Bank Deposits and Relationship Lending*

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Abstract

I study the role of deposit accounts in bank-firm lending relationships, using a dataset with detailed information about all Norwegian firms' bank deposit and loan account balances. I show that firms are more likely to increase borrowing from a bank where they hold deposit accounts, and less likely to end the lending relationship. In regressions with both firm and bank fixed effects, I find that bank lending relationships where firms hold deposit accounts are less likely to end after the bank experiences distress, proxied by write-downs on the bank's loan portfolio, relative to other lending relationships. This finding is consistent with the hypothesis that a bank will prefer deposit-holding firm borrowers when forced to scale down its loan customer base, and is thus suggestive that deposit accounts provide some added value to the banking relationship.

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1 Introduction

Finance theory suggests that bank lenders and firm borrowers enter into lending relationships to alleviate information asymmetries and agency costs. A bank lending relationship is said to exist when the incumbent lender can repeatedly deal with the borrower in a more efficient way than competing lenders can[1]. According to Boot (2000), the exact sources through which these relationships add value are poorly understood. This paper investigates one potential source: deposit accounts held by borrower firms with their bank lender. Exclusive access to borrowers' transactions accounts may provide lending banks with an information advantage relative to potential competing lenders. The information from the transactions accounts improves the bank's knowledge about the borrower, thus potentially reducing adverse selection problems, and it may facilitate the bank's monitoring of the firm. Additionally, there may be operational benefits of providing loans and deposits bundled together.

In this paper, I take advantage of a unique dataset with detailed information about all corporate bank deposit and loan accounts in Norway. By linking this dataset to the firms' financial accounting data and the banks' accounting data, I can do a more detailed and exhaustive study than has been done previously in the literature. Bank finance in general, and lending relationships in particular, are usually considered more important for small firms, as these firms are less transparent than larger firms, and the agency costs are therefore potentially larger. Since I use a dataset that includes all Norwegian limited-liability firms, it enables me to focus on small, unlisted companies.

I propose two research questions. First, I investigate whether deposits are related to the interest paid, amount of credit granted, and whether firms get new loans. I find that having a deposit account is correlated with higher interest rate paid, but also with larger increases in relationship borrowing, and reduced likelihood that the relationship is ended. It is not clear why depositor-borrowers pay higher interest rates. Being a depositor may be correlated with unobserved firm characteristics. E.g., if banks demand high risk-firms to keep deposit accounts at the bank to obtain a loan, we get a positive relationship between interest rates and deposit accounts, even if the causal effect of having a deposit account is to reduce interest rates. I include several control variables that indicate firm risk, but it is likely that the bank uses additional information that I do not have when evaluating its borrowers' creditworthiness. We thus have a problem with omitted variables.

My second research question aims to address this endogeneity problem. I look at whether bank deposit

[1]For an introduction to the theory of financial intermediation, see Freixas and Rochet (2008 (2nd ed.)).

accounts are important to firms when banks are facing problems and write-downs on their loans. Banks that experience adverse shocks to their capital may be forced to reduce their supply of bank loans[2]. If deposit accounts provide some added value to the banking relationship, the bank would presumably prefer to salvage relationship loans to deposit-holding firms at the expense of loans to firms without deposit accounts at the bank, in order to preserve this added value. Borrowers who hold a deposit account at the bank will in this case have an advantage relative to other borrowers. My findings support this hypothesis. In particular, when a bank faces loan losses to its loan portfolio, borrower firms with deposit accounts at that bank are less likely to end their relationship.

Several papers have suggested economies of scope between lending and deposit taking. Berlin and Mester (1999) find that deposit funding enables banks to smooth lending rates, and thus provide a useful insurance service to the firm borrowers. They do not study economies of scope at the individual bank-firm relationship level, but in stead look at the bank's overall balance sheet to show that banks who fund themselves more heavily with deposits are better placed to smooth lending rates when exogenous shocks occur. Degryse and van Cayseele (2000) suggest that access to information from a firm's checking account provides a lending bank with a unique advantage in monitoring borrowers. They do not have the data to test this hypothesis directly, but they find empirical evidence that firms who borrow from their "main bank", a definition which implies that it holds a checking account at that bank, pay lower interest rates. Since I find in this paper that depositor-borrowers pay higher interest rates, this suggests that my findings for depositor-borrowers are not simply related to a lending relationship, but to a more narrow deposit account effect.

In an early theoretical contribution, Vale (1993) builds a model where access to transactions accounts gives banks private information about firms, making them more able to disentangle high- from low-quality borrowers than competing financial intermediaries without such access. His model predicts that depositors will receive better loan terms. However, Petersen and Rajan (1994) do not find evidence that deposit accounts reduce borrowing costs for firms. Their coefficient estimates mostly indicate a positive relationship between deposit accounts and interest rates, but their estimates are not statistically significant. Their finding is somewhat consistent with my results, as I find that depositor-borrowers pay higher interest rates than non-depositor borrowers. Still, I find that depositor-borrowers benefit from better access to credit when their bank experiences problems. That is, depositors benefit from being less exposed to its lender's financial health, rather than directly through lower interest rates. Thus, my findings to some extent bridge the apparent inconsistency between the papers of Vale (1993) and Petersen and Rajan (1994).

[2]See e.g., Holmstrom and Tirole (1997).

More recent empirical contributions look more directly at the link between transactions accounts and banks' behaviour and access to information. Mester, Nakamura, and Renault (2007) show that transactions accounts facilitate monitoring for relationship lenders. They use a sample of firm borrowers at a Canadian bank to show that banks intensify monitoring of firms who, based on information from the transactions accounts, seem to be in trouble. Elsas (2005) finds that checking accounts or payments services increase the probability that a bank is considered a main bank. In a recent paper using data from a German bank, Norden and Weber (2011) find that bank account activity provides useful information to the bank lender. Transactions account activity exhibits abnormal patterns up to 12 months prior to a firm's default. Including such information therefore improves predictions of default.

Mester, Nakamura, and Renault (2007) and Norden and Weber (2011) look at the importance of transactions accounts using information about the loan portfolio of a single bank. In this paper, I take advantage of the unique data set to look at the corporate loan portfolios of *all* Norwegian banks.

The rest of the paper is organised as follows. I describe the dataset and the empirical strategy in Section 2. Regression results are discussed in Section 3, while Section 4 concludes.

