The Supply-Side Effects of Bank Lending

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These supply-side effects manifest into unusually tight lending condition in the bank loan market. I find bank loan spreads over the policy rate to be about 20 percent higher than the long-run average, and about 1 percentage point higher than just before the financial crisis. The tight lending terms counteract monetary easing, and could potentially impede the economic recovery.

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The supply-side effects of bank lending

I. Introduction

Using loan level data, this paper provides unique empirical evidence on the supply side effects of bank lending. Following the 2007-09 financial crisis that severely weakened the banking industry, the U.S. enacted sweeping financial reform to re-regulate the financial services industry, epitomized by the passage of the Dodd-Frank Wall Street Reform and Consumer Protection Act in 2010. At around the same time, the Basel Committee on Banking Supervision finalized the new Basel III capital standards; and in its response to the financial crisis, the Basel Committee introduced the liquidity reform and a capital surcharge for global systemically important banks. The confluence of tightening banking supervision and regulation, as well as higher capital standards, suggests that the supply-side effects for bank credit cannot be overlooked even though the demand for bank loans likely has declined amid slowing economic growth and heightened uncertainties. My results show that after controlling for borrowers' credit risk, the loan terms offered by banks are significantly related to the bank's financial condition, including portfolio quality, profitability, and unused lending capacity. Specifically, weaker banks are found to charge significantly higher loan rates on their commercial and industrial lending than stronger banks.

An immediate policy question is that how much the supply-side effect of bank lending is clogging the monetary policy transmission channel? That is, amid the zero lower bound of policy rate, and the Large Scale Asset Purchases, how much higher is the bank loan rate from its long-run average that counteracts the monetary easing?

According to the Federal Reserve's Senior Loan Officers Opinion Survey (SLOOS), banks tightened both lending terms and lending standards to unprecedented levels during the financial crisis (see Figure 1). While over the last few quarters, the SLOOS results showed signs of easing in bank lending, it is unclear on net, how tight or ease bank lending currently is. The problem is that the SLOOS data provide only qualitative information on the changes in aggregate bank loan supply, making it impossible to gauge the true underlying condition of the bank loan market.

In this paper, I use the transaction data for 1.6 million commercial and industrial (C&I) loans extended by a panel of 429 commercial banks from 1997 to 2011 to study how the C&I loan rate behaved over time, after controlling for credit risk and loan characteristics. In addition to quantifying the tightness in the credit market, I also show the channels through which banks tightened loan supply, including reducing the (quantity) discount on large loans and raising the risk premium on less credit worthy borrowers. Furthermore, I delve into the supply-side effects of bank credit by examining how *lender* characteristics determine loan rates.

In the finance literature, the demand-side factors in corporate borrowing, including the information problem of the borrowers [e.g. Norden and Wagner (2008) and Daniels and Ramirez (2008)], relationship lending [e.g. Calomiris and Pornrojnangkool (2009), Hellman, Lindsey and Puri (2008), and Uchida, Udell and Yamori (2008)], and the borrower's choice of debt and lenders [e.g. Kwan and Carleton (2009)] are well documented. However, there are relatively few studies on the effects of the lender's financial condition on loan pricing.[2] Finding how a lending bank's own financial condition affects its lending terms is akin to a pure supply-side effect in credit provisions.[3]

The papers most closely related to this study include Rajan (1994), Berger and Udell (2004), Murfin (2009), and Chava and Purnanandam (2009). Rajan (1994) studied how bank credit policy fluctuates. Berger and Udell (2004) used the same kind of data as in this paper to link portfolio performance to the tightening of bank credit standards and lending volumes, referring to their findings as the institutional memory hypothesis. Murfin (2009) studied the supply-side effects on loan covenants and found evidence that banks wrote tighter loan contracts than their

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[2] Repullo and Suarez (2004) examined how two different Basel rules on capital requirements, the advanced internal rating based approach versus the standardized rule, could affect loan pricing.

[3] In providing evidence on the supply-side effects of bank lending, this paper shows the drag in monetary policy transmission via the bank lending channel (Kashyap, Stein, and Wilcox (1993), Oliner and Rudebusch (1996), and Kashyap and Stein (2000)). Further calibration works need to be done to assess the degree banking loan tightening offsets monetary easing.

peers after suffering defaults to their own portfolios, even when defaulting borrowers were in different industries and geographic regions than current borrowers. Chava and Purnanandam (2009) found that banks with exposure to the 1998 Russian default subsequently cut back on lending. More broadly, Bernanke and Gertler (1995), Peek and Rosengren (1997), Kang and Stulz (2000), and Paravisini (2008) studied various shocks to lenders on credit availability in the economy.

In this paper, I focus on the extent, and the mechanism, of bank credit tightening during and after the 2007-09 financial crisis. I find that as of the third quarter of 2011, the average C&I loan rate spread over the policy rate (federal funds rate) was about 63 basis points, or 20 percent, higher than its long-run average. Because lending terms were unusually loose just prior to the eruption of the crisis, the increase in the loan rate spread from the trough in 2007:Q2 to the present was almost one percentage point, a significant headwind to monetary easing. Interestingly, I do not find evidence that smaller bank-dependent borrowers, proxied by loan size, suffered more from bank tightening than large borrowers. The channels through which banks tightened loan rates include reducing the quantity discount on large loans and raising the price of risk for riskier borrowers. I also find that noncommitment loans were priced significantly higher than commitment loans at the height of the liquidity shortfall in late 2007 and early 2008, but this premium dropped to zero following the introduction of emergency liquidity facilities by the Federal Reserve.

Regarding the supply-side effects, I find that banks' loan portfolio quality, profitability, and the amount of unused lending capacity have significant effects on bank loan rates immediately after the financial crisis. The results strongly suggest that weaker banks tighten lending terms more than strong banks.

The rest of this paper is organized as follows. Section II describes the data and provides summary statistics. Section III estimates how much banks tightened loan rates during and after the financial crisis. Section IV examines how and why banks tighten credit. The robustness of the findings is discussed in Section V. Section VI concludes.

II. Data

The loan level data are obtained from the Federal Reserve's Survey of Terms of Business Lending (STBL), which collects data on all C&I loans made by a panel of about 350 domestic banks during the report period. The report period covers the first business week of February, May, August, and November of each year. The panel is drawn from across the United States and includes both large and small banks that actively engage in business lending. While participating banks tend to stay in the panel from year to year, the panel changes over time due to mergers and exits from banking.

The STBL covers all C&I loans to U.S. addresses when funds are disbursed to borrowers during the report period. The loans must be denominated in U.S. dollars and greater than $7,500. The data exclude loans secured by real estate, even if the proceeds are for commercial and industrial purposes. Since the STBL started in 1977, the level of details reported by the participating banks has increased over time. In 1997:Q2, the STBL started collecting loan level credit risk ratings, with each risk rating category clearly defined by the Federal Reserve (rather than by the reporting bank).

Specifically, the STBL defines five credit risk ratings. Rate1 is minimal risk; loans in this category have virtually no chance of resulting in a loss. Rate2 is low risk; loans in this category are very unlikely to result in a loss. Rate3 is moderate risk; loans in this category have little chance of resulting in a loss. This category should include the average loan, under average economic conditions, at the typical lender. Rate4 is acceptable risk; loans in this category have a limited chance of resulting in a loss. Rate5 is special mention or classified asset; loans in this category would generally fall into the examination categories of "special mention," "substandard," "doubtful," or "loss." Rate5 would primarily be work-out loans, as it is highly unlikely that new loans would fall into this category. The complete definitions of the rating categories are provided in Appendix 1.

Since it is important to control for the credit risk of the borrowing firm, this study uses STBL data from 1997:Q2 to 2011:Q3. In addition to credit risk ratings, the loan level data include the loan rate, the loan size, whether the loan rate is based on the prime rate, commitment status, and whether the loan is secured by collateral. Term loans or loans with repricing intervals greater than one year are excluded. In order for the loans from a reporting bank in a particular quarter to be included in the analysis, the bank must have extended at least ten loans during the quarter.

The financial data of the reporting banks are collected from the quarterly Report of Conditions and Income, known as the Call Report. The end-of-quarter Call Report data are merged with the quarterly STBL data immediately following the Call date, so that the STBL data always lead the Call Report data by one calendar month.[4] My final sample includes 1.6 million C&I loans made by 429 banks.

For robustness, banks also are grouped into three size categories based on their total assets: large banks with total assets over $10 billion, medium banks with total assets between $1 billion and $10 billion, and small banks with total assets less than $1 billion. In addition, some analysis uses subsamples of large loans (at least $1 million) and small loans (no greater than $50,000).

Table 1 provides descriptive statistics of the sample banks for both the full sample and by size class. Table 2 provides descriptive statistics of the sample C&I loans for the full sample and by bank size, and also separately for the subsamples of large loans and small loans. Note that in Table 2, although there are more medium-sized banks in the sample, over 75 percent of the loans were made by large banks, reflecting the concentration in the U.S. banking industry. Both the mean and the median loan size increase with bank size. Credit risk ratings are concentrated in the "Moderate Risk" and "Acceptable Risk" categories. "Special Mention" accounts for less than 10 percent of the sample, and dropping these loans from the analysis provides very similar results.[1] About 90 percent of the C&I loans in the full sample were made under commitment. About 80 percent of the sample C&I loans were secured with collaterals.

[4] For example, the December 2008 Call Report data are merged with the February 2009 STBL data.

[1] Dropping the very large loans (over $25 million) from the analysis also provides very similar results.

III. Extent of tightening

To examine how the loan rate charged by banks changes over time, I fit the following pooled time-series cross-sectional model by regressing the loan rate on loan characteristics, bank fixed effects and time effects.

$$\boldsymbol{Y_{ijt} = \alpha X_{ijt} + \sum \lambda_t \mathrm{Time}_t + \sum \mu_j \mathrm{Bank}_j + \varepsilon_{it}} \ , \qquad (1)$$

where Y_{ijt} is the interest rate on loan *i* made by bank *j* at time *t*, X_{ijt} is a vector of loan *i* characteristics, *Time* is the time effect dummy, *Bank* is the bank fixed effect dummy, and ε_{it} is the residual. The loan characteristics include the following:

LOANSIZE = Log (loan size);
RATE2, ... RATE5 = Dummy variables equal 1 if the credit risk rating equals 2 to 5, respectively, zero otherwise;
PRIME = Dummy variable equals 1 if the base rate is the prime rate, zero otherwise;
NONCOMMIT = Dummy variable equals 1 if the loan is not made under a loan commitment, zero otherwise;
SECURE = Dummy variable equals 1 if the loan is secured by firm assets, zero otherwise.

The coefficient of LOANSIZE is expected to be negative due to scale economies in loan production. In the model, RATE1 is excluded for identification, so the coefficients of RATE2 to RATE5 measure the incremental spread over RATE1 loans. RATE2 to RATE5 are expected to be positive and increasing, reflecting that loans have higher credit risk are charged a higher rate. The variable PRIME captures the bargaining power of the borrower and is expected to have a positive coefficient. Loans to smaller borrowers are usually priced using the prime rate as the base lending rate; loans to larger firms are usually based on the London interbank offered rate (Libor). The coefficient of NONCOMMIT is expected to be positive; ceteris paribus, banks have more flexibility and bargaining power in setting the loan rate of a NONCOMMIT loan than in the case of a loan drawdown from a line of credit. The coefficient of SECURE is expected to be negative since a collateralized loan improves the loan's expected recovery rate in the event of a default than an uncollateralized loan.[2]

In equation (1), the vector of coefficients, α is restricted to be constant over time so that the first term measures the average effects of loan characteristics on loan rates. The bank fixed effect controls for bank-specific factors including its production function and local market competition. The coefficients of the time effect dummies capture the time-specific factors, including the level of interest rates in the economy.

Results of the estimated coefficients of loan characteristics in equation (1) using the full sample and the subsamples of large and small loans are provided in Table 3. While the coefficients of the bank fixed effects are not reported, many are significant. The adjusted R-squared is about 80 percent. Using the robust standard errors that correct for the clustering of observations per bank per quarter, the coefficients of the loan characteristics are significant and have the expected signs in general. The coefficient of LOANSIZE is significantly negative, indicating that large loans tend to be cheaper than small loans. The coefficients of the credit risk ratings are significant and they increase with risk. The coefficient of NONCOMMIT is significantly positive. On average, interest rates on noncommitment loans were 38 basis points higher than loans that were made under commitment. The coefficient of PRIME is significantly positive, indicating that prime-based loans on average are 78 basis points higher than non-prime-based loans. PRIME has a bigger effect on loan rates for large loans than for small loans, reflecting that large C&I loans are more likely to be priced off Libor. In Panel A, SECURE is significantly negative for loans made by small banks, but insignificant in the full sample and the large and medium bank subsamples. Panel B shows that for large loans, SECURE is significantly positive, and the result is robust with respect to bank size. This is consistent with the literature that states that for larger loans,

[2] Ono and Uesugi (2009) showed that the use of collateral is effective in raising the bank's seniority and enhances its screening and monitoring. Brick and Palia (2007) also found significant effects of collateral on loan rates. However, Berger and Udell (1990), Booth (1992), and Kwan and Carleton (2009) found that secured loans are associated with higher loan rates in large loans.

collateral is actually associated with higher risk, consistent with self-selection of providing collateral. For small loans, in Panel C, SECURE is significantly negative, and the result is robust with respect to bank size. The findings suggest that for small loans, collateral improves recovery risk and has a negative effect on loan rates.

Figure 1 charts the estimates of the time effect dummies with the 95 percent robust confidence interval. The time effect coefficient tracks the target federal funds rate very well, and the Pearson correlation coefficient is 0.99. It also tracks the three-month Libor rate well, with the correlation at 0.98. It tracks the corporate bond rate less well, with the correlation at 0.25, most likely due to the differences in pricing conventions (floating rates versus fixed rates) and maturity between bank loans and corporate bonds.

