Capital, Supervision, Funding Cost and the Supply of Bank Credit

by

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ABSTRACT

The literature identifies many factors that affect the supply of bank credit including a bank's capital adequacy relative to minimum regulatory requirements, its cost of funds, and the stringency of bank supervision. We analyze the importance of these factors as determinants of bank loan supply using loan growth data on an unbalanced panel of individual banks from 1994-2008. We identify bank credit supply by restricting our analysis to clusters of banks that are of similar size and operate primarily in an identical county and include controls for county-level loan demand. We find strong evidence that bank funding cost, capital levels, and heightened supervisory monitoring all determine the supply of bank credit. Bank capital is a determinant of loan supply but minimum regulatory capital constraints are not statistically significant for the banks in our sample.

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Bank Capital, Supervision, Funding Cost and the Supply of Bank Credit

I. Introduction

The financial crisis of 2007-2009 re-kindled academic and policy interest in understanding "credit crunches" or instances in which bank regulatory requirements are alleged to restrict the supply of bank credit and ultimately the pace of economic growth.[2] In addition to regulatory capital requirements, the academic literature and popular press also argue that the intensity of banking supervision is pro-cyclical and variation in monitoring intensity affects bank loan supply.[3] While we review the existing literature on the importance of regulatory capital requirements and supervision as constraints on bank credit supply in a subsequent section, to preview, the evidence on these issues is mixed.

Distinct from the credit crunch literature, credit channel models of the monetary transmission mechanism argue that a bank's cost of funds has a direct effect on the supply of bank credit.[4] In this literature, an increase in bank funding costs, regardless of whether generated by an increase in the riskiness of a bank's liabilities or by restrictive monetary policy, will be passed on to bank customers through higher loan rates. Higher borrowing costs will reduce the investment and consumption demands of bank dependent borrowers and, through economic interactions, ultimately leads to a magnified reduction in final aggregate demand.

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[2] See for example Valencia (2007), Berrospide and Edge (2010), Gambacorta and Marques-Ibanez (2011), Mora and Logan (2010), Rice and Rose (2010), Carlson, Shan and Warusawitharana (2011) or Gambacorta and Marques-Ibanez (2011).

[3] See for example, O'Keefe and Wilcox (2011), Curry, Fissel and Hanweck (2007), Krainer and Lopez (2009), Berger, Kyle and Scalise (2001)

[4] Early works include Tobin and Brainard (1963), Brunner and Melzer (1963), Brunner (1964). The modern literature includes, *inter alia*, Bernanke and Blinder (1989), Bernanke and Lown (1991), or Bernanke and Gertler (1989, 1995). Kashyap and Stein (1995) provide an early survey. Oliner and Rudebusch (1996), Ashcraft (2006) and Black, Hancock and Passmore (2007) question the importance of credit channel.

While the credit crunch and credit channels literatures are largely disparate, they both focus on factors that potentially influence the supply of bank credit.[5] In this paper, we take a step toward better integrating these literatures by examining the effect of bank regulatory capital constraints and supervisory monitoring actions on the credit supply decisions of individual banks while fully controlling for the cost of funds at the individual bank level.

The literatures that investigate the bank credit supply implications of binding or near-binding regulatory capital requirements and procyclical supervisory monitoring do not recognize and control for the potential importance of variation in bank funding costs. In contrast to the credit crunch and procyclical supervision literatures, credit channel theories of the monetary transmission mechanism highlight variation in the cost of bank funds as a primary determinant of shifts in the supply of bank credit. The omission of bank funding costs in credit crunch related studies may lead to significant empirical biases. For example, the cost of bank funding likely increases in periods when banks are experiencing significant loan losses, testing minimum regulatory capital boundaries or undergoing enhanced scrutiny from supervisors.[6] Evidence suggests that the lending rates charged by capital-constrained banks differ from those charged by well-capitalized banks.[7] Since bank funding costs themselves are an independent influence on bank credit supply, the omission of bank funding cost controls in studies that investigate the credit crunch hypothesis may result in overestimates of the loan supply impact of regulatory capital constraints or enhanced supervisory monitoring.