2 Data and Methodology

2.1 The Datasets

I use a dataset with detailed information of the end-of-year balance on all bank deposit and bank loan accounts, and interest accrued to the account during the year, for all Norwegian firms for 1997-2009. The dataset includes a unique firm identifier, which enables linking the observations with firm financial accounts, and there is a unique bank ID which provides a link to bank financial statements.

The bank account data are collected annually by The Norwegian Tax Administration from the banks for tax purposes, which suggests that its accuracy is good. The banks are required to report electronically to the Tax Authorities for every account the following information: the account number; the name of the account holder and the unique organisation (ID) number; the deposit or loan balance as of 31 December; and interest accrued during the year. The interest accrued on loans includes, in addition to regular interest, any fees or commissions related to a loan. The database is confidential, but has been made available to us by the Norwegian Ministry of Finance[3] under strict confidentiality conditions regarding data access and

[3]Approval gratefully received by letters dated 12 November 2008 and 27 August 2009

the disclosure of the identities of the contracting parties. The database includes all bank accounts held by Norwegian firms at a domestically operating bank, including Norwegian branches of foreign banks.

The observations in the bank account database are linked to a financial accounts database, which contains annual accounting data for all Norwegian private and public limited liability companies for the period 1992-2008. Norwegian companies are required to have an authorised auditor, and must file their annual financial accounts with the National Registry of Company Accounts[4] by the end of July the year after the accounting year. The accounting database includes the profit and loss account, the balance sheet, selected items from the notes to the accounts, and other company related information such as, e.g., five-digit industry codes and legal form. The database is further described in Mjøs (2007) and Mjøs and Øksnes (2010).

The bank financial accounts information is compiled from the websites of the Norwegian Financial Services Association and the Norwegian Savings Banks Association[5]. I compute a bankruptcy prediction variable based on information about all Norwegian bankruptcies obtained from the National Registry of Bankruptcies[6].

2.2 Empirical Strategy

I do the analysis on the firm-bank-year level. In other words, for every firm, I have one observation for each bank the firm holds an account with, for each year the firm holds an account at that bank. To address my first research question, whether there is a relation between deposit accounts and credit availability, I estimate the following regression equations

$$\textit{Interest rate margin}_{ijt} = \textit{Deposit account}_{ijt-1}\beta^1 + Z_{ijt-1}\gamma^1 + \epsilon^1_{ijt} \quad (1)$$

$$\Delta\textit{Bankloan\_assets}_{ijt} = \textit{Deposit account}_{ijt-1}\beta^2 + Z_{ijt-1}\gamma^2 + \epsilon^2_{ijt} \quad (2)$$

$$\textit{i\_new account}_{ijt} = \textit{Deposit account}_{ijt-1}\beta^3 + Z_{ijt-1}\gamma^3 + \epsilon^3_{ijt} \quad (3)$$

$$\textit{Loan relationship terminated}_{ijt} = \textit{Deposit account}_{ijt-1}\beta^4 + Z_{ijt-1}\gamma^4 + \epsilon^4_{ijt} \quad (4)$$

where i denotes firm, j denotes bank, and t is the time index. The explanatory variable of interest is $\textit{Deposit account}_{ijt}$, which is a dummy variable taking the value one when firm i holds a deposit account at

[4]Presented also in English at www.brreg.no.

[5]www.fnh.no and www.sparebankforeningen.no, respectively.

[6]Presented also in English at www.brreg.no.

bank j at date t, and zero otherwise. Z_{ijt-1} is a vector of control variables. The interest rate margin is computed as

$$Interest\ rate\ margin_{ijt} = \frac{Interest\ paid_{ijt}}{\frac{1}{2}(Bank\ Loan_{ijt} + Bank\ Loan_{ijt-1})} - NIBOR3m_t$$

where $NIBOR3m_t$ is the yearly average of the 3 month Norwegian InterBank Offered Rate, the standard reference rate in the Norwegian interbank market. To reduce the extent of noise in the data, I compute the interest rate margin only for firms with bank loans greater than NOK 100,000 in either year t or year $t-1$. $\Delta Bankloan\_assets_{ijt}$ is the change in amount borrowed by firm i from bank j from date $t-1$ to date t, normalised by the firm's total assets at date $t-1$.

$i\_new\ account_{ijt}$ is a dummy variable that takes the value one if firm i borrows with a *new* bank account from bank j in year t, and zero otherwise. The opening of new bank accounts is often associated with the granting of new loans, and I interpret the creation of a new bank account as indicative that the bank and the firm have made some active credit decisions. Changes in borrowed amounts at existing bank accounts, on the other hand, may reflect previously determined loan contract terms.

Loan relationship terminated$_{ijt}$ is a dummy variable that is equal to one if the amount borrowed by firm i from bank j at date t is zero, when the firm borrowed a positive amount from that bank at date $t-1$. This includes both the instances when all loans have been paid down but the firm keeps at least one deposit account with the bank, and the instances when the relationship the firm has with the bank is abandoned altogether and the firm thus holds no accounts with bank j in year t. I expect this variable to give a strong indication of a deterioration in the bank-firm relationship.

2.3 Control Variables

Table (1) provides a list of the variables used in the analysis. My objective is to compare borrowers who differ in the extent to which they hold dposit accounts, but are otherwise similar. Including control variables is therefore essential. Note that the control variables included in (1)-(4) are lagged one year, relative to the dependent variables, to reduce potential endogeneity problems. This lag, together with the need for lagged variables to compute the dependent variables, means that my sample effectively starts in 1998 rather than 1997. *Size* is measured as the logarithm of a firm's total assets. Larger companies are usually more transparent than smaller companies, which could affect their access to credit. Gertler and Gilchrist (1994) find that small firms' access to bank credit is reduced more during monetary policy tightening, relative to

large firms. Also, if the granting of a loan has some fixed cost element, small loans may become prohibitively expensive. Fixed and tangible assets can potentially be used as collateral, which a company can put forth against a loan. I therefore include *Fixedassets_ assets*, which is the share of total assets that consists of non-current fixed tangible assets, e.g., property, machinery and equipment.

High earnings and large amounts of cash on the balance sheet increase a company's opportunities to finance projects by internal financing. I include Return on Assets, *ROA*, and *Cash_ assets* as control variables. Since it is an economic flow variable, the timing of *ROA* is slightly different than the other variables. ROA_{it-1} is return on assets to firm i during year t, i.e. profitability during the year following the index date $t-1$. The inclusion of *Cash_ assets* is important, as it controls for the possibility that a bank prefers to lend to firms with more cash because they are safer. Since cash balances are potentially correlated with the existence of deposit accounts, not controlling for the firm's cash balance may confound the analysis.