The high correlation between the time effect and the federal funds rate suggests that monetary policy is fully transmitted to bank loan rates most of the time, implying that the spread of the time effect coefficient over the policy rate can be used to measure the stance of the bank loan market, controlling for monetary policy.

Figure 2 charts the spread of the time effect coefficient over the federal funds rate. From 1997:Q2 to 2008:Q4, this spread averaged 3.16 percent. However, as the financial crisis unfolded, this spread rose quickly, before peaking in 2010. Although it has eased a bit in 2011, as of 2011:Q3, this spread has a point estimate of 3.79 percent, which is still well above its long-run average. The 63 basis points difference, or 20 percent above average, measures the tightness in bank loan rate in the aggregate, which is clearly economically significant at the currently low interest rate environment. This stubbornly high spread in the bank loan market counteract the extent of monetary easing, which includes lowing the policy rate to just above zero, Large Scale Asset Purchases, and the Maturity Extension Program.

Note that in Figure 2, the spread was below average from 2004:Q4 to 2008:Q3 (averaging 23 basis points), indicating that the bank loan rate was unusually loose just before the financial crisis. Thus, from the trough in 2007:Q2 to recently, the tightening of bank loan rates totaled about 1 full percentage point.

Figures 3, 4, and 5 chart the results for large, medium, and small banks, respectively. Figure 4 shows that medium-sized banks exhibit the largest degree of tightening in loan rates, in both absolute term and percentage term, relative to the long-run average. Medium-sized banks make up the largest fraction of banks in the sample, although as a group, they did not make the largest fraction of loans. In Figure 5, the spread of bank loans made by small banks as of 2011:Q3 was 56 basis points or 11 percent above its long-run average. While small banks seem to tighten the least among the three bank size classes, loans by small banks make up less than 3 percent of sample loans by number.

To shed light on whether banks tighten the loan terms more on bank-dependent borrowers, I also analyze subsamples of large loans (at least $1 million) and small loans (no greater than $50,000). Small loans are proxies for small borrowers who are assumed to be less likely to have access to the capital market and therefore are more likely to be dependent on a relationship with a single bank.[3] Large loans are assumed to be taken by large borrowers who likely have access to the capital market, including the commercial paper market, and also are likely to have relationships with more than one bank.

Figure 6 charts the spread of the time effect coefficient over the federal funds rate for the regression using only large loans. Relative to the long-run average, the spread on large loans is almost one full percentage point higher, or 86 percent above normal. Figures 7 and 8 show the large loan results by bank size.[4] Large banks are found to tighten more on their large loans than medium-sized banks do. After the financial crisis, large banks are subject to higher capital standards, including the supervisory stress testing of capital adequacy, and the capital surcharges for systemically important financial institutions.

Figure 10 shows the results for the sample of small loans. Across all banks, while the spread on small loans is about 48 basis points or 14 percent above the long-run average, the degree of

[3] The STBL data do not provide borrowers' characteristics or identities.

[4] The number of observations of large loans made by small banks is small, and therefore these loans are not analyzed separately.

tightening is actually less than that of large C&I loans, which indicate that smaller, bank-dependent borrowers are not having more difficulties in obtaining bank credit than larger borrowers. Medium-sized banks are found to tighten more on their small loans (Figure 12), relative to large banks (Figure 11) and small banks (Figure 13).

IV. Supply-side effects

In equation (1), the coefficients of loan characteristics, α, are restricted to be constant over time so that they measure the average effect of loan characteristics on loan rates. Similarly, the bank fixed effect in (1) controls for the average effect of bank characteristics on loan rates. With those restrictions, the time effect coefficient captures the element of the loan rate that is unique to time period *t* after controlling for the average effects of loan characteristics and bank characteristics. In this section, I discuss how the effects of loan characteristics and bank characteristics on loan rates change over time, particularly over the recent quarters when banks were under severe stress. To do this, I relax the restrictions in equation (1) by fitting the following cross section regression at each quarter *t*:

$$\boldsymbol{Y_{ijt} = \theta_t + \alpha_t X_{ijt} + \beta_t Z_{jt} + \nu_{it}} \;, \qquad (2)$$

where θ_t is the intercept term, Z_{jt} is a vector of bank *j*'s characteristics at time *t*, and v_{it} is the residual, to produce a time series of α_t and β_t. The evolution of α_t captures how the effects of loan characteristics on loan rates change over time, which addresses the question of how banks tighten credit. The evolution of β_t captures how the effects of bank characteristics on loan rates change over time, which addresses the question of why banks tighten credit.

Using data from the Call Report, the following variables are included in the *Z* vector:
BADLOAN = Ratio of past-due and nonaccrual loans to allowance for loan loss;
CAPITAL = Ratio of book value capital to total assets;
ROA = Return on assets;
UNCOMMIT = Log (Unused line of credit to total loans).

BADLOAN measures a bank's loan portfolio quality relative to its reserves for loan loss.[5] To the extent that a bank with a higher ratio of bad loans to loan-loss reserves is more likely to restrain itself in making new loans, that is, to reduce its loan supply, the coefficient of BADLOAN would be positive. The channels through which BADLOAN could constrain bank lending include supervisory pressure to reduce lending, capital constraints due to higher provisioning for loan loss in the future, and the bank's own reassessment of the economic outlook, local economic conditions, and underwriting standards in light of the bad portfolio outcomes. While it is beyond the scope of this paper to distinguish among these channels, finding a positive coefficient of BADLOAN provides evidence of the supply-side effect of loan pricing.

CAPITAL is included to examine the effect of the book value capital ratio on loan prices. While CAPITAL may capture a bank's capital constraint more directly, a bank's book value capital ratio could lag its economic capital when loan losses are recognized slowly.[6] [7] (On the other hand, BADLOAN is derived from the observed delinquency in the loan portfolio.) A negative coefficient of CAPITAL would suggest that a low book value capital ratio constrains bank lending.

ROA measures a bank's profitability. Higher ROA could result in higher retained earnings and hence additional capital both to support and to fund bank lending. To the extent that a more (less) profitable bank with high (low) ROA tends to increase (decrease) its loan supply, this would lead to a negative relation between loan rate and ROA.

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[5] Deflating bad loans by total loans outstanding provides similar results.

[6] Washington Mutual was considered well capitalized just before it failed. Wachovia also was well capitalized before it was acquired by Wells Fargo.

[7] Many banks in the STBL panel do not have publicly traded stocks for computing market value capital ratio. Bank stock prices also likely capture the bad loan effects already included in the model.

The fourth bank-specific variables in the cross-sectional regression is UNCOMMIT, which measures a bank's unused loan commitment outstanding. Assuming the level of unused loan commitment measures a bank's lending capacity, a bank with high level of unused loan commitments is more likely to increase its loan supply by offering more attractive terms to borrowers, so that the coefficient of UNCOMMIT would be negative.[8]

Together, these four bank-specific variables test the supply-side effects of bank loan pricing. In the cross-sectional regression, β_t captures the pure cross-sectional effects of BADLOAN, CAPITAL, ROA, and UNCOMMIT on the loan rate at a given point in time. This should be distinguished from a time-series cross-sectional model where a positive effect of BADLOAN on loan price could be because rising loan delinquency signals worsening economic developments that prompts banks to tighten loan rates. In a pure cross-sectional regression, all banks are at the same point in time facing the same economy. If, for example, banks with more bad loans indeed are found to charge a higher loan rate than banks with fewer bad loans, the results would be more supportive of the supply-side story than the economic outlook story.

Table 4 reports the results of fitting equation (2) by quarter, from 1997:Q2 to 2011:Q3. The intercept term tracks the federal funds rate, but not as well as in Figure 1. Since the effects of loan characteristics and bank characteristics on loan rates are allowed to be time varying, the tightening in loan rates is reflected in both the intercept term and the changes in coefficients.

The coefficient of PRIME is almost always positive and significant, confirming that Prime-based loans tend to be more expensive than non-Prime-based (Libor based) loans.

The coefficient of LOANSIZE increases over time but remains significantly negative. The negative coefficient suggests that the loan rate declines with loan size. However, during and

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[8] Gatev, Schuermann and Strahan (2009) argued that deposits can be used to hedge loan commitments. Ivashina and Scharfstein (2009) found banks that co-syndicated more of their credit lines with Lehman Brothers reduced their syndicated lending more following the Lehman collapse. Both of these papers point to a supply-side effect of loan commitments.

immediately after the financial crisis, the coefficient of LOANSIZE rose from about -0.2 to -0.1, indicating that the quantity discount has been halved from before the crisis.

The coefficients of risk rating have the expected positive sign, and they increase with the risk rating. Since 2009, the coefficients of risk rating have been trending up, especially the coefficients of RATE3, RATE4, and RATE5, but they rebounded from relatively low levels. A higher coefficient of risk rating indicates that banks raise the price of risk. For example, the average moderate risk (RATE3) loan is about 40 basis points more expensive in 2010 compared to mid-2009, while the average workout loan (RATE5) costs about 70 basis points more.

The coefficient of NONCOMMIT is positive but insignificant until 2006. It is significantly positive in late 2007 and early 2008, when the liquidity in the banking sector was unusually scarce. As liquidity returned to the banking sector following the introduction of emergency liquidity facilities by the Federal Reserve, the coefficient of NONCOMMIT becomes insignificant.[9] The findings suggest that banks charge a premium for noncommitment loans when they face liquidity constraints.

The coefficient of SECURE is negative, but largely insignificant. SECURE is significantly negative in 2008, perhaps in response to the unusual uncertainties in the economy whereby the provision of collaterals had significant effect on lowering the loan rate.

Turning to the effects of bank characteristics on loan rates, before 2008, the coefficient of BADLOAN is mostly insignificantly different from zero, suggesting that in a cross section of banks, loan portfolio quality did not seem to have any effects on loan price before the crisis. Since 2008, the coefficient of BADLOAN was significantly positive in most of the quarters, and turned insignificant only very recently. A positive coefficient suggests that in a cross section of banks, banks with poorer portfolio quality charge a higher loan rate. The findings are consistent with the supply-side effect of loan pricing. Using the point estimate of 0.2 for the coefficient of

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[9] See Kwan (2009) for a discussion of liquidity in the banking sector during the financial crisis.

BADLOAN, a bank with twice the amount of BADLOAN than the average would raise its loan rate by about one-half of a percentage point, ceteris paribus.

The coefficient of CAPITAL is significantly positive during the tightening cycle from 2003 to 2004, indicating that banks with more capital charge a higher loan rate. However, since then, the coefficient of CAPITAL is largely insignificant, including during and after the financial crisis.

Before the crisis, the coefficient of ROA was mostly insignificant, indicating that profitability did not seem to affect loan pricing. However, over the last six quarters starting in 2010:Q2, ROA was found to be significantly negative, indicating that weaker banks with poor performance systematically charged higher loan rates than stronger banks. For example, over the last few quarters, a bank with an ROA that was one-half of the sample average would raise its loan price by about 10 basis points, ceteris paribus.

The coefficient of UNCOMMIT is significantly negative from mid-2004 to mid-2006, 2007 to 2008, and since 2009. The negative coefficient indicates that banks with more unused loan commitments charge lower loan rates. The results confirm that banks with excess lending capacity are more aggressive in loan pricing.

Taken together, the findings in Table 4 provide strong empirical evidence on the supply-side effects of bank loan pricing in the current environment. Loan portfolio quality, profitability, and lending capacity are found to be significant determinants of bank loan rates.

V. Robustness

One potential concern about Table 4 is that BADLOAN may be picking up the residual risk faced by the bank that was not fully captured by the Risk Rating. Thus, ex ante, a bank may charge a higher loan rate on its C&I loans due to the perceived higher credit risk. To address this potential issue on risk measurement, I modified BADLOAN to include only delinquent non-C&I loans, so that the BADLOAN in the ith bank has nothing to do with its C&I loan performance. If this modified BADLOAN ratio still has explanatory power for the bank's C&I loan rate, one can have higher confidence that the (non-C&I) BADLOAN ratio indeed captures the supply-side effect rather than the residual risk.

Table 5 presents the quarterly cross-section regression results using non-C&I BADLOAN. The findings are similar to Table 4. During and immediately after the financial crisis, the performance of the bank's non-C&I loan portfolio is found to have a significant effect on the bank's pricing of its C&I loans.

I also perform other robustness checks, including fitting equation (2) separately for each size class of banks by quarter, and, adding three lags of CAPITAL out of concerns that book capital may be slow in measuring economic capital. The results are robust with respect to bank size; and adding lagged CAPITAL provides qualitatively similar results.[10]

VI. Conclusions

Using loan level data, this paper provides empirical evidence on the supply-side effects of bank loan pricing. Following the 2007-09 financial crisis, the re-regulation of the banking industry, the new Basel capital standards, and the unfavorable capital market for banking firms seeking external capital led to an environment in the U.S. banking sector where the banking firm's own financial conditions are found to have significant effects on its loan supply. In a cross section of banks, I find the bank's loan portfolio quality, profitability, and unused lending capacity have significant explanatory power for its loan rates, after controlling for borrower's credit risk and loan characteristics. Specifically, weaker banks are found to charge higher rates.

These supply-side effects manifest into unusually tight lending condition in the bank loan market. I find bank loan spreads over the policy rate to be about 20 percent higher than the long-run average, and about 1 percentage point higher than just before the financial crisis. The tight lending terms counteract monetary easing, and could potentially impede the economic recovery.

[10] These results are available upon request.

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Appendix 1: STBL instructions on credit risk rating

Risk rating. If your institution assigns internal risk ratings to business loans, enter the numerical designation from the list provided below that most closely matches the definition of the internal rating assigned to this loan. *Do not* enter your institution's own internal risk rating. If your institution rates loans, but a particular loan is unrated, or not yet rated, enter ‘‘0” for that loan. If your institution does not assign internal risk ratings to business loans, either (a) leave this column blank or (b) use the categories presented below to make the assignment. The definitions provided here take account of both the characteristics of the borrower and the protections provided in the loan contract. Note that the definitions are intended to characterize ranges of risk; hence the definition of your institution's internal rating for a loan probably will not exactly match any of the provided definitions. Enter the numerical designation that corresponds *most closely* to the internal rating of your institution. The risk rating categories provided here are not intended to establish a supervisory standard for the maintenance or reporting of internal risk rating systems.