[5] Bernanke and Lown (1991) certainly articulate an integrated view of the credit channel and capital crunch in their discussions of these hypotheses, but they do not control for these effects simultaneously in their empirical analysis.
[6] For example, the macroeconomic literature on the external finance premium [*inter alia*, Bernanke and Gertler (1989), Kiyotaki and Moore (1997), or Bernanke, Gertler, and Gilchrist (1999)] argues that a bank's cost of raising non-insured external funds should determined by its capital position and the strength of a bank's financial condition.
[7] See for example, Santos and Winton (2009), Kishan and Opiela, (2000), Kishan and Opiela, (2006), and Gambacorta (2005).

We estimate the importance of these alternative potential determinants of bank credit supply using regulatory data from the Report of Condition and Income filings, FDIC Summary Deposit Data, confidential data on bank supervisory CAMELS ratings, and various indictors of county-level economic activity. In order to accurately estimate the importance of these alternative channels of influence on the supply of bank credit, we must have a mechanism to identify shifts in bank loan supply from shifts if bank loan demand.

In this study we control for variation in bank loan demand by filtering the population of U.S. banks to include only clusters of banks that face identical local market demand conditions in a given year. To be included in our sample, a bank must raise more than 50 percent of its deposits in a single county as indicated by the FDIC Summary of Deposits Data, and there must be at least one other bank of similar size that also raises more than 50 percent of its deposits in the same county in that year. After identifying multiple banks that face the same local loan demand conditions, we control for local loan demand variation using both county-by-quarter fixed effects and alternatively using quarterly fixed effects to control for nationwide macro effects and continuous economic variables to measure county-level activity at a quarterly level.[8] Estimation results are consistent across these alternative methods of controlling for bank loan demand variation thereby enhancing confidence in the robustness of our findings.

Our estimates suggest that bank capital, cost of funds, and the intensity of supervisory monitoring are all statistically significant determinants of bank loan supply. Among these channels, bank funding cost is the most important. Across a number of alternative model specifications, our results suggest that, other things equal, a 1 percentage point increase in bank

[8] To ensure we control for demand effects, in this study, we define the relevant common market as the geographical county level. In anti-trust and other studies that need to define a common banking market, the common market is defined as a common MSA or common rural county. See for example, Avery and Samolyk (2004), or Heitfield and Prager (2004). We have also estimated our models using a common CBSA (instead of county) to define the banking market and the results are consistent with those reported in this study.

funding costs lowers bank loan growth by at least 1 percentage point, and perhaps by as much as 1.5 percentage points depending on the preferred model specification. Another robust finding is that heightened supervisory scrutiny is associated with lower loan growth. A bank supervisory CAMELS rating of 3 or lower (4/5) is consistently associated with lower bank loan growth other controls held constant. Banks with CAMELS ratings of 4 or 5 show the largest negative loan growth impact. Consistent with this effect, banks with a recently downgraded CAMELS rating also show reduced loan growth, while recently upgraded banks have accelerated loan growth.

Our results analyzing the effect of bank capital effect on loan supply are more nuanced. Other things held constant, banks with higher lagged capital levels tend to experience higher subsequent loan growth but the effect is not large. For example, a bank with a 1 percentage point higher leverage ratio (Tier 1 capital to total assets) will on average experience about 5 additional basis points of loan growth the following quarter. Our estimates, which control bank loan demand at the local market level, for the effects of bank funding costs, and for each bank's supervisory monitoring intensity, are substantially smaller than estimates reported in other studies.[9]

Our results linking loan growth to bank capital levels may be consistent with either fully endogenous management choices regarding optimal bank capital structure, or they could be driven by binding or near-binding regulatory capital requirements. Because non-insured external financing is costly for banks,[10] by raising capital in the quarter(s) prior to expanding lending (through retained earnings) banks may be positioned to raise new uninsured liabilities at a lower

[9] Among existing studies, Carlson, Shan and Warusawitharana (2011) estimates are perhaps the closest to our own. After controlling for demand variation, their estimates suggest that BHC loan growth is about 20 basis points larger for every 1 percentage point increase in a BHC leverage ratio. As we discuss later, macroeconomic approaches that do not carefully control for loan demand variation find much larger effects of capital on loan growth.

[10] Indirect empirical evidence is provided in, for example, Kishan Opiela (2000), Gambacorta (2004), Gambacorta and Mistrulli (2004).

risk premium when it funds new loans in the subsequent period. [We are working on empirical verification.]