A company's bankruptcy risk affects its ability to raise external finance and the terms at which it can borrow. I estimate a bankruptcy probability using a logit regression, where the dependent variable for a firm-year observation takes the value 1 if it is the last year the company files its annual financial accounts and it also enters a formal bankruptcy process within three years. The explanatory variables used are the same as those used by Norges Bank's Sebra Model (Eklund, Larsen, and Bernhardsen (2001)): earnings/total assets, (liquid assets - short term debt)/turnover, unpaid indirect taxes[7]/total assets, trade credit/total assets, equity/total assets, book equity < paid-in equity (0/1), dividend payments (0/1), industry average equity/total assets, industry average trade credit/total assets, industry standard deviation for earnings/total assets, age dummies (years ≤ 8), and total assets. I first estimate updated parameters for every year in the sample, using information that was available up to and including that year. I then use these parameter estimates to compute an updated bankruptcy probability each year, using the most recent accounting information available at the time. This out-of-sample bankruptcy prediction reflects the public information at the time.

Bankloan_ assets is the ratio of the firm's total bank loan to total firm assets, and controls for the firm's financial leverage. *Bankloan_ assets_ rel* is the ratio of the relationship loan to total firm assets. This variable takes into account that the size of the relationship loan relative to the firm is a good proxy for the strength of the banking relationship (Elsas, 2005). In this paper, I study the effect of deposit accounts, and not the entire lending relationship, on firm borrowing. This variables thus controls for other aspects of the relationship that may influence lending and borrowing behaviour.

[7]Typically VAT.

Old firms have a longer history, and external financiers may have access to more information about the firm, reducing information asymmetries. I therefore include the log of the firm's age as a control variable. Whether a firm has more than one bank relationship may affect the firm-bank interactions in ways other than through the existence of a deposit account. I therefore include a dummy variable, *Multibank*, equal to one if the firm has bank loan accounts at more than one bank.

I also include some variables to control for bank and bank loan market characteristics. *Banksize_loan*, the national bank loan market share of the bank, takes into account that the size of banks may systematically affect their lending decisions. Berger, Miller, Petersen, Rajan, and Stein (2005) find that the size of the bank lender is negatively correlated with the presence of a firm checking account at that bank, controlling for other firm characteristics. Since my paper studies the effect of deposit accounts, and not bank size, this control variable is important. I include a measure of local market competition, *Bankregion_hhi_loan*, measured as the Herfindahl-Hirschman Index for the local bank loan market. Finally, I include the bank's equity-to-assets ratio and a bank distress indicator variable, *lossdum*. The bank distress indicator variable is equal to one when overall accounting write-downs on the bank's loans, reported on a separate line in the bank's annual profit and loss statement, exceed the sample distribution's 90th percentile.

Additionally, I include region-, geographic centrality-, firm industry-, and time-dummy variables. The regional dummies relate to seven geographic regions of Norway. The geographic centrality measure classifies all Norwegian municipalities into on of five groups based on the level of urbanisation. The firm is allocated to the region and municipality in which it has its headquarters. The firm industry classification is based on the first two digits of the firm's NACE category. For more details, see Mjøs and Øksnes (2010).

2.4 Sample Selection

I exclude some firms based on certain criteria. First, I exclude non-limited liability firms. These firms are not generally required to submit their financial statements to the Accounts Registry. They are also harder to distinguish from the owners' personal finances. Additionally, most bank credit to the corporate sector is granted to limited liability firms, suggesting that these firms should be the focus of interest. Second, I exclude all bank accounts held by financial institutions and government-owned companies. Third, I only consider commercial banks, savings banks, and other financial intermediaries who operate as profit-maximising entities. Some Norwegian financial intermediaries are owned by the government, and their profit-maximising objective may not be entirely clear. Examples of such entities are institutions to promote new, innovative firms, or to finance exporting firms. To avoid such potential political considerations to

contaminate the analysis, I focus on ordinary banks.

Finally, I exclude some of the smallest firms and bank-firm relationships from the sample. For a relationship to be of any significant importance, I expect that the amounts involved must be above some minimum level. If the amount borrowed by a firm is very low, the bank is unlikely to spend much effort to monitor the firm, since the potential benefits of doing so are likely to be small. I therefore exclude all firms whose average total assets during the years they exist during the sample years are less than NOK 500,000[8] Such small firms are often single-owner firms, typically with little or negligible economic activity. In addition, in the empirical analyses I only include bank-firm relationships where the firm borrows at least NOK 100,000[9] in year $t-1$. I also drop all firms who have positive intra-group debt at the end of year $t-1$. The opportunity to borrow from other group companies may affect their financial behaviour in several ways that I cannot control for in this analysis.

2.5 Descriptive Statistics

Table (2) shows the total number of firms and firm-bank relationships for each year during the sample period 1997-2008. Panel A shows the number of firms present for each year, while Panel B shows the number of unique firm-bank relationships. I define a relationship to exist between a firm and a bank if the firm has an account at that bank. We see that the number of firms and the number of bank-firm relationships increase over the sample period. First, note that most firms hold at least one deposit account, i.e. few firms have a borrowing account without having at least one deposit account at some bank. When we look at the individual bank-firm relationships in Panel B, however, we see that many firms borrow from a bank with whom they do not hold a deposit account. The majority of the firms are both borrowers and depositors. The average number of bank-firm relationships per firm is around 1.5.

Table (3) shows descriptive statistics for the borrowing firms included in the sample used for the empirical analysis. Firm-bank relationships where the firm did not borrow at least NOK 100,000 are thus excluded. Note that this loses more than half the firm-bank-year observations from the previous table. The table shows the number of observations (N), mean, standard deviation (sd), and the median for each variable. Some of the variables have been winsorised at the 1st and 99th percentile, indicated in the table by $^{(*)}$. The median firm has total assets of around NOK 4.0 million, while the mean of total assets is NOK 28.1 million.

[8]The average exchange rate USD/NOK was 7.20 during our sample period. The amount in USD based on this exchange rate is therefore $69,500.

[9]Based on a USD/NOK exchange rate of 7.20, this amounts to $13,900.