Minimal risk (enter ‘‘1”). Loans in this category have virtually no chance of resulting in a loss. They would have a level of risk similar to a loan with the following characteristics:

• The customer has been with your institution for many years and has an excellent credit history.
• The customer's cash flow is steady and well in excess of required debt repayments plus other fixed charges.
• The customer has an AA or higher public debt rating.
• The customer has excellent access to alternative sources of finance at favorable terms.
• The management is of uniformly high quality and has unquestioned character.
• The collateral, if required, is cash or cash equivalent and is equal to or exceeds the value of the loan.
• The guarantor, if required, would achieve approximately this rating if borrowing from your institution.

Low risk (enter ‘‘2”). Loans in this category are very unlikely to result in a loss. They would have a level of risk similar to a loan with the following characteristics:

• The customer has an excellent credit history.
• The customer's cash flow is steady and comfortably exceeds required debt repayments plus other fixed charges.
• The customer has a BBB or higher public debt rating.
• The customer has good access to alternative sources of finance at favorable terms.
• The management is of high quality and has unquestioned character.
• The collateral, if required, is sufficiently liquid and has a large enough margin to make very likely the recovery of the full amount of the loan in the event of default.
• The guarantor, if required, would achieve approximately this rating if borrowing from your institution.

Moderate risk (enter ‘‘3”). Loans in this category have little chance of resulting in a loss. This category should include the average loan, under average economic conditions, at the typical lender. Loans in this category would have a level of risk similar to a loan with the following characteristics:

• The customer has a good credit history.
• The customer's cash flow may be subject to cyclical conditions, but is adequate to meet required debt repayments plus other fixed charges even after a limited period of losses or in the event of a somewhat lower trend in earnings.
• The customer has limited access to the capital markets.
• The customer has some access to alternative sources of finance at reasonable terms.
• The firm has good management in important positions.
• Collateral, which would usually be required, is sufficiently liquid and has a large enough margin to make likely the recovery of the value of the loan in the event of default.
• The guarantor, if required, would achieve approximately this rating if borrowing from your institution.

Acceptable risk (enter ‘‘4”). Loans in this category have a limited chance of resulting in a loss. They would have a level of risk similar to a loan with the following characteristics:

• The customer has only a fair credit rating but no recent credit problems.
• The customer's cash flow is currently adequate to meet required debt repayments, but it may not be sufficient in the event of significant adverse developments.
• The customer does not have access to the capital markets.
• The customer has some limited access to alternative sources of finance possibly at unfavorable terms.
• Some management weakness exists.
• Collateral, which would generally be required, is sufficient to make likely the recovery of the value of the loan in the event of default, but liquidating the collateral may be difficult or expensive.
• The guarantor, if required, would achieve this rating or lower if borrowing from your institution.

Special mention or classified asset (enter ‘‘5”). Loans in this category would generally fall into the examination categories: “special mention,” “substandard,” “doubtful,” or “loss.” They would primarily be work-out loans, as it is highly unlikely that new loans would fall into this category.

Table 1: Descriptive Statistics for Sample Banks, 1997:Q2-2011:Q3
Mean (median)

	All Banks	Large Banks	Medium Banks	Small Banks
Total Assets (in $ millions)	34,100.5 (3,372.8)	104,866.4 (37,598.5)	3,577.4 (2,662.6)	559.1 (562.1)
Deposits-to-Assets	0.753 (0.769)	0.685 (0.692)	0.766 (0.777)	0.824 (0.836)
Capital-to-Assets	0.096 (0.088)	0.094 (0.086)	0.096 (0.089)	0.097 (0.090)
Delinquent Loans-to-Total Loans	0.023 (0.018)	0.025 (0.019)	0.022 (0.017)	0.022 (0.017)
Delinquent Loans-to-Loan Loss Allowance	1.389 (1.233)	1.469 (1.329)	1.338 (1.188)	1.386 (1.160)
Unused Commitments-to-Loans	0.433 (0.316)	0.665 (0.533)	0.371 (0.287)	0.233 (0.204)
Return on Assets (in %)	0.261 (0.292)	0.246 (0.299)	0.258 (0.296)	0.288 (0.278)
Number of Banks	429	100	247	158

Table 2: Descriptive Statistics for C&I Loans, 1997:Q2-2011:Q3
All loans
Mean (median) or fraction

	All Banks	Large Banks	Medium Banks	Small Banks
Loan Rate (in percent)	6.571 (6.500)	6.353 (6.250)	7.207 (7.500)	7.836 (8.250)
Loan Amount (in $ thousands)	337.9 (42.7)	392.4 (49.9)	172.4 (30.0)	79.1 (20.0)
Minimal Risk	0.018	0.016	0.023	0.032
Low Risk	0.088	0.092	0.066	0.147
Moderate Risk	0.460	0.450	0.496	0.463
Acceptable Risk	0.353	0.360	0.332	0.294
Special Mention	0.081	0.081	0.083	0.063
Not under Commitment	0.103	0.100	0.111	0.127
Secured	0.799	0.783	0.856	0.809
Number of Loans	1,637,638	1,250,060	345,917	41,661

Large loans (at least $1,000,000)
Mean (median) or fraction

	All Banks	Large Banks	Medium Banks	Small Banks
Loan Rate (in percent)	5.622 (5.780)	5.514 (5.720)	6.569 (6.650)	6.361 (6.165)
Loan Amount (in $ millions)	4.021 (2.200)	4.109 (2.250)	3.314 (2.000)	2.259 (1.693)
Minimal Risk	0.034	0.033	0.042	0.197
Low Risk	0.177	0.179	0.161	0.136
Moderate Risk	0.492	0.497	0.456	0.431
Acceptable Risk	0.229	0.229	0.230	0.186
Special Mention	0.067	0.063	0.112	0.050
Not under Commitment	0.086	0.078	0.156	0.297
Secured	0.553	0.532	0.733	0.749
Number of Loans	97,814	87,640	9,712	462

Small loans (less than $50,000) Mean (median) or fraction				
	All Banks	Large Banks	Medium Banks	Small Banks
Loan Rate (in percent)	6.886 (6.880)	6.671 (6.500)	7.364 (7.660)	8.034 (8.500)
Loan Amount (in $ thousands)	18.0 (15.0)	18.4 (15.8)	17.2 (14.5)	15.7 (12.0)
Minimal Risk	0.017	0.014	0.023	0.031
Low Risk	0.073	0.077	0.051	0.139
Moderate Risk	0.457	0.443	0.496	0.471
Acceptable Risk	0.379	0.393	0.347	0.294
Special Mention	0.075	0.073	0.083	0.065
Not under Commitment	0.122	0.126	0.113	0.124
Secured	0.821	0.811	0.855	0.805
Number of Loans	863,798	625,234	208,701	29,863

Table 3: Results of pooled time-series cross-section regression, 1997:Q2-2011:Q3
(Fixed-effect and time-effect coefficients not reported, robust standard errors in parentheses)

Panel A: All loans

	ALL	LARGE	MEDIUM	SMALL
PRIME	0.777*** (0.111)	0.854*** (0.131)	0.432*** (0.070)	-0.269* (0.145)
LOANSIZE	-0.200*** (0.021)	-0.200*** (0.025)	-0.195*** (0.017)	-0.200*** (0.014)
RATE2	0.208** (0.103)	0.126 (0.129)	0.448*** (0.130)	0.887*** (0.143)
RATE3	0.642*** (0.145)	0.569*** (0.193)	0.841*** (0.142)	1.326*** (0.133)
RATE4	0.818*** (0.084)	0.716*** (0.104)	1.118*** (0.141)	1.695*** (0.156)
RATE5	1.287*** (0.095)	1.246*** (0.122)	1.385*** (0.144)	1.836*** (0.207)
NONCOMMIT	0.382*** (0.108)	0.360** (0.140)	0.415*** (0.079)	0.315*** (0.113)
SECURE	-0.081 (0.075)	-0.072 (0.087)	-0.139 (0.104)	-0.129*** (0.047)
Adjusted R^2	0.819	0.815	0.820	0.800
N	1,637,638	1,250,060	345,917	41,661

Panel B: Large loans (at least $1,000,000)

	ALL	LARGE	MEDIUM	SMALL
PRIME	1.289*** (0.070)	1.327*** (0.076)	0.919*** (0.091)	0.931*** (0.286)
LOANSIZE	-0.104*** (0.012)	-0.098*** (0.013)	-0.147*** (0.024)	0.117 (0.111)
RATE2	0.113 (0.084)	0.085 (0.090)	0.433*** (0.144)	0.282 (0.380)
RATE3	0.521*** (0.075)	0.504*** (0.081)	0.705*** (0.127)	0.623** (0.279)
RATE4	1.026*** (0.060)	1.021*** (0.064)	1.090*** (0.153)	0.665*** (0.240)
RATE5	1.486*** (0.098)	1.513*** (0.119)	1.410*** (0.145)	1.811*** (0.358)
NONCOMMIT	-0.072 (0.055)	-0.102* (0.058)	0.205* (0.121)	-0.051 (0.199)
SECURE	0.398*** (0.043)	0.401*** (0.047)	0.286*** (0.045)	0.275*** (0.092)
Adjusted R^2	0.826	0.825	0.819	0.818
N	97,814	87,640	9,712	462

Panel C: Small loans (less than $50,000)

	ALL	LARGE	MEDIUM	SMALL
PRIME	0.550*** (0.173)	0.634*** (0.209)	0.246*** (0.094)	-0.409** (0.161)
LOANSIZE	-0.232*** (0.022)	-0.237*** (0.029)	-0.209*** (0.022)	-0.219*** (0.026)
RATE2	0.360** (0.150)	0.224 (0.198)	0.573*** (0.173)	1.013*** (0.171)
RATE3	0.732*** (0.212)	0.597* (0.304)	0.962*** (0.185)	1.506*** (0.144)
RATE4	0.841*** (0.134)	0.655*** (0.186)	1.213*** (0.175)	1.881*** (0.174)
RATE5	1.190*** (0.143)	1.058*** (0.202)	1.438*** (0.176)	1.959*** (0.222)
NONCOMMIT	0.511*** (0.138)	0.516*** (0.183)	0.417*** (0.076)	0.322** (0.137)
SECURE	-0.300*** (0.086)	-0.312*** (0.104)	-0.277** (0.117)	-0.189*** (0.060)
Adjusted R^2	0.808	0.806	0.812	0.783
N	863,798	625,234	208,701	29,863

***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Cross section regressions of loan rate on loan characteristics and bank characteristics
(robust standard errors in parentheses)

