage, Profitability and Tangibility not interacted. All firm and lender characteristics are lagged by one year and winsorized at 1%. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
			Bank Dependent Firms				Financially Constrained Firms			
			Unrated		No Bonds		Small		Young	
	NoHedgers	Hedgers	NoHedgers	Hedgers	NoHedgers	Hedgers	NoHedgers	Hedgers	NoHedgers	Hedgers
Panel A: Lender Size										
BankDebt/At	-21.61***	-4.559	-29.64***	-5.190	-24.20***	-9.498	-38.17***	-5.944	-21.88***	-10.19*
	(-5.052)	(-1.163)	(-4.702)	(-0.797)	(-3.613)	(-1.416)	(-3.519)	(-0.818)	(-3.693)	(-1.802)
Lender Size	-0.120	0.289*	-0.224**	0.189	-0.161	0.230	-0.406**	0.294	-0.190	0.0685
	(-1.279)	(1.717)	(-2.016)	(0.854)	(-1.329)	(0.957)	(-2.136)	(0.857)	(-1.513)	(0.303)
(BankDebt/At)*(Lend. Size)	1.47***	-0.390	0.201***	-0.272	1.46***	-0.101	2.47**	-0.569	1.66***	-0.446
	(3.657)	(-0.704)	(4.007)	(-0.398)	(2.720)	(-0.153)	(2.490)	(-0.575)	(3.062)	(-0.732)
Panel B: Lender Capital Ratio										
BankDebt/At	-21.37***	-4.831	-29.29***	-5.953	-23.79***	-9.824	-37.91***	-7.022	-20.43***	-9.913*
	(-5.034)	(-1.221)	(-4.695)	(-0.910)	(-3.618)	(-1.461)	(-3.399)	(-0.953)	(-3.571)	(-1.733)
Lender Capital Ratio	-36.81**	40.58	-56.58***	24.13	-44.39*	31.40	-92.56**	35.34	-48.99**	6.056
	(-2.013)	(1.187)	(-2.602)	(0.529)	(-1.898)	(0.657)	(-2.423)	(0.515)	(-2.024)	(0.132)
(BankDebt/At)*(Capital Ratio)	2.662***	-0.757	3.714***	-0.362	2.623**	-0.158	4.743**	-0.816	2.792***	-0.981
	(3.429)	(-0.662)	(3.843)	(-0.258)	(2.567)	(-0.117)	(2.347)	(-0.391)	(2.812)	(-0.746)
Panel C: Lender Liquidity Ratio										
BankDebt/At	-16.94***	-4.815	-19.50***	-4.951	-18.23***	-10.05	-20.45*	-7.325	-12.97**	-10.87*
	(-4.159)	(-1.257)	(-3.464)	(-0.806)	(-3.170)	(-1.589)	(-1.766)	(-1.063)	(-2.391)	(-1.932)
Lender Liquidity Ratio	8.232	35.85	1.989	25.69	5.622	18.93	8.411	34.97	6.009	11.52
	(0.769)	(1.558)	(0.170)	(1.084)	(0.454)	(0.717)	(0.308)	(0.720)	(0.485)	(0.607)
(BankDebt/At)*(Liquidity Ratio)	1.547**	-0.542	1.718**	-0.464	1.528**	-0.0232	1.380	-0.545	1.251	-0.521
	(2.250)	(-0.652)	(2.177)	(-0.494)	(1.966)	(-0.0250)	(0.792)	(-0.362)	(1.550)	(-0.545)
Panel D: Lender Deposit Ratio										
BankDebt/At	-19.80***	-5.151	-25.93***	-7.150	-21.13***	-10.24	-37.49***	-6.518	-19.68***	-10.90*
	(-4.793)	(-1.314)	(-4.236)	(-1.090)	(-3.310)	(-1.527)	(-3.522)	(-0.872)	(-3.429)	(-1.920)

Lender Deposit Ratio	-3.423	8.131	-5.780*	2.014	-3.916	4.895	-11.60*	7.621	-6.249*	1.589
	(-1.193)	(1.366)	(-1.681)	(0.263)	(-1.087)	(0.622)	(-1.824)	(0.585)	(-1.756)	(0.220)
(BankDebt/At)*(Deposit Ratio)	0.404***	-0.0976	0.530***	-0.00364	0.374**	-0.00117	0.798***	-0.162	0.446***	-0.115
	(3.274)	(-0.528)	(3.432)	(-0.0163)	(2.291)	(-0.00557)	(2.659)	(-0.468)	(2.608)	(-0.555)
Observations	30,362	26,143	20,232	9,777	18,331	9,702	7,673	5,691	13,012	5,449
Number of gvkey	1,366	1,102	971	523	923	529	454	337	782	433
Firm Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 9
Is Short Term Debt Special?