The median amount deposited by a firm is NOK 173 thousand, and the median amount of borrowing is NOK 1.6 million. The mean values are substantially higher than median values, suggesting that the distributions are right-skewed, as we might had expected.

The mean interest rate margin is 3.8 percentage points, and the median is 2.9 percentage points. We note that average change in loan balances in a firm-bank-relation is -4.5 percent of total assets. This tells us that firms, once a relationship has been initiated, tend on average to repay the loans that were granted at the outset of the firm-bank relationship. A new borrowing account was opened in 23.3 percent of the firm-bank-years. The median bank loan-to-assets ratio is 39.8 percent, suggesting bank loans are an important source of financing for these firms. The median relationship-loan-to-assets ratio is 34.0 percent. The fact that this ratio is not very much lower than the firm's overall bank loan-to-assets ratio reflects that most firms borrow from only one bank. The median value of the deposits-to-assets ratio is only 4.0 percent. This is not quite unexpected, as the sample includes only borrowing firms. On average, 12 percent of relationships were terminated in any given year.

3 Empirical Results

3.1 Deposits and Credit Availability

Table (4) shows regression coefficients on the deposit account dummy. This dummy variable takes the value one if the relationship has a positive deposit account balance, and zero otherwise. The table has four columns with regression estimates. Column (1) shows a standard OLS regression, with control variables for firm characteristics, bank and loan market characteristics, geography-, industry- and time-fixed effects. Column (2) includes firm fixed effects. Firm-invariant control variables are therefore excluded in this specification. Column (3) includes bank fixed effects, while Column (4) has both firm and bank fixed effects. Standard errors are clustered at the firm level.

We see that the existence of a positive deposit account balance increases interest rate margins paid by the firm, but it also increases credit granted. The change in borrowed amount, and the likelihood that a new borrowing account will be opened in the firm-bank relationship are all higher when the firm holds a deposit account in the relationship. This finding is robust across the various specifications.

The most robust of these specifications is likely to be Column (4), which includes both firm and bank fixed effects. I will therefore only comment on this column. The economic significance on the dependent

variables of having a bank account in the lending relationship is large. The interest rate margin increases by around one percentage point when the deposit dummy variable changes from zero to one. Compared to a median interest rate margin of 2.9 percentage points, the deposit account increases the margin by around one third. For the credit quantity variables, the coefficient on $\Delta Bankloan\_assets$ suggests that amount borrowed over the next year is 2 percent of total assets higher for depositor-borrowers than for non-depositor borrowers. The likelihood of opening a new loan account is around four percentage points higher for relationship-depositors. Finally, the likelihood that a relationship will be ended is 2.6 percentage points lower when the firm has a deposit account. On average, lending relationships are terminated 12 percent of the time. This suggests that deposit accounts reduces the probability of termination by one fifth.

Based on these results, it seems that the existence of deposit accounts is related to the extent to which firms borrow in the bank-firm-relationships. However, the decision whether to hold a deposit account and borrow from the same bank is endogenous, and it is hard to interpret what these parameter estimates really say about underlying economic relationships. If we can find a situation where credit demand exceeds the bank's supply of loans, the bank's actions and choice of borrowers in these circumstances may tell us something about how it values its access to borrowers' deposit accounts. I propose that when banks are in distress, such a situation is likely to occur. This leads to my second research question, where I study whether deposit-account-holding firms have relatively better access to credit when the bank is in a financially weak position.

3.2 Deposits and Banks' Loan Losses

Several finance papers, one of the more important among them being Holmstrom and Tirole (1997), argue that negative shocks to a bank's capital may affect its ability to grant loans. Agency costs mean that bank financiers require the bank to back its lending with a minimum amount of its own capital. Losses to the bank, which lowers its capital, may thus require the bank to reduce its supply of credit. Regulatory requirements to fulfil a minimum level of capital may also reduce a bank's ability to lend after experiencing loan losses. One interesting question in this respect is whether it will prefer certain borrowers above others when forced to cut lending. In this paper, I study whether deposit accounts are valuable to banks in their lending. In particular, when the bank experiences loan write-downs and may be forced to reduce its credit supply, will it prefer to reduce it to borrowers who do not hold a deposit account with the bank? If the bank prefers borrowers with deposit accounts, this suggests that such accounts are valuable to the bank lending.

The bank's loan portfolio losses are obviously not exogenous to the borrowers of the bank. This event therefore does not constitute a quasi-natural experiment in this sense. Firm quality affects both the bank's loan losses and its access to credit in the future. A bank that writes down the value of its loan portfolio is likely to have borrowers of low average quality. However, the critical assumption in this analysis is that there is no systematic relationship between a firm's pre-event quality and whether it is a relationship-depositor or not. There are no clear indications that this assumption should not hold.

To perform the analyisis, I introduce a new variable to the regresson equation. The bank loan loss indicator variable, *lossdum*, is interacted with the deposit account dummy to obtain the interaction variable *lossXdum*. I define *lossdum* as a dummy variable that takes the value one if the bank's total loan losses are above the 90th percentile of the sample distribution of bank loan losses, and zero otherwise. Banks sometimes reverse booked loan losses, leading to negative accounting loan write-downs. Since I primarily aim to study the effect of bank problems on the access to credit, I focus on the positive-valued accounting losses. The timing of the reversal of previously booked loan write-downs also may be more related to accounting rules than to changes in the underlying health of the bank's loan portfolio. A manual look at the events classified with *lossdum* equal to one, using this definition, also indicates that these are events that were reported in the media at the time as relating to occurrences of actual bank distress.

lossXdum is an interaction variable that is equal to one when the bank suffers high loan losses *and* the borrowing firm has a deposit account at that bank, and otherwise zero. The two variables are summarised as follows:

$$lossdum_{jt-1} = 1_{Bank\ total\ losses_{jt-1} > 90\text{th percentile}}$$
$$lossXdep_{ijt-1} = lossdum_{jt-1} X\, Deposit\ dummy_{ijt-1}$$