	Intercept	PRIME	LOAN-SIZE	RATE2	RATE3	RATE4	RATE5	NON-COMMIT	SECURE	BAD-LOAN	CAPITAL	ROA	UN-COMMIT	Adj-R^2	N
97:Q2	7.944***	1.168***	-0.232***	0.207	0.500***	0.606***	1.137***	0.226**	0.0311	0.0126	0.241	77.76**	-0.241***	0.430	22300
	(0.267)	(0.0972)	(0.0202)	(0.142)	(0.130)	(0.122)	(0.140)	(0.112)	(0.0666)	(0.0489)	(1.383)	(34.16)	(0.0530)		
97:Q3	7.888***	1.202***	-0.221***	0.249**	0.614***	0.767***	1.256***	0.207	0.138**	0.0114	-1.335	20.10	-0.263***	0.472	25677
	(0.218)	(0.0871)	(0.0173)	(0.110)	(0.0875)	(0.0839)	(0.0948)	(0.128)	(0.0606)	(0.0646)	(1.322)	(30.60)	(0.0548)		
97:Q4	7.870***	1.189***	-0.221***	0.239**	0.650***	0.843***	1.277***	0.170	0.0762	0.0658	-0.232	-10.84	-0.291***	0.474	26404
	(0.194)	(0.0855)	(0.0164)	(0.106)	(0.0936)	(0.0972)	(0.108)	(0.121)	(0.0610)	(0.0574)	(1.189)	(32.17)	(0.0617)		
98:Q1	8.516***	1.205***	-0.266***	-0.0391	0.456***	0.590***	1.067***	0.207*	-0.0930	0.0634	-0.377	-16.61	-0.232***	0.440	31509
	(0.356)	(0.0768)	(0.0297)	(0.166)	(0.170)	(0.184)	(0.170)	(0.120)	(0.143)	(0.100)	(1.600)	(34.74)	(0.0855)		
98:Q2	8.247***	1.045***	-0.280***	0.241	0.765***	0.824***	1.259***	0.133	0.0218	-0.0189	3.439*	-48.34***	-0.133	0.453	31309
	(0.359)	(0.122)	(0.0289)	(0.152)	(0.164)	(0.147)	(0.149)	(0.120)	(0.130)	(0.0701)	(1.994)	(8.320)	(0.116)		
98:Q3	8.651***	1.163***	-0.289***	0.0277	0.584***	0.772***	1.123***	0.349	-0.165	-0.186*	0.376	49.71***	-0.0732	0.428	32287
	(0.383)	(0.0973)	(0.0320)	(0.172)	(0.177)	(0.173)	(0.164)	(0.234)	(0.163)	(0.103)	(1.830)	(14.95)	(0.0974)		
98:Q4	8.500***	1.037***	-0.292***	-0.212	0.412*	0.485**	1.354***	0.382	-0.210	-0.0118	3.010	-79.17***	-0.0956	0.412	31379
	(0.376)	(0.0962)	(0.0343)	(0.217)	(0.237)	(0.222)	(0.455)	(0.246)	(0.163)	(0.0920)	(1.956)	(23.41)	(0.105)		
99:Q1	7.486***	0.848***	-0.283***	0.327***	0.945***	0.995***	1.341***	0.510**	-0.118	-0.0894	4.650**	-13.33	-0.109	0.388	34577
	(0.307)	(0.131)	(0.0277)	(0.123)	(0.172)	(0.122)	(0.133)	(0.253)	(0.139)	(0.0658)	(1.808)	(11.58)	(0.110)		
99:Q2	7.669***	0.840***	-0.259***	0.118	0.758***	0.899***	1.183***	0.423	-0.125	-0.154*	3.497*	12.86	-0.102	0.303	33204
	(0.403)	(0.163)	(0.0288)	(0.170)	(0.182)	(0.186)	(0.163)	(0.277)	(0.184)	(0.0877)	(2.047)	(13.39)	(0.110)		
99:Q3	7.862***	1.008***	-0.249***	0.107	0.676***	0.742***	1.088***	0.133	-0.192	-0.106	4.154**	-8.944	-0.0523	0.367	33558
	(0.403)	(0.117)	(0.0284)	(0.179)	(0.190)	(0.173)	(0.171)	(0.233)	(0.165)	(0.0781)	(1.854)	(9.041)	(0.105)		
99:Q4	7.689***	1.073***	-0.241***	0.312*	0.827***	0.947***	1.393***	-0.105	-0.214	-0.104	5.004***	16.44	-0.0675	0.393	30170
	(0.395)	(0.110)	(0.0275)	(0.182)	(0.194)	(0.174)	(0.170)	(0.129)	(0.165)	(0.0680)	(1.624)	(17.69)	(0.0819)		
00:Q1	8.928***	1.054***	-0.241***	0.217	0.805***	0.886***	1.354***	-0.105	-0.269	-0.288***	1.824	-40.75**	-0.112	0.388	30338
	(0.473)	(0.100)	(0.0306)	(0.192)	(0.196)	(0.180)	(0.189)	(0.126)	(0.182)	(0.0805)	(1.938)	(17.65)	(0.103)		
00:Q2	7.821***	0.926***	-0.200***	0.492***	0.946***	1.032***	1.593***	-0.0680	-0.000849	-0.0963	6.510***	9.042	-0.223***	0.351	30236
	(0.366)	(0.0867)	(0.0200)	(0.176)	(0.201)	(0.184)	(0.168)	(0.138)	(0.134)	(0.0965)	(2.371)	(26.36)	(0.0676)		
00:Q3	8.391***	1.147***	-0.210***	0.278	0.909***	0.927***	1.464***	-0.0796	-0.131	-0.0124	5.746**	32.27*	-0.0498	0.383	25830
	(0.399)	(0.116)	(0.0294)	(0.175)	(0.195)	(0.168)	(0.153)	(0.116)	(0.158)	(0.0725)	(2.297)	(16.64)	(0.123)		
00:Q4	8.383***	1.111***	-0.214***	0.482***	0.783***	0.877***	1.376***	-0.0267	-0.128	0.0220	6.349***	13.83	-0.0556	0.368	29342
	(0.343)	(0.107)	(0.0320)	(0.170)	(0.169)	(0.131)	(0.136)	(0.151)	(0.150)	(0.0646)	(2.019)	(27.17)	(0.130)		
01:Q1	7.594***	0.910***	-0.238***	0.610***	0.850***	1.020***	1.438***	-0.0115	-0.147	0.0181	5.485**	39.68***	-0.108	0.338	31433
	(0.394)	(0.125)	(0.0353)	(0.164)	(0.174)	(0.114)	(0.126)	(0.130)	(0.174)	(0.0589)	(2.202)	(14.46)	(0.117)		

	Intercept	PRIME	LOAN-SIZE	RATE2	RATE3	RATE4	RATE5	NON-COMMIT	SECURE	BAD-LOAN	CAPITAL	ROA	UN-COMMIT	Adj-R^2	N
01:Q2	6.907***	0.762***	-0.271***	0.258	0.493**	0.634***	1.007***	0.166	-0.148	0.172***	6.869**	17.39	-0.0979	0.307	31018
	(0.418)	(0.174)	(0.0339)	(0.215)	(0.240)	(0.196)	(0.214)	(0.181)	(0.151)	(0.0486)	(2.894)	(32.16)	(0.145)		
01:Q3	6.000***	0.761***	-0.259***	0.289	0.637***	0.829***	1.210***	0.168	-0.211	0.117	7.532***	3.226	-0.167	0.324	32375
	(0.420)	(0.174)	(0.0324)	(0.205)	(0.219)	(0.160)	(0.165)	(0.215)	(0.159)	(0.0813)	(2.023)	(41.46)	(0.104)		
01:Q4	4.456***	0.338	-0.252***	0.277	0.790***	0.948***	1.395***	0.168	-0.165	0.241***	5.327***	51.05**	-0.182*	0.218	30857
	(0.361)	(0.218)	(0.0293)	(0.177)	(0.201)	(0.169)	(0.174)	(0.243)	(0.131)	(0.0714)	(1.590)	(22.59)	(0.108)		
02:Q1	4.732***	0.552**	-0.254***	0.243	0.513*	0.624***	1.068***	0.178	-0.261*	0.0387	4.046	10.09	-0.246*	0.221	31289
	(0.553)	(0.253)	(0.0310)	(0.212)	(0.290)	(0.213)	(0.225)	(0.214)	(0.143)	(0.0854)	(3.201)	(19.46)	(0.127)		
02:Q2	4.340***	0.287	-0.256***	0.157	0.746***	0.797***	1.226***	0.383	-0.375***	0.101	11.83***	-63.35	-0.134	0.212	31317
	(0.415)	(0.257)	(0.0306)	(0.208)	(0.273)	(0.180)	(0.196)	(0.343)	(0.142)	(0.0780)	(2.596)	(38.88)	(0.102)		
02:Q3	4.820***	0.465**	-0.264***	-0.139	0.464	0.498*	1.039***	0.237	-0.234*	0.152*	8.166***	-95.91**	-0.0860	0.243	29817
	(0.472)	(0.195)	(0.0261)	(0.282)	(0.301)	(0.262)	(0.270)	(0.229)	(0.124)	(0.0872)	(1.955)	(41.91)	(0.0854)		
02:Q4	5.248***	0.0832	-0.267***	-0.487*	0.112	0.183	0.857***	0.322	-0.117	-0.0123	7.315***	-14.63	-0.0476	0.207	26305
	(0.401)	(0.191)	(0.0302)	(0.250)	(0.264)	(0.199)	(0.203)	(0.197)	(0.131)	(0.119)	(2.003)	(21.53)	(0.133)		
03:Q1	4.664***	0.179	-0.265***	-0.277	0.301	0.227	0.903***	0.240	-0.211**	-0.00397	9.664***	-45.83	-0.182	0.201	29343
	(0.489)	(0.164)	(0.0298)	(0.301)	(0.360)	(0.284)	(0.290)	(0.246)	(0.0968)	(0.0682)	(2.392)	(35.41)	(0.120)		
03:Q2	3.704***	0.551***	-0.250***	0.268*	0.766***	0.717***	1.367***	0.210	-0.288**	0.0882	8.587***	-12.87	-0.201	0.232	22043
	(0.425)	(0.200)	(0.0366)	(0.159)	(0.139)	(0.121)	(0.133)	(0.212)	(0.128)	(0.0936)	(2.931)	(54.55)	(0.138)		
03:Q3	3.813***	0.577***	-0.245***	0.361**	0.770***	0.610***	1.236***	0.213	-0.305***	-0.0639	8.293***	-47.50	-0.181	0.222	25277
	(0.445)	(0.165)	(0.0304)	(0.147)	(0.198)	(0.125)	(0.146)	(0.260)	(0.0983)	(0.116)	(2.815)	(57.08)	(0.120)		
03:Q4	3.434***	0.426**	-0.237***	0.395**	0.814***	0.686***	1.307***	0.335	-0.129	0.0328	8.622***	-2.050	-0.108	0.212	27176
	(0.439)	(0.193)	(0.0332)	(0.155)	(0.219)	(0.148)	(0.182)	(0.263)	(0.112)	(0.112)	(2.534)	(36.52)	(0.123)		
04:Q1	3.501***	0.610***	-0.233***	0.166	0.694***	0.570***	1.170***	0.111	-0.161	0.0625	9.446***	-44.86	-0.0415	0.218	27973
	(0.432)	(0.187)	(0.0351)	(0.172)	(0.208)	(0.184)	(0.199)	(0.263)	(0.138)	(0.0599)	(2.539)	(41.34)	(0.145)		
04:Q2	2.967***	0.420*	-0.191***	0.256	0.703***	0.577***	1.179***	0.279	0.0387	0.122	6.449**	17.59	-0.432***	0.218	26427
	(0.394)	(0.216)	(0.0191)	(0.183)	(0.213)	(0.173)	(0.204)	(0.276)	(0.106)	(0.0983)	(2.636)	(56.31)	(0.131)		
04:Q3	3.043***	0.606***	-0.165***	0.343**	0.652***	0.579***	1.077***	0.158	0.0154	0.0538	6.606***	18.25	-0.515***	0.242	24659
	(0.379)	(0.169)	(0.0184)	(0.157)	(0.204)	(0.150)	(0.204)	(0.242)	(0.0833)	(0.105)	(2.366)	(42.38)	(0.121)		
04:Q4	3.939***	0.746***	-0.141***	0.202**	0.450***	0.500***	0.853***	0.201	-0.0886	0.0640	-1.924	56.05***	-0.838***	0.296	30813
	(0.281)	(0.156)	(0.0265)	(0.101)	(0.163)	(0.0787)	(0.171)	(0.223)	(0.0973)	(0.0699)	(1.932)	(13.50)	(0.120)		
05:Q1	4.342***	0.734***	-0.168***	0.666***	1.016***	1.058***	1.137***	0.167	-0.154	0.151***	-1.426	9.469	-0.712***	0.298	25709
	(0.279)	(0.225)	(0.0222)	(0.113)	(0.150)	(0.118)	(0.192)	(0.229)	(0.103)	(0.0564)	(1.865)	(35.09)	(0.120)		

	Intercept	PRIME	LOAN-SIZE	RATE2	RATE3	RATE4	RATE5	NON-COMMIT	SECURE	BAD-LOAN	CAPITAL	ROA	UN-COMMIT	Adj-R^2	N
05:Q2	4.591***	0.899***	-0.160***	0.376***	0.862***	0.927***	1.031***	0.246	-0.0652	0.134**	-0.911	32.19	-0.706***	0.332	28384
	(0.272)	(0.187)	(0.0245)	(0.0946)	(0.112)	(0.0989)	(0.169)	(0.165)	(0.0993)	(0.0510)	(2.007)	(34.89)	(0.104)		
05:Q3	4.693***	0.817***	-0.172***	0.401***	0.936***	0.946***	1.231***	0.178	-0.0462	0.0939	3.872*	-3.158	-0.676***	0.320	25930
	(0.308)	(0.188)	(0.0263)	(0.130)	(0.131)	(0.118)	(0.158)	(0.177)	(0.116)	(0.0618)	(2.291)	(23.12)	(0.121)		
05:Q4	5.311***	1.080***	-0.162***	0.386***	0.901***	0.959***	1.280***	0.142	-0.0431	0.0762	1.552	17.56	-0.668***	0.361	20188
	(0.248)	(0.225)	(0.0293)	(0.114)	(0.149)	(0.0895)	(0.114)	(0.190)	(0.111)	(0.0570)	(1.911)	(15.81)	(0.108)		
06:Q1	6.111***	1.001***	-0.171***	0.465***	0.917***	1.008***	1.293***	0.195	-0.140	0.0290	0.620	33.42	-0.550***	0.351	26753
	(0.291)	(0.179)	(0.0254)	(0.120)	(0.116)	(0.130)	(0.151)	(0.150)	(0.0927)	(0.0337)	(1.829)	(30.87)	(0.0901)		
06:Q2	6.978***	1.019***	-0.172***	0.343	0.870***	0.919***	1.182***	0.0826	-0.0284	0.0147	1.044	-72.96	-0.133	0.312	29721
	(0.386)	(0.159)	(0.0261)	(0.226)	(0.210)	(0.192)	(0.208)	(0.112)	(0.0702)	(0.0385)	(1.932)	(53.67)	(0.103)		
06:Q3	7.480***	1.059***	-0.180***	0.148	0.753***	0.737***	1.004***	0.126	-0.0347	0.0331	1.901	-70.69	-0.0959	0.299	31903
	(0.329)	(0.241)	(0.0331)	(0.137)	(0.119)	(0.0984)	(0.108)	(0.167)	(0.0589)	(0.0521)	(1.348)	(60.76)	(0.127)		
06:Q4	7.476***	1.068***	-0.190***	0.0980	0.647**	0.692***	0.957***	0.105	-0.162*	0.0638	2.370*	-33.93	-0.0805	0.307	27194
	(0.431)	(0.223)	(0.0322)	(0.238)	(0.251)	(0.235)	(0.246)	(0.189)	(0.0864)	(0.0551)	(1.242)	(55.65)	(0.0973)		
07:Q1	7.196***	0.967***	-0.187***	0.234	0.689***	0.752***	0.962***	0.282***	-0.120	0.0230	2.534	-14.52	-0.395***	0.330	27730
	(0.309)	(0.199)	(0.0328)	(0.184)	(0.206)	(0.182)	(0.207)	(0.104)	(0.106)	(0.0347)	(1.657)	(26.37)	(0.0674)		
07:Q2	7.352***	0.859***	-0.183***	0.176	0.607**	0.590***	0.812***	0.249**	-0.113	0.0437	1.305	3.032	-0.431***	0.293	27287
	(0.472)	(0.210)	(0.0318)	(0.226)	(0.244)	(0.208)	(0.242)	(0.116)	(0.110)	(0.0431)	(1.715)	(43.53)	(0.0842)		
07:Q3	7.235***	0.938***	-0.178***	0.415***	0.803***	0.802***	1.005***	0.216	-0.0470	0.0371	0.977	-44.63	-0.366***	0.326	26244
	(0.306)	(0.155)	(0.0263)	(0.127)	(0.143)	(0.121)	(0.141)	(0.149)	(0.0855)	(0.0452)	(1.564)	(50.03)	(0.0828)		
07:Q4	6.720***	0.827***	-0.174***	0.216	0.584***	0.577***	0.770***	0.344***	-0.205**	0.0591*	1.218	-36.72*	-0.437***	0.324	26905
	(0.314)	(0.144)	(0.0262)	(0.138)	(0.159)	(0.144)	(0.168)	(0.117)	(0.0834)	(0.0323)	(1.324)	(19.35)	(0.0755)		
08:Q1	5.541***	0.610***	-0.192***	-0.0787	0.310	0.364*	0.655***	0.319**	-0.273***	0.121***	-1.635	31.33***	-0.774***	0.306	29715
	(0.389)	(0.157)	(0.0262)	(0.207)	(0.229)	(0.214)	(0.221)	(0.143)	(0.0710)	(0.0364)	(1.752)	(8.869)	(0.103)		
08:Q2	4.602***	0.333***	-0.171***	0.166*	0.492***	0.482***	0.864***	0.309**	-0.228***	0.104*	0.291	-19.13	-0.628***	0.243	29619
	(0.256)	(0.106)	(0.0229)	(0.0941)	(0.108)	(0.0969)	(0.0901)	(0.151)	(0.0567)	(0.0563)	(1.658)	(28.94)	(0.0886)		
08:Q3	4.400***	0.528***	-0.158***	0.0126	0.377**	0.420***	0.821***	0.390**	-0.270***	0.108*	0.265	6.745	-0.615***	0.269	27225
	(0.321)	(0.121)	(0.0240)	(0.132)	(0.175)	(0.138)	(0.160)	(0.163)	(0.0617)	(0.0589)	(1.563)	(14.33)	(0.0994)		
08:Q4	4.164***	-0.243	-0.166***	0.0202	0.373**	0.382**	0.780***	-0.0434	-0.170**	0.0658	7.227***	-9.962	-0.0386	0.115	28455
	(0.434)	(0.174)	(0.0233)	(0.155)	(0.159)	(0.153)	(0.196)	(0.120)	(0.0715)	(0.0647)	(2.471)	(13.04)	(0.145)		
09:Q1	2.579***	0.943***	-0.130***	-0.109	0.328*	0.306*	0.776***	0.0425	-0.182**	0.0302	4.254	-14.13	-0.155	0.193	25360
	(0.457)	(0.186)	(0.0294)	(0.159)	(0.180)	(0.173)	(0.207)	(0.169)	(0.0769)	(0.0981)	(2.801)	(9.004)	(0.110)		