This table examines the role of debt maturity. Short Term Debt % is defined as debt in current liabilities (item 34) over book value of assets. Debt in current liabilities is the total amount of short-term notes and the current portion of long term debt that is due in one year. More precisely short-term debt includes: 1. Bank acceptances and overdrafts; 2. Brokerage companies' drafts payable commercial paper; 3. Construction loans; 4. Current portion of long-term debt; 5. Debt in default; 6. Debt due on demand; 7. Due to factor if "interest bearing"; 8. Installments on a loan; 9. Interest payable when combined with notes payable; 10. Line of credit; 11. Loans payable to officers of the company; 12. Loans payable to parents, and consolidated or unconsolidated subsidiaries; 13. Loans payable to stockholders 14. Notes payable to banks and others; 15. Notes payable that are included in accounts payable, unless specifically trade notes payable; 16. Sinking fund payments. We only report "Surprise and the terms interacted with "Surprise". All regressions also include (unreported) a constant term, as well as LnAssets, Book Leverage, Profitability and Tangibility not interacted. All firm characteristics are lagged by one year and winsorized at 1%. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)
Surprise	-4.593***	0.752	-4.454***	0.631
	(0.246)	(0.882)	(0.425)	(0.898)
ShortTermDebt/At	7.503	6.938		
	(5.537)	(5.580)		
Has ShortTermDebt			-0.248	0.232
			(0.548)	(0.569)
Has STDebt *(STDebt /At)			8.423	6.521
			(5.919)	(5.849)
LnAssets		-1.022***		-1.025***
		(0.132)		(0.133)
Book Leverage		1.251		1.174
		(0.965)		(0.982)
Profitability		-8.238***		-8.265***
		(2.206)		(2.203)
Tangibility		2.520***		2.493**
		(0.978)		(0.981)
Observations	97,927	97,659	97,927	97,659
R-squared	0.004	0.007	0.005	0.007
Number of gvkey	3,434	3,428	3,434	3,428

Description of Variables

Variable	Construction
Book Value Equity	Total Assets (6) - lt - txditc - Preferred Stock
Book Leverage	Total Debt / Total Assets (6)
Profitability	Operating Income Before Depreciation (13) – Interest Expenses (15) – Income Taxes (16) – Dividends (21)
Cash /Assets	Cash and Short-Term Investments (1) /Total Assets (6)
Credit Spread	Spread on U.S. corporate bond yields between Moody's AAA and BAA, averages of seasoned issues (from Datastream)
Dividend Payer	A dummy variable that takes the value of one if common stock dividends (21) are positive, and zero otherwise
M/B	(Market Value of Equity + Total Debt + Preferred Stock Liquidating Value (10) – Deferred Taxes and Investment Tax Credit (35)) / Total Assets (6)
Market Value of Equity	Stock Price (199) × Common Shares Used to Calculate EPS (54)
Preferred Stock	Max[Preferred Stock Liquidating Value (10), Preferred Stock Redemption Value (56), Preferred Stock Carrying Value (130)]
Rated	A dummy variable that takes the value of one if the firm is rated by the S&P, and zero otherwise
Rating	Monthly S&P ratings (280). Takes 23 values: 1 = "AAA", 2="AA+", 3="AA", 4="AA-", 5="A+", 6="A", 7="A-", 8="BBB+", 9="BBB", 10="BBB-", 11="BB+", 12="BB", 13="BB-", 14="B+", 15="B", 16="B-", 17="CCC+", 18="CCC", 19="CCC-", 20="CC", 21="SD", 22="D", 23= Unrated
Size	Logarithm of Book Value of Total Assets (6)
Tangibility	Net Property, Plant, and Equipment (8) / Total Assets (6)
Total Debt	Debt in Current Liabilities (34) + Long-Term Debt (9)
Credit Lines / Assets	Undrawn Credit (from CIQ) / Assets (6)