The variables are lagged one year relative to the dependent variable in the regressions. The new regression equations, with *lossdum* in the vector of control variables, Z_{itj-1}, are

$$Interest\ rate\ margin_{ijt} = Deposit\ account_{ijt-1}\beta^1 + lossXdep_{ijt-1}\delta^1 + Z_{ijt-1}\gamma^1 + \epsilon^1_{ijt} \quad (5)$$
$$\Delta Bankloan\_assets_{ijt} = Deposit\ account_{ijt-1}\beta^2 + lossXdep_{ijt-1}\delta^2 + Z_{ijt-1}\gamma^2 + \epsilon^2_{ijt} \quad (6)$$
$$i\_new\ account_{ijt} = Deposit\ account_{ijt-1}\beta^3 + lossXdep_{ijt-1}\delta^3 + Z_{ijt-1}\gamma^3 + \epsilon^3_{ijt} \quad (7)$$
$$Loan\ relationship\ terminated_{ijt} = Deposit\ account_{ijt-1}\beta^4 + lossXdep_{ijt-1}\delta^4 + Z_{ijt-1}\gamma^4 + \epsilon^4_{ijt} \quad (8)$$

We can think of this setup loosely in terms of treatment and control groups. The treatment group consists of firms that were borrowers at a distressed bank at date $t-1$, *and* held a deposit account at that bank at that date. Effective control groups consist of both non-depositor firms at the same bank at the same date, and depositor firms at other banks at the same date. This means that I control for the correlation between firm quality and bank loan loss event using the bank's non-depositor borrowers. In addition, the sample includes non-depositors at other banks, as well as observations at dates different from when the event occurred.

The regression results are reported in Table (5). I will keep my comments to my preferred specification in Column (4). The key coefficients in this section are the estimates for *lossXdep*. Panel A shows that the interest rate margin is reduced by 0.17 percentage points for depositors at affected banks, relative to non-depositors. This suggests that even though bank depositors pay higher interest rates on average, they pay relatively lower rates when the bank is in difficulty.

In Panel B, the change in the amount borrowed is 1.44 percent of total assets higher for depositors than for non-depositor firms. The coefficient on *lossdum* is -0.025, so the aggregate effect on $\Delta Bankloan\_assets$ still is negative. This confirms our expectation that bank distress reduces lending. But it reduces it by less for firms with deposits in the affected bank. The effect of *lossXdep* on the new account indicator variable, which is shown in Panel C, is not statistically significantly different from zero. However, bank distress is associated with a smaller likelihood of the firm getting a new loan. Both Panel B and Panel C strongly suggest that bank distress lowers loan growth.

Panel D shows the effect on the likelihood that the bank lending relationship is ended. Having a deposit account with the bank reduces this likelihood when the bank suffers high losses by 3.9 percentage points, and largely offsets the effect of *lossdum*.

The results therefore give positive evidence that banks in distress prefer borrowers who also hold deposit accounts at their bank. The findings are consistent with the literature that advocates an important role for transactions accounts in the provision of bank loans. One interpretation of the findings is that firms pay higher borrowing interest rates at the bank where they keep their deposits, but that this is partly compensated for by reducing the extent to which the firm's access to credit is exposed to bank distress.

3.3 Robustness Tests

3.3.1 Cut-Off Thresholds

The tests in the previous section may be sensitive to the cut-off threshold which I define to indicate a bank in distress. I therefore change this threshold from the 90th percentile to the 95th percentile. That is, I redefine the variable *lossdum* to indicate whether the bank experiences loan losses above the 95th percentile of the sample distribution of bank loan losses. The adjusted *lossXdep* is obtained by interacting the deposit dummy variable with this new bank loss indicator variable. The results are reported in Panel A of Table (6), which reports coefficient estimates on *lossXdep*. The effect on the interest rate disappears in Column (4), but the effects on Δ*Bankloan_assets* and *Loan relationship terminated* are even stronger than in Table (5).

3.3.2 Multiple Banking Relationship Firms

Although I control for multiple banking relationships through the variable *Multibank*, one may worry that including single-relationship firms, who are almost by default highly likely to keep their deposit accounts with their bank lender, could distort the analysis. I therefore rerun the regressions on the subsample of firms which have more than one relationship. Note that I define a banking relationship here as a firm-bank observation that includes borrowing. Thus, a single-relationship firm may have bank accounts at several banks, but borrows from only one of them. Thus, it is not obvious that excluding single-relationship firms with deposit accounts only at banks from whom they do not borrow, improves the analysis.

The results, which are reported in Panel B of Table (6), show that the effect on Δ*Bankloan_assets* is no longer significant, while the effect on *Loan relationship terminated* is still significant. Overall, although the results are somewhat mixed, they do not refute the findings in Table (5). Given that the analysis in Table (5) is performed on a larger and more informative sample, our interpretation of the results based on that table is not altered.

3.3.3 Placebo Falsification Test

A common concern when comparing the differential effects on two groups of observations of an event such the one studied here, is that these merely reflect different time trends between the two groups of firms, depositors and non-depositors at affected banks, that exist over time for reasons unrelated to the bank distress event.

To rule out this possibility, I provide a placebo falsification test. Such a test is recommended by standard econometric texts, e.g., Roberts and Whited (2011). I falsely set the bank loss event to occur two years prior to the actual event occurrence, in stead of the year when the bank actually suffered the losses. That is, if bank j suffers a loan loss above the sample distribution's 90th percentile in year t, I set *lossdum* equal to one in year $t-2$. Subsequently, I update the interaction variable with the depositor-borrower dummy, *lossXdep*, using these adjusted values of *lossdum*. If the losses are the actual cause of the reported effects in the previous section, these results should not be significant.

Panel C in Table (6) shows that this is mostly the case, and suggest that the findings are not driven by different time trends for depositor-borrowers and non-depositor-borrowers. There is a statistically significant effect on $\Delta Bankloan\_assets$ in Column (4), but the coefficient value is only one third of the corresponding estimated value in Table (5). The effect on $i\_newaccount$ is similar to previous estimates, thus not refuting that some other factors may confound the estimation of this equation. This suggests that depositor-borrowers borrow more already prior to the bank distress event, but the point estimate value is lower than in Table (5).

However, in the final equation there are no effects using this specification. This supports the interpretation that the lower relationship termination rates for depositor-borrowers are connected to bank distress.

3.3.4 Additional Control Variables

Bank loans of short maturity may be easier to terminate than longer-term loans. If short-term loans are positively correlated with the presence of a deposit account at a bank, this may explain the findings in this paper. In order to investigate this, I include an additional control variable that takes into account the amount of short-term bank debt on the firm's balance sheet. This variable is based on the balance sheet from the firm's financial accounts, and it is thus not available on the individual firm-bank relationship level. Nevertheless, since the number of banks that a firm borrows from is limited, it is likely to be a good indication of the extent of short-term debt at the individual relationship level. The results, which are not reported, show that the main effects remain. In fact, for most specifications, the coefficient estimates on *lossXdep* become larger, and the statistical significance is stronger.