	Intercept	PRIME	LOAN-SIZE	RATE2	RATE3	RATE4	RATE5	NON-COMMIT	SECURE	BAD-LOAN	CAPITAL	ROA	UN-COMMIT	Adj-R^2	N
09:Q2	2.433***	0.876***	-0.116***	-0.327**	0.206	0.277*	0.899***	0.0914	-0.142*	0.163*	4.845	4.833	-0.171	0.199	25547
	(0.462)	(0.140)	(0.0269)	(0.144)	(0.140)	(0.154)	(0.174)	(0.117)	(0.0835)	(0.0831)	(3.434)	(4.538)	(0.129)		
09:Q3	2.363***	1.045***	-0.114***	-0.311**	0.274*	0.326**	0.907***	-0.0870	-0.0538	0.210**	3.641	-12.84	-0.165	0.225	22936
	(0.559)	(0.153)	(0.0308)	(0.139)	(0.149)	(0.153)	(0.186)	(0.179)	(0.0927)	(0.103)	(3.942)	(21.02)	(0.113)		
09:Q4	2.433***	1.006***	-0.100***	-0.182	0.490***	0.543***	1.160***	-0.150	-0.117	0.168	1.012	-16.73	-0.425**	0.259	22184
	(0.722)	(0.158)	(0.0346)	(0.164)	(0.159)	(0.184)	(0.222)	(0.185)	(0.0969)	(0.116)	(3.859)	(10.42)	(0.163)		
10:Q1	2.270***	0.948***	-0.105***	-0.0903	0.587***	0.645***	1.415***	-0.0776	-0.0761	0.202***	0.428	-22.29	-0.504***	0.273	26426
	(0.545)	(0.150)	(0.0376)	(0.160)	(0.137)	(0.158)	(0.182)	(0.221)	(0.0873)	(0.0762)	(2.452)	(14.11)	(0.179)		
10:Q2	2.270***	0.934***	-0.0872**	-0.186	0.494***	0.578***	1.313***	-0.0934	0.103	0.181**	0.921	-87.39**	-0.494***	0.284	28165
	(0.484)	(0.137)	(0.0347)	(0.181)	(0.160)	(0.138)	(0.181)	(0.207)	(0.103)	(0.0746)	(2.103)	(34.31)	(0.153)		
10:Q3	2.434***	0.875***	-0.0880**	-0.132	0.525***	0.645***	1.362***	-0.0925	0.0490	0.190***	0.818	-120.4***	-0.465***	0.309	26948
	(0.477)	(0.141)	(0.0390)	(0.172)	(0.163)	(0.156)	(0.192)	(0.181)	(0.0801)	(0.0620)	(2.037)	(32.39)	(0.149)		
10:Q4	2.515***	1.016***	-0.0760**	-0.0365	0.608***	0.734***	1.557***	-0.262	0.0914	0.141**	-1.873	-76.36**	-0.513***	0.325	26695
	(0.444)	(0.128)	(0.0377)	(0.173)	(0.165)	(0.167)	(0.181)	(0.182)	(0.0730)	(0.0578)	(2.213)	(38.40)	(0.149)		
11:Q1	2.422***	0.842***	-0.0946**	-0.140	0.724***	0.777***	1.563***	0.326	0.0704	0.202**	-1.409	-59.49***	-0.497***	0.289	29644
	(0.522)	(0.141)	(0.0467)	(0.190)	(0.227)	(0.145)	(0.157)	(0.434)	(0.112)	(0.0959)	(2.264)	(19.89)	(0.180)		
11:Q2	2.854***	1.110***	-0.101***	-0.0816	0.544***	0.686***	1.370***	-0.127	-0.00494	0.100	-2.281	-120.2**	-0.576***	0.371	29878
	(0.456)	(0.134)	(0.0346)	(0.170)	(0.150)	(0.142)	(0.173)	(0.179)	(0.0835)	(0.0622)	(2.076)	(57.59)	(0.115)		
11:Q3	3.218***	1.077***	-0.113***	-0.0338	0.560***	0.775***	1.524***	-0.0712	-0.0261	0.0530	-1.836	-214.9***	-0.560***	0.385	28651
	(0.413)	(0.136)	(0.0361)	(0.150)	(0.135)	(0.0928)	(0.134)	(0.157)	(0.0955)	(0.0583)	(1.771)	(58.62)	(0.106)		

***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 5: Cross section regressions of loan rate on loan characteristics and bank characteristics (with BAD Non-C&I Loans)
(robust standard errors in parentheses)

	Intercept	PRIME	LOAN-SIZE	RATE2	RATE3	RATE4	RATE5	NON-COMMIT	SECURE	BADLN (nonC&I)	CAPITAL	ROA	UN-COMMIT	Adj-R^2	N
97:Q2	7.957*** (0.254)	1.168*** (0.0969)	-0.232*** (0.0197)	0.207 (0.140)	0.499*** (0.129)	0.605*** (0.121)	1.135*** (0.138)	0.225** (0.113)	0.0333 (0.0656)	0.00305 (0.0658)	0.274 (1.402)	76.79** (33.82)	-0.244*** (0.0540)	0.430	22300
97:Q3	7.898*** (0.212)	1.202*** (0.0870)	-0.221*** (0.0173)	0.249** (0.110)	0.613*** (0.0865)	0.767*** (0.0833)	1.255*** (0.0948)	0.206 (0.130)	0.139** (0.0596)	0.00430 (0.0828)	-1.315 (1.341)	19.22 (30.52)	-0.265*** (0.0552)	0.472	25677
97:Q4	7.885*** (0.189)	1.191*** (0.0854)	-0.220*** (0.0165)	0.234** (0.107)	0.647*** (0.0941)	0.841*** (0.0978)	1.273*** (0.108)	0.164 (0.122)	0.0792 (0.0611)	0.0642 (0.0812)	-0.202 (1.225)	-11.85 (31.70)	-0.297*** (0.0615)	0.474	26404
98:Q1	8.460*** (0.338)	1.209*** (0.0772)	-0.262*** (0.0293)	-0.0545 (0.169)	0.440** (0.170)	0.582*** (0.188)	1.059*** (0.173)	0.205* (0.118)	-0.0959 (0.145)	0.123 (0.116)	-0.330 (1.615)	-12.10 (31.33)	-0.232*** (0.0878)	0.441	31509
98:Q2	8.264*** (0.350)	1.044*** (0.121)	-0.281*** (0.0289)	0.242 (0.152)	0.764*** (0.165)	0.823*** (0.147)	1.257*** (0.150)	0.136 (0.121)	0.0225 (0.131)	-0.0334 (0.0820)	3.422* (1.992)	-49.82*** (9.904)	-0.132 (0.119)	0.453	31309
98:Q3	8.601*** (0.379)	1.160*** (0.0974)	-0.291*** (0.0320)	0.0298 (0.170)	0.585*** (0.176)	0.767*** (0.173)	1.122*** (0.163)	0.355 (0.225)	-0.177 (0.165)	-0.178 (0.119)	0.487 (1.910)	52.13*** (17.18)	-0.0557 (0.0998)	0.428	32287
98:Q4	8.489*** (0.367)	1.038*** (0.0962)	-0.292*** (0.0343)	-0.210 (0.216)	0.416* (0.237)	0.487** (0.221)	1.357*** (0.453)	0.384 (0.248)	-0.211 (0.164)	-0.00345 (0.103)	3.035 (1.952)	-80.00*** (22.89)	-0.0935 (0.105)	0.412	31379
99:Q1	7.466*** (0.292)	0.845*** (0.130)	-0.284*** (0.0277)	0.325*** (0.124)	0.944*** (0.172)	0.990*** (0.123)	1.337*** (0.133)	0.520** (0.253)	-0.117 (0.139)	-0.0954 (0.0691)	4.771*** (1.795)	-14.52 (11.74)	-0.104 (0.113)	0.388	34577
99:Q2	7.599*** (0.387)	0.837*** (0.164)	-0.261*** (0.0288)	0.119 (0.171)	0.759*** (0.185)	0.892*** (0.188)	1.179*** (0.166)	0.446 (0.286)	-0.128 (0.185)	-0.146 (0.0915)	3.747* (2.072)	12.39 (13.66)	-0.0933 (0.115)	0.301	33204
99:Q3	7.872*** (0.391)	0.993*** (0.117)	-0.253*** (0.0283)	0.108 (0.181)	0.673*** (0.192)	0.739*** (0.177)	1.083*** (0.174)	0.150 (0.233)	-0.195 (0.165)	-0.162 (0.105)	4.359** (1.768)	-9.821 (8.685)	-0.0597 (0.108)	0.368	33558
99:Q4	7.681*** (0.386)	1.064*** (0.110)	-0.245*** (0.0278)	0.313* (0.182)	0.828*** (0.194)	0.947*** (0.175)	1.392*** (0.170)	-0.0985 (0.125)	-0.215 (0.164)	-0.147 (0.0990)	5.168*** (1.556)	15.26 (18.26)	-0.0791 (0.0873)	0.394	30170
00:Q1	8.727*** (0.467)	1.064*** (0.104)	-0.247*** (0.0315)	0.230 (0.194)	0.822*** (0.197)	0.885*** (0.184)	1.364*** (0.188)	-0.0889 (0.118)	-0.288 (0.184)	-0.277*** (0.0901)	2.879 (1.911)	-45.03** (17.58)	-0.124 (0.111)	0.384	30338
00:Q2	7.740*** (0.327)	0.925*** (0.0875)	-0.201*** (0.0205)	0.499*** (0.179)	0.949*** (0.204)	1.031*** (0.186)	1.589*** (0.170)	-0.0568 (0.138)	-0.00715 (0.138)	-0.0780 (0.109)	6.962*** (2.255)	5.790 (27.26)	-0.225*** (0.0718)	0.350	30236
00:Q3	8.411*** (0.393)	1.143*** (0.115)	-0.210*** (0.0295)	0.282 (0.175)	0.912*** (0.195)	0.932*** (0.168)	1.468*** (0.155)	-0.0782 (0.115)	-0.129 (0.158)	-0.0408 (0.0953)	5.675** (2.280)	31.63* (16.74)	-0.0574 (0.124)	0.383	25830
00:Q4	8.412*** (0.344)	1.112*** (0.106)	-0.213*** (0.0319)	0.485*** (0.171)	0.784*** (0.170)	0.882*** (0.130)	1.380*** (0.137)	-0.0301 (0.152)	-0.127 (0.150)	0.00881 (0.0901)	6.194*** (2.015)	13.92 (27.14)	-0.0578 (0.131)	0.368	29342
01:Q1	7.614*** (0.397)	0.909*** (0.125)	-0.238*** (0.0354)	0.612*** (0.165)	0.850*** (0.174)	1.022*** (0.114)	1.440*** (0.126)	-0.0131 (0.129)	-0.147 (0.174)	0.00823 (0.0893)	5.400** (2.271)	40.31** (15.77)	-0.110 (0.118)	0.338	31433