When we explicitly test for the presence of a minimum regulatory capital effect, our estimates are not consistently different from 0. In one specification we find statistically significant evidence that banks with capital positions below the well-capitalized regulatory threshold experience lower subsequent loan growth, but our results are not monotonic with respect to PCA capital deficiency categorizations, and the statistical significance of this effect is attenuated when additional statistical controls are included in the model. Thus, while better capitalized banks may increase credit at a slightly faster pace, this effect does not seem to be strongly associated with binding or near-binding minimum regulatory capital standards for the banks in our sample.

After controlling for alternative channels of influence on bank credit supply, we find that lagged loan performance measures have a statistically significant effect on a bank's subsequent loan growth. Holding constant other factors, banks that experience a 1 percent increase in the level of their non-performing assets will, on average, experience about a 50 basis points decline in their subsequent loan growth. We conjecture that lagged loan performance is in part an indicator of the lending risk-reward tradeoff facing bank management, especially when banks make relationship-based loans, but we have not yet produced convincing statistical support for this hypothesis and we continue to analyze this conjecture.

The remainder of our paper is organized as follows. Section II reviews the credit channels view of the monetary transmission mechanism in which the cost of bank funds drives shifts in bank credit supply. Section III discusses the credit crunch literature that links bank minimum regulatory capital requirements and procyclical supervisory monitoring to shifts in bank credit supply. Section IV discusses the literature on procyclical supervision intensity and bank loan supply. Section V discusses the data and identification scheme that we use to assess the importance of these alternative determinants of bank lending growth. Section VI discusses our estimation results. A penultimate section discusses the policy implications of our findings and Section VII concludes the paper.

II. Bank Funding Costs and Credit Channel Transmission Mechanism

The so-called modern "credit channel" theory of the monetary policy transmission mechanism [Bernanke and Blinder (1989), Bernanke and Lown (1991), or Bernanke and Gertler (1989, 1995)] is built on the assumption that that monetary policy has a disproportionate effect on bank dependent borrowers. Bank dependent borrowers cannot easily access the capital markets because of asymmetric information or other informational problems that cannot be overcome without costly monitoring or some other mechanism that reduces information asymmetry.[11]

The credit channel literature argues that monetary policy causes a change in aggregate demand, in part, by altering the cost of capital and supply of credit for bank-dependent borrowers. When the Federal Reserve engages in open market operations and alters bank reserve balances, it also changes the marginal cost of bank funding and these changes in funding costs are passed through to bank borrowers—primarily consumers and small businesses. Monetary policy impacts both bank-dependent borrowers' cost of funds as well as their borrowing capacities.[12] As bank dependent borrowers react to changes in credit availability, they will alter

[11] See for example, Hale and Santos (2009) for more recent evidence in support of this assumption.
[12] For example, other things equal, an increase in interest cost will lower firm profitability and reduce a firm's ability to service debt payments. Customer demand, moreover, may eroded by the higher cost of bank credit which will reduce demand for the firm's output and further compromise the firm debt service capacity. Similarly, an increase

their demand for final goods and services. These changes will, in turn, affect the demands of firms with access to the capital markets, and these firms will adjust their demands endogenously.

Credit channel theory also predicts that large losses at a significant number of banks could lead to reduced bank credit supply and a subsequent reduction in real output. Significant bank losses may reduce investor confidence in banks' abilities to honor their non-guaranteed liabilities and increase in a bank's marginal cost of funds. Individual bank loan performance, moreover, is in part driven by macroeconomic conditions and investors may anticipate that loan performance to positively correlate across all banks in the system. Thus, even banks currently reporting satisfactory asset performance may face confidence issues and higher costs of funding as investors rationally anticipate at least some future deterioration in the performance of all banks' loan portfolios.

A widespread deterioration in bank performance (or indeed just the perception thereof) could result in an increase in the cost of bank funding similar to what occurs when open market operations are used to drain reserves from the banking system. The credit channel theory suggests that, faced with higher funding costs, banks will increase the rates they charge bank dependent borrowers, these borrowers will adjust their consumption and investments, and these demand reductions will multiply over time through endogenous linkages in the system. The end result is a reduction in bank loan growth and final demand.