4 Concluding Remarks

This paper studies two research questions. First, I show that deposit accounts are related to higher credit growth, but also to higher interest rate margin, for borrowing firms. Second, I look at the relevance of deposit accounts to firm-bank relationships when the bank faces loan write-downs and may be forced to scale down its loan portfolio. To the extent of my knowledge, this is the first paper to look at this effect. I take advantage of a detailed dataset that includes all Norwegian corporate bank accounts, both deposits and loans. I find that firm borrowers with deposit accounts are more likely to remain borrowers at a bank when the bank faces high loan losses, relative to other borrowers not holding deposits at that bank. This suggests that deposit accounts provide added value to the firm-bank lending relationship.

I have not looked in more detail into what are the exact mechanisms regarding the deposit account that create value. Is it reduced information asymmetries, increased opportunity for the bank to monitor the borrower, or does it give the bank some ability to advise the firm and create added value through improvements in the firm's operations and finances? Mester, Nakamura, and Renault (2007) and Norden and Weber (2011) provide the first steps in this direction, but given the importance of this topic, more research is clearly warranted. One potential question for future research is whether the mechanisms that lead banks to prefer depositor-borrowers when in distress, as I document in paper, are different from the mechanisms studied in previous papers.

References

Berger, A. N., N. H. Miller, M. A. Petersen, R. G. Rajan, and J. C. Stein (2005): "Does Function Follow Organisational Form? Evidence from the Lending Practices of Large and Small Banks," *Journal of Financial Economics*, 76, 237–269.

Berlin, M. and L. J. Mester (1999): "Deposits and Relationship Lending," *Review of Financial Studies*, 12 (3), 579–607.

Boot, A. W. (2000): "Relationship Banking: What Do We Know?" *Journal of Financial Intermediation*, 9, 7–25.

Degryse, H. and P. van Cayseele (2000): "Relationship Lending within a Bank-Based System: Evidence from European Small Business Data," *Journal of Financial Intermediation*, 9 (1), 90–109.

Eklund, T., K. Larsen, and E. Bernhardsen (2001): "Model for analysing credit risk in the enterprise sector," *Norges Bank Economic Bulletin*.

Elsas, R. (2005): "Empirical Determinants of Relationship Lending," *Journal of Financial Intermediation*, 14, 32–57.

Freixas, X. and J.-C. Rochet (2008 (2nd ed.)): *Microeconomics of Banking*, MIT Press.

Gertler, M. and S. Gilchrist (1994): "Monetary Policy, Business Cycles and the Behaviour of Small Manufacturing Firms," *Quarterly Journal of Economics*, 109 (2), 309–340, new York University, New York.

Holmstrom, B. and J. Tirole (1997): "Financial Intermediation, Loanable Funds, and the Real Sector," *Quarterly Journal of Economics*, 112, 663–691.

Mester, L. J., L. I. Nakamura, and M. Renault (2007): "Transactions Accounts and Loan Monitoring," *Review of Financial Studies*, 20 (3), 529–556.

Mjøs, A. (2007): "Corporate Finance: Capital Structure and Hybrid Capital," Ph.D. thesis, Norwegian School of Economics and Business Administration (NHH).

Mjøs, A. and K. Øksnes (2010): "Dokumentasjon og kvalitetssikring av SNFs og NHHs database med regnskaps- og foretaksinformasjon for norske selskaper," Tech. rep., SNF.

Norden, L. and M. Weber (2011): "Credit Line Usage, Checking Account Activity, and Default Risk of Bank Borrowers," *Review of Financial Studies*, forthcoming.

Petersen, M. and R. Rajan (1994): "The benefits of lending relationships. Evidence from small business data," *Journal of Finance*, 49, 3–37.

Roberts, M. R. and T. M. Whited (2011): "Endogeneity in Corporate Finance," Http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1748604.

Vale, B. (1993): "The Dual Role of Demand Deposits under Asymmetric Information," *Scandinavian Journal of Economics*, 95 (1), 77–95.

A Tables and Figures

Table 1: Description of variables

Firm Characteristics	
Size	$\log(Total\ assets_{it-1})$
Fixedassets_assets	$\frac{Fixed\ assets_{it-1}}{Total\ assets_{it-1}}$
ROA	$\frac{Pre\text{-}tax\ earnings_{it+1}}{Total\ assets_{it}}$
Bkcyprob	Probability of bankruptcy ("Sebra" model) out-of-sample prediction.
Cash_assets	$\frac{Cash_{it-1}}{Total\ assets_{it-1}}$
Bankloan_assets	$\frac{Bank\ Loan_{it-1}}{Total\ assets_{it-1}}$
Logfirmage	$\log(firmage)$
Multibank	Dummy variable equal to one if firm has more than one bank relationships, zero otherwise.
Bank and Bank Loan Market Characteristics	
Banksize_loan	National bank loan market share of the bank
Bankreg.._hhi_ut..	Herfindahl-Hirschman Index for regional bank loan market
Bank equity	Bank's equity as a fraction of total assets
Bank losses	$\frac{Bank\ Loan\ Losses_{jt}}{Bank\ Total\ Assets_{jt}} - \frac{1}{T_j}\Sigma_\tau \frac{Bank\ Loan\ Losses_{j\tau}}{Bank\ Total\ Assets_{j\tau}}$, T_j = number of years bank exists.

Table 2: Number of firms and bank-firm relationships. The table shows all firm-bank relationships for firms whose average assets during the sample period exceeds NOK 500,000.

Panel A: Number of firms.

Year	Total	Depositor only	Borrower only	Both depositor and borrower
1997	82,495	18,344	1,008	63,141
1998	88,558	21,316	988	66,253
1999	92,922	23,035	974	68,911
2000	98,857	27,262	955	70,637
2001	102,458	31,971	949	69,537
2002	103,797	33,437	936	69,423
2003	104,888	33,957	917	70,012
2004	108,324	35,681	1,359	71,280
2005	113,743	38,224	1,308	74,208
2006	120,312	42,521	940	76,846
2007	130,937	48,183	894	81,853
2008	135,794	51,143	876	83,771

Panel B: Number of firm-bank relationships.