	Intercept	PRIME	LOAN-SIZE	RATE2	RATE3	RATE4	RATE5	NON-COMMIT	SECURE	BADLN (nonC&I)	CAPITAL	ROA	UN-COMMIT	Adj-R^2	N
01:Q2	7.010***	0.765***	-0.269***	0.272	0.497**	0.643***	1.011***	0.155	-0.144	0.169***	6.819**	11.36	-0.0631	0.307	31018
	(0.413)	(0.174)	(0.0337)	(0.219)	(0.243)	(0.197)	(0.219)	(0.182)	(0.152)	(0.0434)	(2.965)	(30.17)	(0.144)		
01:Q3	6.058***	0.764***	-0.257***	0.305	0.643***	0.841***	1.221***	0.159	-0.212	0.117	7.474***	1.600	-0.145	0.324	32375
	(0.395)	(0.174)	(0.0330)	(0.213)	(0.218)	(0.157)	(0.162)	(0.216)	(0.160)	(0.0834)	(1.997)	(40.33)	(0.101)		
01:Q4	4.549***	0.348	-0.248***	0.311*	0.800***	0.949***	1.405***	0.166	-0.180	0.256***	5.459***	53.53**	-0.114	0.220	30857
	(0.341)	(0.217)	(0.0298)	(0.178)	(0.198)	(0.165)	(0.171)	(0.244)	(0.131)	(0.0623)	(1.622)	(23.14)	(0.107)		
02:Q1	4.765***	0.553**	-0.254***	0.257	0.511*	0.624***	1.069***	0.175	-0.262*	0.0203	4.092	10.12	-0.245**	0.220	31289
	(0.533)	(0.252)	(0.0312)	(0.220)	(0.290)	(0.213)	(0.225)	(0.214)	(0.140)	(0.0847)	(3.222)	(19.25)	(0.123)		
02:Q2	4.365***	0.289	-0.255***	0.164	0.756***	0.805***	1.227***	0.381	-0.391***	0.114	11.89***	-59.49	-0.104	0.212	31317
	(0.422)	(0.257)	(0.0310)	(0.207)	(0.273)	(0.178)	(0.194)	(0.349)	(0.139)	(0.103)	(2.631)	(39.22)	(0.109)		
02:Q3	4.978***	0.467**	-0.265***	-0.135	0.453	0.495*	1.026***	0.226	-0.254**	0.101	8.418***	-104.4**	-0.0694	0.241	29817
	(0.482)	(0.196)	(0.0274)	(0.289)	(0.307)	(0.268)	(0.277)	(0.230)	(0.125)	(0.107)	(2.105)	(45.59)	(0.0999)		
02:Q4	5.202***	0.0849	-0.267***	-0.494**	0.116	0.181	0.858***	0.326	-0.118	0.0246	7.473***	-16.03	-0.0323	0.207	26305
	(0.411)	(0.192)	(0.0304)	(0.245)	(0.263)	(0.200)	(0.203)	(0.199)	(0.132)	(0.140)	(2.108)	(22.46)	(0.139)		
03:Q1	4.704***	0.178	-0.266***	-0.274	0.295	0.227	0.900***	0.235	-0.208**	-0.0377	9.434***	-44.21	-0.201	0.201	29343
	(0.494)	(0.165)	(0.0295)	(0.302)	(0.359)	(0.284)	(0.289)	(0.248)	(0.0966)	(0.0971)	(2.489)	(35.71)	(0.132)		
03:Q2	3.764***	0.550***	-0.250***	0.282*	0.764***	0.725***	1.370***	0.201	-0.293**	0.0494	8.479***	-6.318	-0.201	0.231	22043
	(0.438)	(0.200)	(0.0368)	(0.158)	(0.137)	(0.118)	(0.131)	(0.216)	(0.127)	(0.0962)	(3.019)	(53.66)	(0.143)		
03:Q3	3.827***	0.577***	-0.247***	0.363**	0.773***	0.611***	1.240***	0.218	-0.296***	-0.0951	7.972***	-46.68	-0.207	0.223	25277
	(0.439)	(0.165)	(0.0303)	(0.148)	(0.199)	(0.128)	(0.147)	(0.258)	(0.0967)	(0.138)	(2.703)	(56.01)	(0.126)		
03:Q4	3.451***	0.426**	-0.237***	0.397**	0.813***	0.686***	1.305***	0.331	-0.131	0.0249	8.662***	-2.053	-0.106	0.212	27176
	(0.415)	(0.193)	(0.0332)	(0.156)	(0.218)	(0.147)	(0.179)	(0.263)	(0.108)	(0.115)	(2.515)	(36.61)	(0.127)		
04:Q1	3.503***	0.605***	-0.232***	0.171	0.697***	0.573***	1.171***	0.107	-0.167	0.0751	9.703***	-46.83	-0.0258	0.218	27973
	(0.423)	(0.188)	(0.0355)	(0.173)	(0.208)	(0.184)	(0.199)	(0.266)	(0.135)	(0.0597)	(2.568)	(40.98)	(0.143)		
04:Q2	3.033***	0.421*	-0.191***	0.272	0.705***	0.578***	1.172***	0.267	0.0397	0.0971	6.581**	13.35	-0.417***	0.217	26427
	(0.376)	(0.217)	(0.0189)	(0.182)	(0.214)	(0.171)	(0.205)	(0.275)	(0.108)	(0.0938)	(2.715)	(58.32)	(0.147)		
04:Q3	3.140***	0.606***	-0.166***	0.347**	0.646***	0.577***	1.070***	0.154	0.0149	-0.0127	6.458***	13.29	-0.525***	0.242	24659
	(0.349)	(0.169)	(0.0181)	(0.156)	(0.204)	(0.149)	(0.204)	(0.240)	(0.0858)	(0.115)	(2.422)	(41.42)	(0.127)		
04:Q4	4.047***	0.747***	-0.141***	0.156	0.406**	0.454***	0.806***	0.194	-0.0934	0.00392	-1.882	55.35***	-0.845***	0.296	30813
	(0.246)	(0.154)	(0.0262)	(0.102)	(0.174)	(0.0861)	(0.175)	(0.223)	(0.0975)	(0.0791)	(1.940)	(13.73)	(0.125)		
05:Q1	4.377***	0.730***	-0.167***	0.660***	1.016***	1.059***	1.137***	0.162	-0.154	0.140***	-1.051	4.286	-0.687***	0.297	25709
	(0.266)	(0.225)	(0.0223)	(0.113)	(0.150)	(0.118)	(0.192)	(0.232)	(0.103)	(0.0522)	(1.900)	(34.81)	(0.121)		

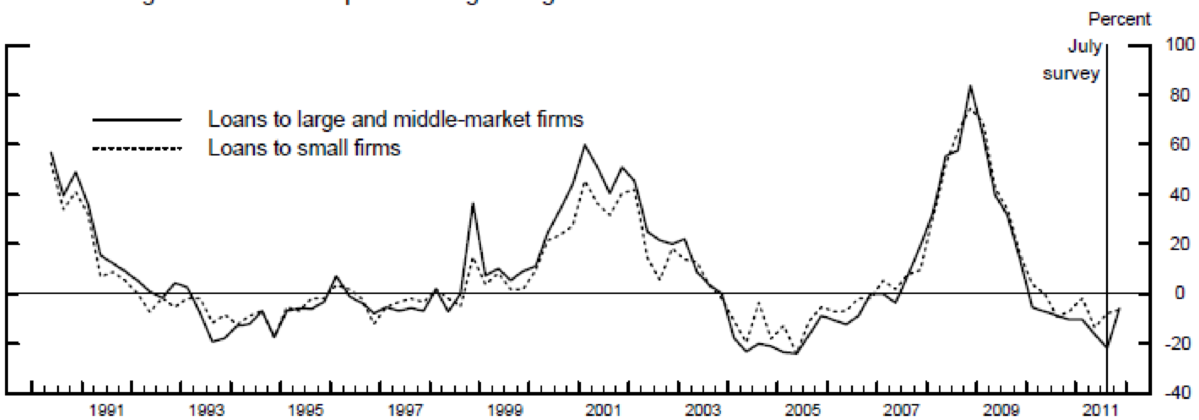
	Intercept	PRIME	LOAN-SIZE	RATE2	RATE3	RATE4	RATE5	NON-COMMIT	SECURE	BADLN (nonC&I)	CAPITAL	ROA	UN-COMMIT	Adj-R^2	N
05:Q2	4.633***	0.901***	-0.159***	0.377***	0.863***	0.927***	1.029***	0.242	-0.0647	0.131**	-0.757	26.38	-0.683***	0.331	28384
	(0.264)	(0.186)	(0.0244)	(0.0946)	(0.112)	(0.0993)	(0.170)	(0.167)	(0.0992)	(0.0516)	(2.032)	(34.23)	(0.105)		
05:Q3	4.710***	0.816***	-0.172***	0.404***	0.938***	0.947***	1.231***	0.177	-0.0453	0.0889	4.107*	-7.108	-0.660***	0.320	25930
	(0.302)	(0.188)	(0.0262)	(0.130)	(0.131)	(0.118)	(0.159)	(0.177)	(0.116)	(0.0644)	(2.323)	(23.65)	(0.121)		
05:Q4	5.327***	1.080***	-0.161***	0.384***	0.899***	0.957***	1.278***	0.138	-0.0437	0.0718	1.664	16.75	-0.657***	0.361	20188
	(0.241)	(0.225)	(0.0291)	(0.113)	(0.149)	(0.0895)	(0.114)	(0.189)	(0.111)	(0.0607)	(1.911)	(16.05)	(0.108)		
06:Q1	6.124***	1.002***	-0.171***	0.464***	0.916***	1.008***	1.292***	0.193	-0.141	0.0241	0.623	33.36	-0.545***	0.350	26753
	(0.290)	(0.179)	(0.0252)	(0.120)	(0.116)	(0.130)	(0.150)	(0.149)	(0.0924)	(0.0349)	(1.831)	(31.28)	(0.0909)		
06:Q2	6.981***	1.018***	-0.171***	0.344	0.870***	0.919***	1.183***	0.0824	-0.0295	0.0164	1.047	-73.15	-0.132	0.312	29721
	(0.386)	(0.160)	(0.0259)	(0.225)	(0.211)	(0.192)	(0.208)	(0.112)	(0.0702)	(0.0400)	(1.934)	(53.64)	(0.103)		
06:Q3	7.490***	1.058***	-0.179***	0.148	0.752***	0.737***	1.003***	0.124	-0.0354	0.0323	1.906	-71.16	-0.0940	0.299	31903
	(0.333)	(0.243)	(0.0329)	(0.136)	(0.119)	(0.0987)	(0.109)	(0.167)	(0.0584)	(0.0532)	(1.351)	(60.85)	(0.127)		
06:Q4	7.487***	1.063***	-0.190***	0.0982	0.642**	0.692***	0.956***	0.107	-0.165*	0.0747	2.410*	-36.49	-0.0784	0.308	27194
	(0.433)	(0.224)	(0.0323)	(0.238)	(0.251)	(0.235)	(0.246)	(0.189)	(0.0875)	(0.0544)	(1.260)	(55.71)	(0.0961)		
07:Q1	7.201***	0.966***	-0.187***	0.235	0.689***	0.752***	0.962***	0.283***	-0.121	0.0243	2.535	-14.89	-0.393***	0.330	27730
	(0.308)	(0.200)	(0.0327)	(0.183)	(0.206)	(0.182)	(0.207)	(0.104)	(0.106)	(0.0344)	(1.654)	(26.45)	(0.0660)		
07:Q2	7.367***	0.856***	-0.183***	0.178	0.605**	0.590***	0.813***	0.249**	-0.116	0.0502	1.307	0.324	-0.427***	0.293	27287
	(0.470)	(0.211)	(0.0318)	(0.224)	(0.244)	(0.208)	(0.241)	(0.116)	(0.110)	(0.0439)	(1.717)	(44.36)	(0.0819)		
07:Q3	7.237***	0.937***	-0.178***	0.416***	0.803***	0.802***	1.004***	0.217	-0.0488	0.0404	1.014	-45.09	-0.364***	0.326	26244
	(0.297)	(0.156)	(0.0261)	(0.127)	(0.143)	(0.121)	(0.141)	(0.149)	(0.0857)	(0.0446)	(1.579)	(49.66)	(0.0815)		
07:Q4	6.730***	0.826***	-0.174***	0.220	0.585***	0.579***	0.770***	0.337***	-0.207**	0.0584*	1.439	-39.58*	-0.424***	0.324	26905
	(0.310)	(0.145)	(0.0261)	(0.138)	(0.159)	(0.145)	(0.168)	(0.118)	(0.0841)	(0.0351)	(1.413)	(20.06)	(0.0755)		
08:Q1	5.563***	0.609***	-0.191***	-0.0824	0.304	0.359*	0.649***	0.312**	-0.276***	0.125***	-1.462	29.75***	-0.754***	0.306	29715
	(0.388)	(0.158)	(0.0263)	(0.208)	(0.230)	(0.215)	(0.222)	(0.143)	(0.0715)	(0.0396)	(1.758)	(8.737)	(0.102)		
08:Q2	4.615***	0.330***	-0.171***	0.162*	0.487***	0.480***	0.858***	0.305**	-0.233***	0.114**	0.321	-19.90	-0.619***	0.244	29619
	(0.246)	(0.106)	(0.0230)	(0.0935)	(0.107)	(0.0971)	(0.0899)	(0.151)	(0.0570)	(0.0538)	(1.616)	(29.01)	(0.0869)		
08:Q3	4.429***	0.527***	-0.157***	0.0101	0.372**	0.418***	0.818***	0.384**	-0.272***	0.108*	0.274	6.937	-0.603***	0.269	27225
	(0.310)	(0.122)	(0.0240)	(0.132)	(0.175)	(0.138)	(0.160)	(0.163)	(0.0629)	(0.0612)	(1.563)	(14.38)	(0.0979)		
08:Q4	4.130***	-0.247	-0.165***	0.0212	0.369**	0.379**	0.779***	-0.0567	-0.176**	0.0908	7.257***	-10.02	-0.0413	0.116	28455
	(0.429)	(0.173)	(0.0237)	(0.154)	(0.159)	(0.152)	(0.196)	(0.128)	(0.0717)	(0.0691)	(2.428)	(13.17)	(0.141)		
09:Q1	2.442***	0.940***	-0.128***	-0.105	0.332*	0.303*	0.781***	0.0397	-0.198**	0.0892	4.505	-12.89	-0.161	0.195	25360
	(0.456)	(0.186)	(0.0298)	(0.159)	(0.179)	(0.171)	(0.208)	(0.174)	(0.0762)	(0.109)	(2.741)	(9.066)	(0.106)		