Year	Total	Depositor only	Borrower only	Both depositor and borrower
1997	141,323	55,730	11,875	73,697
1998	148,558	61,211	12,073	75,255
1999	145,379	57,040	11,381	76,938
2000	153,435	64,159	12,090	77,150
2001	158,081	71,367	12,602	74,095
2002	155,700	69,424	12,211	74,048
2003	154,707	68,091	12,317	74,261
2004	153,858	64,950	14,208	74,679
2005	162,242	68,699	15,329	78,013
2006	171,329	75,565	14,632	80,928
2007	187,109	85,341	15,356	86,218
2008	197,705	94,395	14,914	88,204

Table 3: Summary statistics. Summary statistics for firms whose average assets during the sample period exceeds NOK 500,000, and excludes bank-firm relationships where borrowing is lower than NOK 100,000 for that particular year. $^{(*)}$ denotes that the variable has been winsorised at the 1st and 99th percentile.

Variable	N	mean	sd	median
Interest rate margin$^{(*)}$	524,895	0.038	0.044	0.029
ΔBankloan_assets	531,481	-0.045	0.217	-0.030
i_newaccount	525,267	0.233	0.423	0.000
Relationship terminated	531,481	0.120	0.325	0.000
Depositor dummy	531,481	0.856	0.351	1.000
Deposit balance	531,481	1,637.631	35,917.141	172.727
Bank loan balance	531,481	9,230.341	85,943.352	1,398.749
Total assets	531,481	28,123.671	477,784.717	3,962.000
Size	531,481	8.445	1.364	8.285
Fixedassets_assets	531,269	0.442	0.348	0.394
ROA	527,293	0.089	0.221	0.079
Bankruptcy probability	502,266	0.015	0.022	0.006
Deposits_assets$^{(*)}$	531,481	0.096	0.132	0.040
Bankloan_assets$^{(*)}$	531,481	0.444	0.284	0.398
Relationship loan_assets$^{(*)}$	531,481	0.399	0.282	0.340
Logfirmage	522,223	1.955	1.071	2.079
Banksize_loan	531,481	0.083	0.089	0.031
Multibank	531,481	0.236	0.425	0.000
Bankregion_hhi_loan	527,233	0.164	0.059	0.149
Bank equity	489,442	7.010	2.503	6.520
Bank loss indicator	531,481	0.097	0.296	0.000

Table 4: Regressions. Coefficient estimates for deposit indicator variable, which takes the value one if the firm has a positive deposit balance at the firm-bank relationship, and zero otherwise. The sample includes firms whose average assets during the sample period exceeds NOK 500,000, and excludes bank-firm relationships where borrowing is lower than NOK 100,000 for that particular year. Standard errors clustered at the firm level are reported in parentheses. Control variables are not reported.

Dependent variable	N	(1)	(2)	(3)	(4)
Interest rate margin	435,609	0.0107***	0.0129***	0.0094***	0.0102***
		(0.0003)	(0.0004)	(0.0003)	(0.0005)
ΔBankloan_assets	438,923	0.0275***	0.0265***	0.0212***	0.0195***
		(0.0010)	(0.0015)	(0.0012)	(0.0018)
i_new account	435,918	0.0529***	0.0433***	0.0633***	0.0424***
		(0.0026)	(0.0036)	(0.0028)	(0.0039)
Loan relationship terminated	438,923	-0.0415***	-0.0336***	-0.0308***	-0.0257***
		(0.0019)	(0.0027)	(0.0021)	(0.0030)
Control variables					
Firm characteristics		Yes	Yes	Yes	Yes
Bank and loan market characteristics		Yes	Yes	Yes	Yes
Firm fixed effects		No	Yes	No	Yes
Bank fixed effects		No	No	Yes	Yes
Firm geography dummies		Yes	No	Yes	No
Firm industry dummy		Yes	No	Yes	No
Time fixed effects		Yes	Yes	Yes	Yes

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Regressions. The dependent variable in Panel A is *Interest rate margin*. The dependent variable in Panel B is Δ*Bankloan_ assets*, which is the change in relationship borrowing normalised by firm's total assets at date $t-1$. The dependent variable in Panel C is *i_ new account*, which is an indicator variable equal to one if a new borrowing account is opened in the firm-bank relationship during the period from date $t-1$ to date t, zero otherwise. The dependent variable in Panel D is *Loan relationship terminated*, which is a dummy variable that equals one if the relationship is ended. The sample includes firms whose average assets during the sample period exceeds NOK 500,000, and excludes bank-firm relationships where borrowing is lower than NOK 100,000 for that particular year. Standard errors clustered at the firm level are reported in parentheses. Coefficient estimates for other control variables are not reported. Reported R^2 is total R^2 for columns (1) and (3), and within-firm R^2 for columns (2) and (4).

Variable	(1)	(2)	(3)	(4)
Panel A: Interest rate margin$_{ijt}$ = *Deposit account*$_{ijt-1}\beta^1$ + *lossXdep*$_{ijt-1}\delta^1 + Z_{ijt-1}\gamma^1 + \epsilon^1_{ijt}$				
Deposit account dummy	0.0107***	0.0129***	0.0095***	0.0104***
	(0.0003)	(0.0004)	(0.0003)	(0.0005)
lossXdep	-0.0007	0.0005	-0.0021***	-0.0017**
	(0.0006)	(0.0006)	(0.0006)	(0.0006)
Bank equity	-0.0007***	-0.0005***	-0.0002	0.0001
	(0.0000)	(0.0001)	(0.0001)	(0.0001)
Bank loan loss dummy	-0.0003	-0.0005	0.0038***	0.0030***
	(0.0006)	(0.0006)	(0.0006)	(0.0006)
N	435609	435609	435609	435609
r2	0.2048	0.0759	0.1979	0.0865
Panel B: Δ*Bankloan_ assets*$_{ijt}$ = *Deposit account*$_{ijt-1}\beta^2$ + *lossXdep*$_{ijt-1}\delta^2 + Z_{ijt-1}\gamma^2 + \epsilon^2_{ijt}$				
Deposit account dummy	0.0264***	0.0252***	0.0203***	0.0183***
	(0.0011)	(0.0015)	(0.0012)	(0.0018)
lossXdep	0.0114***	0.0135***	0.0108**	0.0144***
	(0.0032)	(0.0035)	(0.0034)	(0.0036)
Bank equity	0.0020***	0.0021***	0.0004	-0.0009
	(0.0002)	(0.0003)	(0.0004)	(0.0005)
Bank loan loss dummy	-0.0208***	-0.0216***	-0.0233***	-0.0253***
	(0.0030)	(0.0033)	(0.0032)	(0.0035)
N	438923	438923	438923	438923
r2	0.0721	0.1217	0.0721	0.1248

Panel C: i_new account$_{ijt}$ = Deposit account$_{ijt-1}\beta^3$ + lossXdep$_{ijt-1}\delta^3$ + $Z_{ijt-1}\gamma^3 + \epsilon^3_{ijt}$				
Deposit account dummy	0.0520***	0.0431***	0.0609***	0.0412***
	(0.0026)	(0.0037)	(0.0029)	(0.0040)
lossXdep	0.0091	0.0021	0.0276***	0.0138
	(0.0064)	(0.0072)	(0.0064)	(0.0073)
Bank equity	0.0017***	0.0031***	0.0013	-0.0005
	(0.0004)	(0.0006)	(0.0008)	(0.0009)
Bank loan loss dummy	-0.0163**	-0.0113	-0.0431***	-0.0292***
	(0.0059)	(0.0068)	(0.0061)	(0.0069)
N	435918	435918	435918	435918
r2	0.0420	0.0241	0.0412	0.0270
Panel D: Loan relationship terminated$_{ijt}$ = Deposit account$_{ijt-1}\beta^4$ + lossXdep$_{ijt-1}\delta^4$ + $Z_{ijt-1}\gamma^4 + \epsilon^4_{ijt}$				
Deposit account dummy	-0.0376***	-0.0306***	-0.0268***	-0.0224***
	(0.0019)	(0.0028)	(0.0022)	(0.0031)
lossXdep	-0.0393***	-0.0290***	-0.0467***	-0.0389***
	(0.0065)	(0.0070)	(0.0067)	(0.0072)
Bank equity	-0.0037***	-0.0057***	0.0012	0.0039***
	(0.0002)	(0.0005)	(0.0006)	(0.0007)
Bank loan loss dummy	0.0516***	0.0402***	0.0648***	0.0544***
	(0.0063)	(0.0068)	(0.0066)	(0.0070)
N	438923	438923	438923	438923
r2	0.0368	0.0450	0.0297	0.0497
Other control variables				
Firm characteristics	Yes	Yes	Yes	Yes
Bank and loan market characteristics	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	Yes
Bank fixed effects	No	No	Yes	Yes
Firm geography dummies	Yes	No	Yes	No
Firm industry dummy	Yes	No	Yes	No
Time fixed effects	Yes	Yes	Yes	Yes

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: Robustness Tests. Coefficient estimates for *lossXdep*, which is the interaction of *Deposit account dummy* and *Loan loss dummy*. *Deposit account dummy* takes the value one if the firm has a positive deposit balance at the firm-bank relationship, and zero otherwise. In Panel A, *Loan loss dummy* is an indicator variable that equals one if the bank experiences loan losses above the sample's 95th percentile. In Panel B, *Loan loss dummy* is equal to one if the bank experiences loan losses above the sample's 90th percentile during the period from date $t-2$ to date $t-1$. Panel B only includes firms with multiple banking relationships. In Panel C, *Loan loss dummy* is an indicator variable equal to one if the bank experiences loan losses during the period from date t to date $t+1$ above the sample distribution's 90th percentile. The sample excludes firms whose average assets during the sample period is below NOK 500,000, and excludes bank-firm relationships where borrowing is lower than NOK 100,000 for that particular year. Standard errors clustered at the firm level are reported in parentheses. Control variables are not reported.

Dependent variable	N	(1)	(2)	(3)	(4)
Panel A Raised threshold for loss event to 95th percentile.					
Interest rate margin	435,609	0.0003	0.0026***	-0.0014*	-0.0008
		(0.0007)	(0.0007)	(0.0007)	(0.0007)
Δ*Bankloan_ assets*	438,923	0.0135***	0.0180***	0.0150***	0.0194***
		(0.0038)	(0.0041)	(0.0041)	(0.0043)
i_ new account	435,918	-0.0229**	-0.0137	0.0151	0.0045
		(0.0077)	(0.0085)	(0.0078)	(0.0086)
Loan relationship terminated	438,923	-0.0505***	-0.0362***	-0.0648***	-0.0497***
		(0.0080)	(0.0085)	(0.0084)	(0.0089)
Panel B Only firms with multiple banking relationships.					
Interest rate margin	96,550	-0.0027**	0.0014	-0.0039***	-0.0025*
		(0.0010)	(0.0011)	(0.0010)	(0.0010)
Δ*Bankloan_ assets*	98,117	0.0043	0.0068	0.0042	0.0067
		(0.0037)	(0.0041)	(0.0038)	(0.0042)
i_ new account	96,623	0.0038	0.0041	0.0304**	0.0200
		(0.0102)	(0.0116)	(0.0102)	(0.0116)
Loan relationship terminated	98,117	-0.0245*	-0.0202***	-0.0328***	-0.0271**
		(0.0095)	(0.0100)	(0.0098)	(0.0103)
Panel C "Placebo" test, treatment is falsely set two years prior to actual occurrence.					
Interest rate margin	394,086	-0.0020***	-0.0006	-0.0007*	-0.0006*
		(0.0003)	(0.0003)	(0.0003)	(0.0003)
Δ*Bankloan_ assets*	396,584	-0.0022	0.0039*	0.0026	0.0049**
		(0.0016)	(0.0018)	(0.0017)	(0.0018)
i_ new account	394,380	-0.0029	0.0030	0.0105**	0.0106**
		(0.0034)	(0.0037)	(0.0035)	(0.0038)
Loan relationship terminated	396,584	0.0042	-0.0008	0.0003	-0.0007
		(0.0023)	(0.0024)	(0.0024)	(0.0024)
Control variables					
Firm characteristics		Yes	Yes	Yes	Yes
Bank and loan market characteristics		Yes	Yes	Yes	Yes
Firm fixed effects		No	Yes	No	Yes
Bank fixed effects		No	No	Yes	Yes
Firm geography dummies		Yes	No	Yes	No
Firm industry dummy		Yes	No	Yes	No
Time fixed effects		Yes	Yes	Yes	Yes

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$