	Intercept	PRIME	LOAN-SIZE	RATE2	RATE3	RATE4	RATE5	NON-COMMIT	SECURE	BADLN (nonC&I)	CAPITAL	ROA	UN-COMMIT	Adj-R^2	N
09:Q2	2.371*** (0.458)	0.868*** (0.139)	-0.113*** (0.0265)	-0.325** (0.143)	0.207 (0.138)	0.270* (0.154)	0.898*** (0.174)	0.0961 (0.116)	-0.162* (0.0827)	0.219** (0.0879)	4.734 (3.300)	5.333 (4.325)	-0.170 (0.121)	0.205	25547
09:Q3	2.223*** (0.534)	1.035*** (0.151)	-0.110*** (0.0309)	-0.302** (0.137)	0.281* (0.145)	0.323** (0.148)	0.918*** (0.184)	-0.0618 (0.173)	-0.0736 (0.0947)	0.282*** (0.102)	4.009 (3.838)	-10.52 (19.78)	-0.166 (0.106)	0.231	22936
09:Q4	2.267*** (0.662)	0.998*** (0.157)	-0.097*** (0.0347)	-0.173 (0.160)	0.485*** (0.155)	0.535*** (0.179)	1.161*** (0.219)	-0.133 (0.181)	-0.133 (0.105)	0.238** (0.112)	1.608 (3.750)	-14.63 (9.700)	-0.428*** (0.152)	0.262	22184
10:Q1	2.229*** (0.538)	0.944*** (0.149)	-0.102*** (0.0377)	-0.0758 (0.160)	0.588*** (0.135)	0.647*** (0.155)	1.420*** (0.181)	-0.0763 (0.217)	-0.0799 (0.0872)	0.220*** (0.0790)	0.805 (2.437)	-21.65 (14.19)	-0.494*** (0.177)	0.274	26426
10:Q2	2.209*** (0.473)	0.928*** (0.137)	-0.0861** (0.0347)	-0.174 (0.179)	0.497*** (0.157)	0.582*** (0.136)	1.318*** (0.179)	-0.0823 (0.203)	0.103 (0.0995)	0.210*** (0.0750)	1.204 (2.044)	-86.93** (34.30)	-0.486*** (0.150)	0.286	28165
10:Q3	2.422*** (0.473)	0.874*** (0.142)	-0.0865** (0.0391)	-0.123 (0.172)	0.526*** (0.161)	0.646*** (0.154)	1.367*** (0.191)	-0.0889 (0.178)	0.0423 (0.0790)	0.202*** (0.0673)	1.038 (2.000)	-118.1*** (32.18)	-0.454*** (0.150)	0.310	26948
10:Q4	2.499*** (0.437)	1.013*** (0.129)	-0.0752** (0.0378)	-0.0328 (0.172)	0.607*** (0.164)	0.734*** (0.166)	1.556*** (0.180)	-0.258 (0.180)	0.0910 (0.0731)	0.151** (0.0595)	-1.636 (2.158)	-76.27** (38.33)	-0.504*** (0.148)	0.326	26695
11:Q1	2.401*** (0.507)	0.839*** (0.142)	-0.0932** (0.0468)	-0.132 (0.189)	0.722*** (0.226)	0.776*** (0.146)	1.562*** (0.157)	0.330 (0.432)	0.0715 (0.111)	0.217** (0.0931)	-1.191 (2.196)	-59.37*** (19.77)	-0.487*** (0.182)	0.290	29644
11:Q2	2.847*** (0.448)	1.109*** (0.135)	-0.100*** (0.0346)	-0.0777 (0.170)	0.543*** (0.149)	0.685*** (0.142)	1.370*** (0.172)	-0.127 (0.178)	-0.00400 (0.0834)	0.105* (0.0618)	-2.175 (2.042)	-120.6** (57.74)	-0.570*** (0.116)	0.371	29878
11:Q3	3.216*** (0.407)	1.077*** (0.137)	-0.112*** (0.0359)	-0.0330 (0.151)	0.558*** (0.134)	0.772*** (0.0931)	1.523*** (0.135)	-0.0705 (0.157)	-0.0247 (0.0959)	0.0573 (0.0567)	-1.802 (1.742)	-215.7*** (58.78)	-0.557*** (0.107)	0.385	28651

***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Measures of Supply and Demand for Commercial and Industrial Loans, by Size of Firm Seeking Loan

Net Percentage of Domestic Respondents Tightening Standards for Commercial and Industrial Loans



Net Percentage of Domestic Respondents Increasing Spreads of Loan Rates over Banks' Cost of Funds

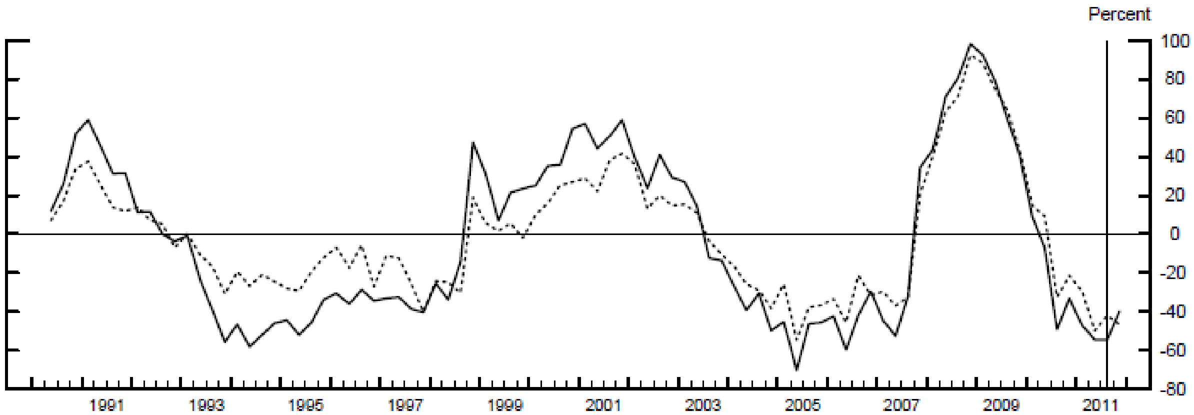
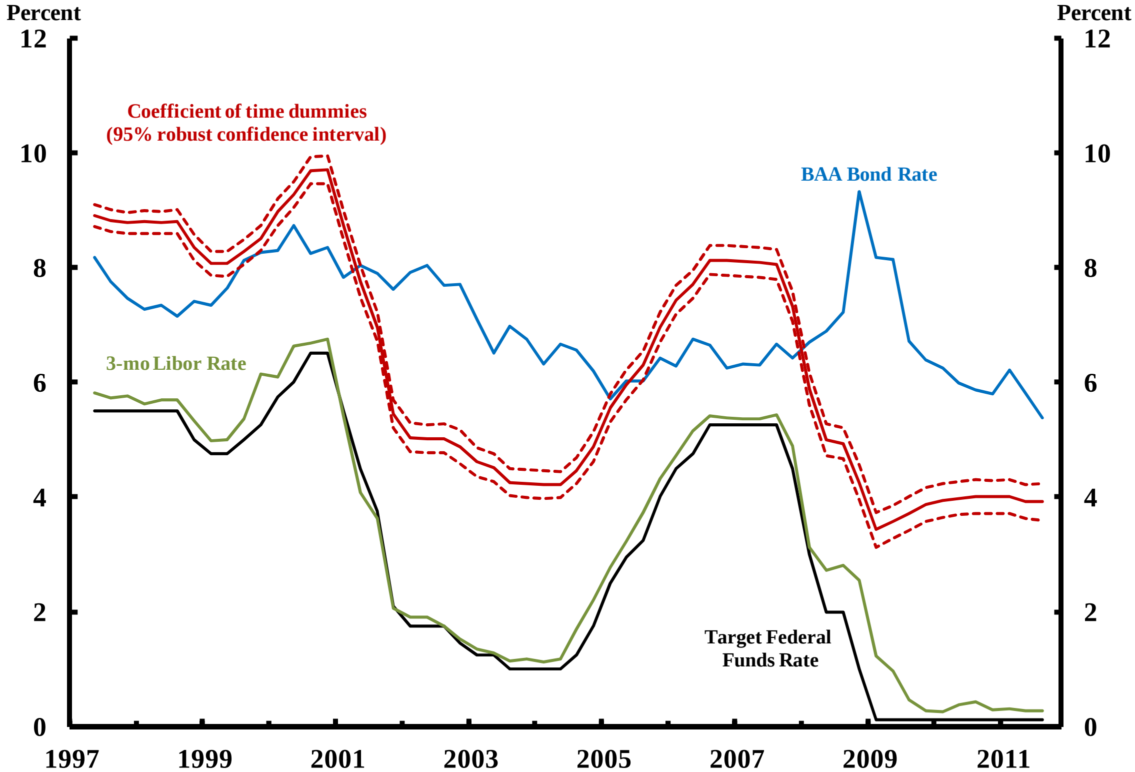


Figure 1: Time Effect and Interest Rates



Pearson Correlation Coefficient between time dummies and interest rates		
	1997:Q2 to 2011:Q3	1997:Q2 to 2008:Q4
Fed Funds	0.9933	0.9954
3-mo Libor	0.9806	0.9807
BAA Bond	0.3901	0.2989

Figure 2: Spread of Coefficient of Time Effect Dummies over Fed Funds Rate
(95% confidence interval from robust standard errors)

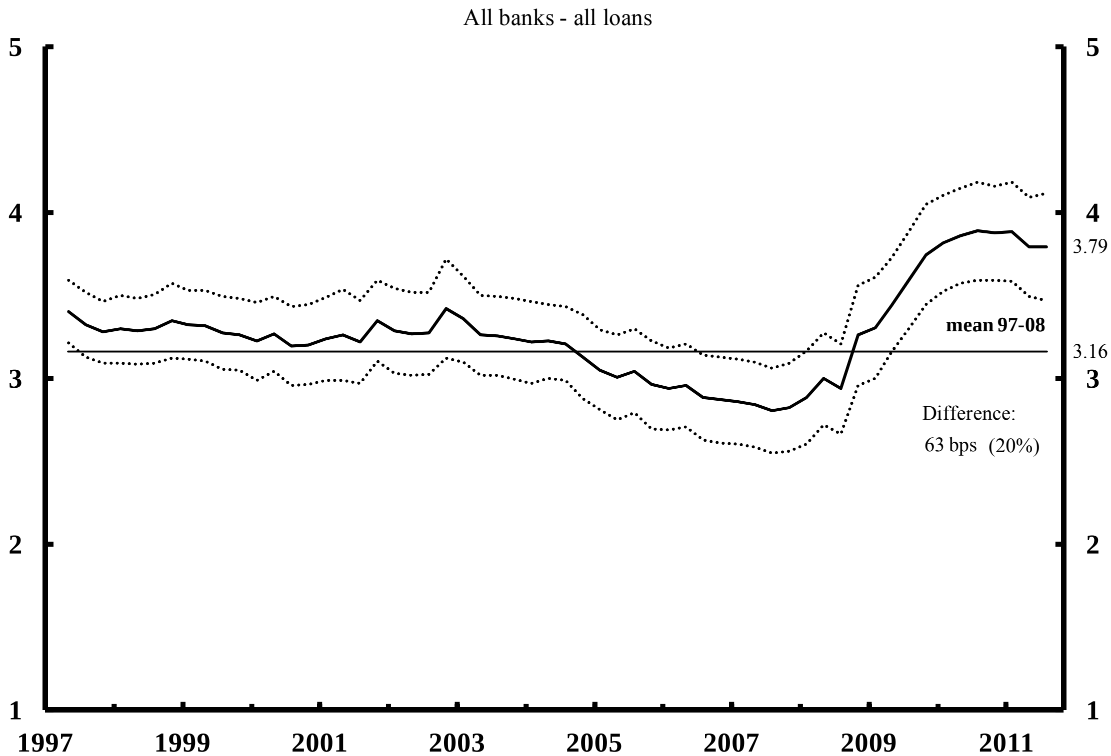


Figure 3: Spread of Coefficient of Time Effect Dummies over Fed Funds Rate
(95% confidence interval from robust standard errors)
Large banks - all loans

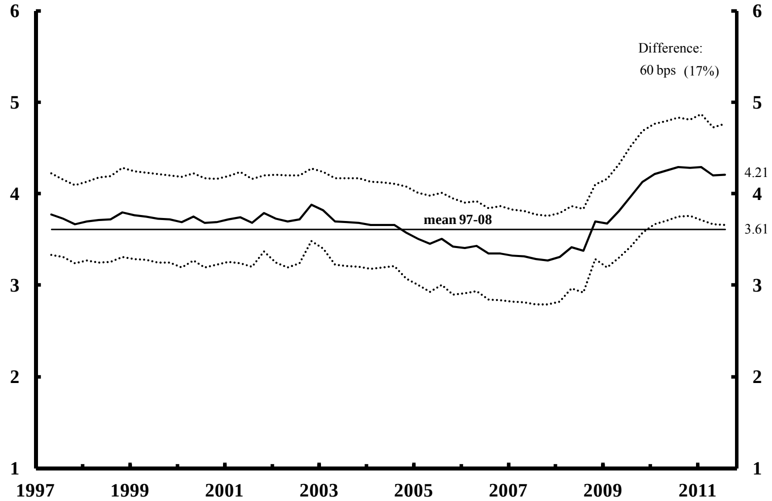


Figure 4: Spread of Coefficient of Time Effect Dummies over Fed Funds Rate
(95% confidence interval from robust standard errors)
Medium banks - all loans

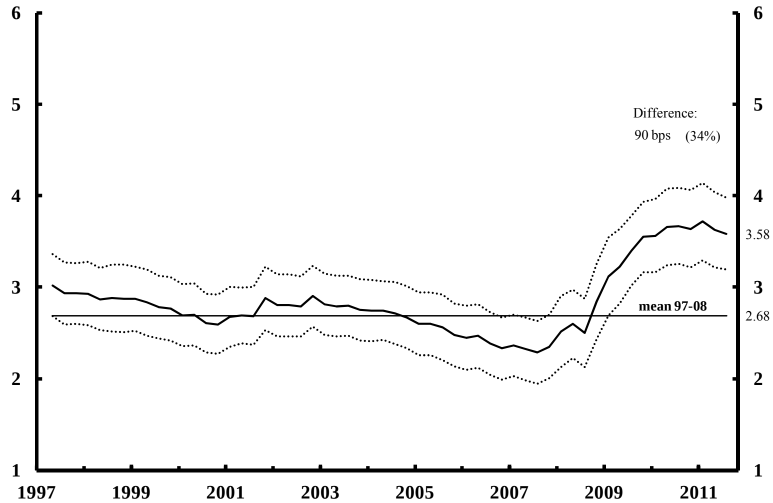


Figure 5: Spread of Coefficient of Time Effect Dummies over Fed Funds Rate
(95% confidence interval from robust standard errors)
Small banks - all loans

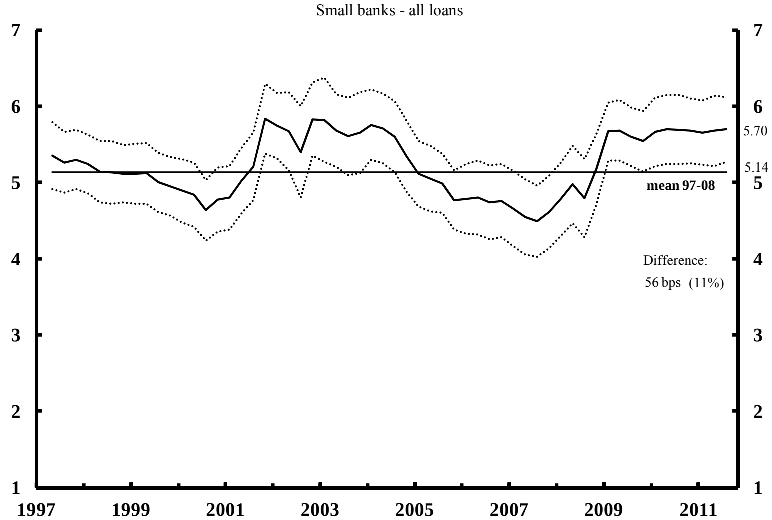


Figure 6: Spread of Coefficient of Time Effect Dummies over Fed Funds Rate

(95% confidence interval from robust standard errors)

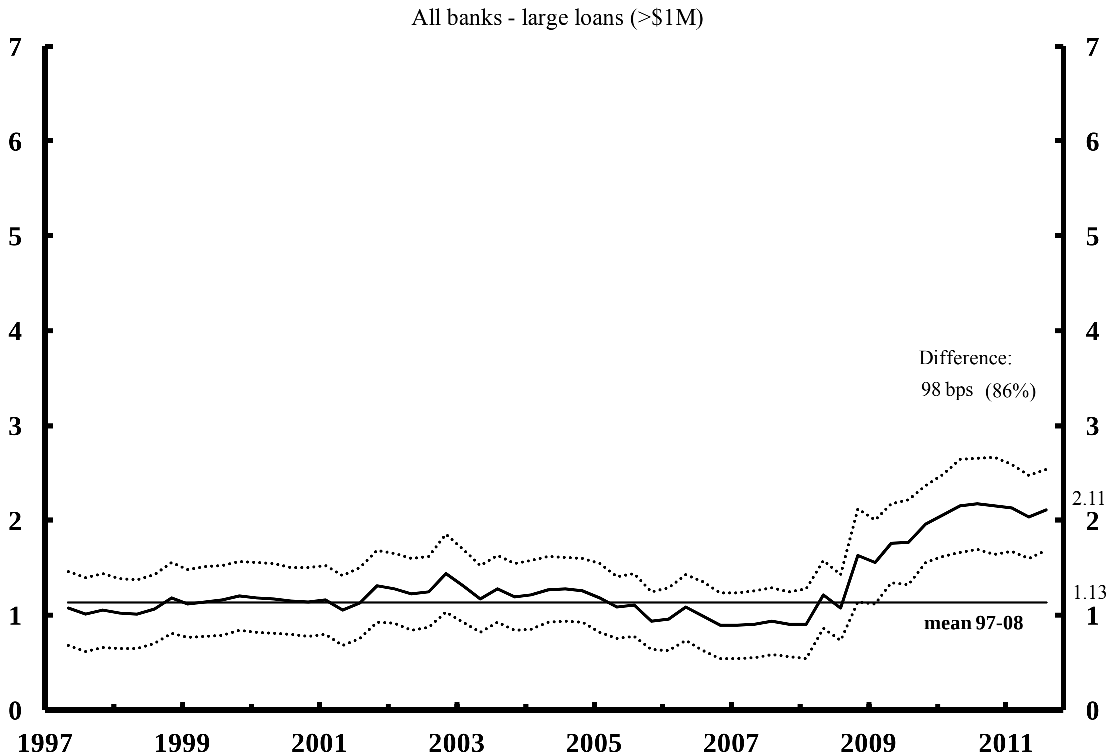


Figure 7: Spread of Coefficient of Time Effect Dummies over Fed Funds Rate
(95% confidence interval from robust standard errors)

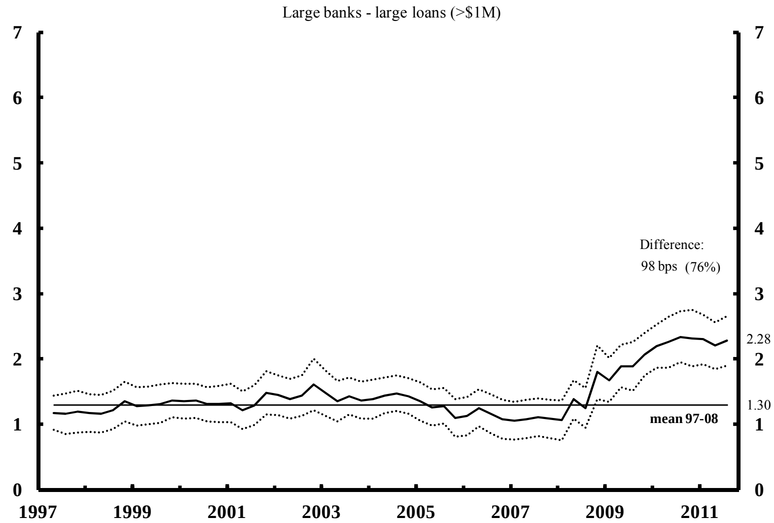


Figure 8: Spread of Coefficient of Time Effect Dummies over Fed Funds Rate
(95% confidence interval from robust standard errors)

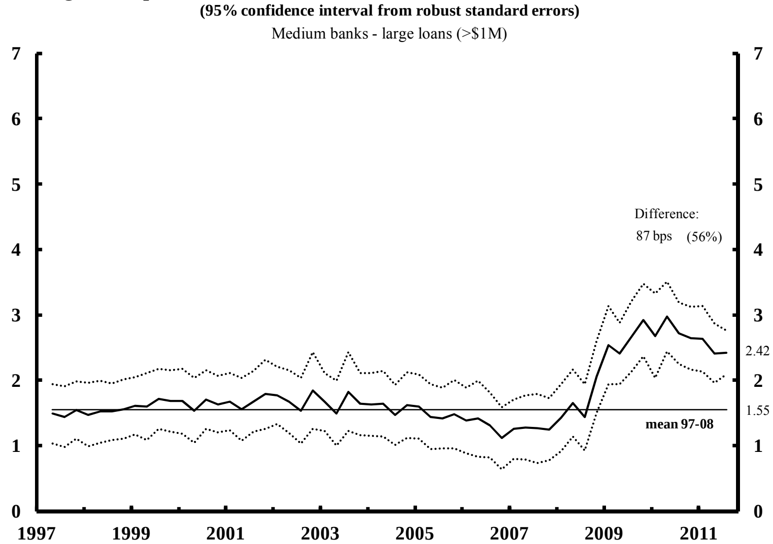


Figure 10: Spread of Coefficient of Time Effect Dummies over Fed Funds Rate

(95% confidence interval from robust standard errors)

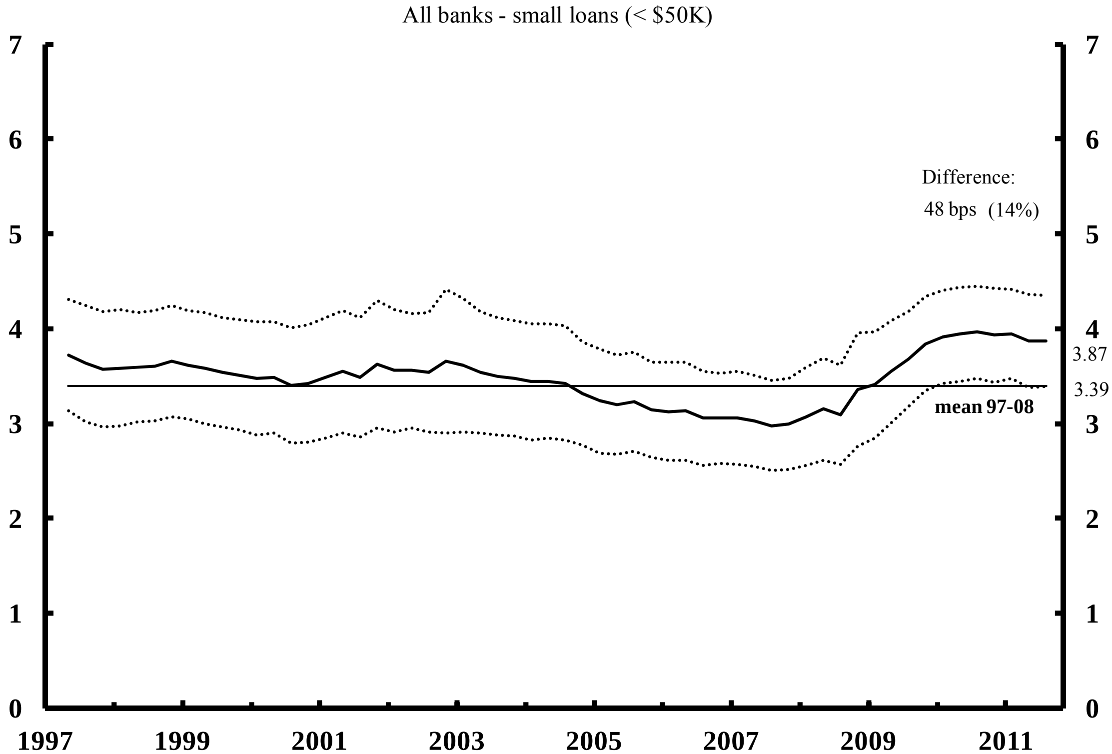


Figure 11: Spread of Coefficient of Time Effect Dummies over Fed Funds Rate
(95% confidence interval from robust standard errors)

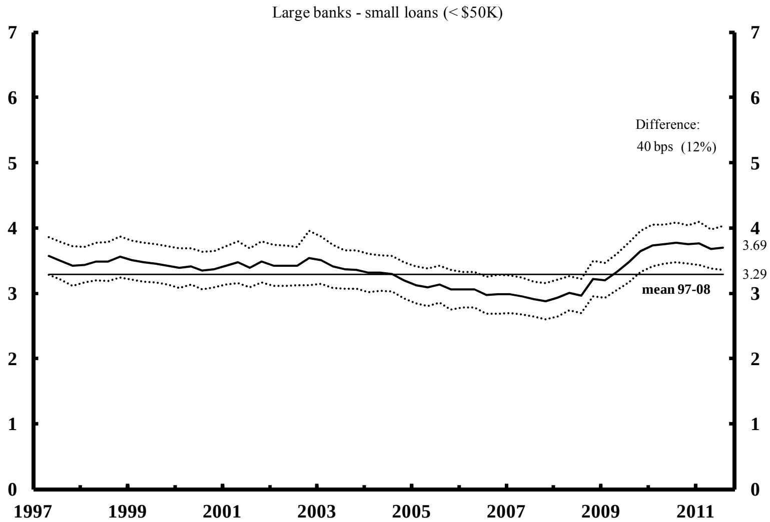


Figure 12: Spread of Coefficient of Time Effect Dummies over Fed Funds Rate
(95% confidence interval from robust standard errors)

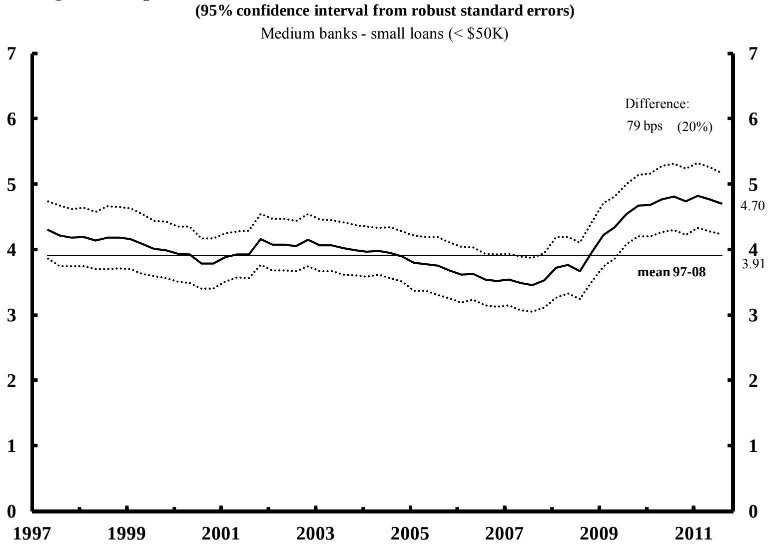


Figure 13: Spread of Coefficient of Time Effect Dummies over Fed Funds Rate
(95% confidence interval from robust standard errors)