III. Capital Crunch Theories of Reduced Bank Credit

Distinct from the credit channel literature is a literature that argues that minimum regulatory capital requirements create situations where capital shortfall or near-shortfalls cause

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in market interest rates may reduce the value of the firm's financial collateral and thereby reduce a bank-dependent firm's borrowing capacity.

banks to reduce their lending. Under US prompt correction action requirements (PCA), a uniform system for regulatory minimum capital requirements was phased in between 1990 and 1992. These minimum capital rules were part of the regulatory reforms that followed the U.S. Savings & Loan crisis. The new minimum capital regulations included requirements for the ratio of capital-to-unweighted assets (the so-called leverage ratio) as well as minimum required levels for two alternative ratios of regulatory capital to risk weighted assets so called risk-based capital (RBC) ratios. When faced with a binding regulatory leverage ratio or a binding risk-weighed capital ratio, a bank must either raise regulatory capital or shrink its total asset base including potentially its loans. If the only constraint is a binding RBC ratio, the bank can also relieve the constraint by shifting assets from classes with high risk weights into classes with lower (or no) risk weights.

Many papers that study the capital crunch hypothesis do so using U.S. data from the early 1990s. Overall, the results seem to find consensus that the evidence supports the hypothesis that a tight or binding regulatory leverage ratio constraint discourages bank loan growth. The studies diverge as to their conclusions on whether large or small banks lending is most affected by a leverage constraint. Conclusions regarding the lending impact of the regulatory RBC ratios are mixed. Some studies find that a binding or near binding regulatory RBC constraint reduces bank lending while others find that banks adjust by rebalancing their portfolios and reducing securities holdings.

In an early paper on this topic, Bernanke and Lown (1991) investigate the credit crunch hypothesis using quarterly data from 1990 and 1991. They find unusually weak credit growth during this recessionary period but argue that the weakness is in part related to weak credit demand as the creditworthiness of potential borrowers deteriorated along with declines in the value of real estate and other collateral. In addition to credit channel demand effects, Bernanke and Lown also find evidence of a regulatory leverage ratio affect on the lending behavior for smaller banking institutions. While the capital-induced reduction in lending growth is measurable, they concluded that the economic magnitude of the effect is small.[13]

Peek and Rosengren (1995a) find evidence that New England banks' deposit-taking behavior over the period 1990-1991 is consistent with the credit crunch hypothesis. Faced with a negative shock to loan demand, banks constrained by the regulatory leverage ratio on average did not alter their deposit demands whereas unconstrained banks decreased deposits. In Peek and Rosengren (1995b), they analyze the New England sample of banks more intensively and conclude that most of the apparent adjustment of bank leverage ratios was in response to formal regulatory enforcement actions that required banks to raise their capital ratios and not voluntary adjustments made by bank management. These results suggest that enhanced supervisory monitoring may in part explain the apparent credit crunch phenomenon.

Brinkmann and Horvitz (1995) analyze the effect of binding RBC ratios on loan growth rates and find that banks with capital in excess of the new RBC standards grew their loan portfolios at a higher rate. In contrast to Bernanke and Lown, Brinkmann and Horvitz conclude that evidence supports the hypothesis that introduction of RBC standards had a "substantial macroeconomic effect (p. 860)." Hancock and Wilcox (1994) examine a sample of 788 large banks in 1991 and also find large effects associated with the imposition of minimum capital regulations. They estimate that banks facing a regulatory leverage ratio constraint reduced their loans by about \$4.50 for each \$1 of capital shortfall, but banks facing an RBC constraint tended to respond by reducing their securities holdings, not their loan portfolios.

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[13] They estimate the capital crunch effect may explain only 2 to 3 percentage points of the decline in bank lending in observed New England over this period.

There are also important studies that do not find evidence that supports the capital crunch hypothesis. Both Berger and Udell (1994) and Shrieves and Dahl (1995) question whether the evidence regarding large RBC effects is convincing. Using a longer time series of data than most studies up to that time, Berger and Udell find some support for a regulatory leverage ratio effect (banks with higher equity-to-asset ratios are more likely to experience high loan growth) but they discount any hypothesized portfolio shifts associated with the introduction of RBC ratios.

The financial crisis of 2007-2010 has been a catalyst for new research on the credit crunch hypothesis. Berrospide and Edge (2010) study the relationship between capital and lending at the bank holding company (BHC) level. They investigate whether BHC loan growth is related to capital levels (as measured by the capital-to-asset ratio) or deviations from BHC-specific target capital ratios after including a number of macroeconomic time series as controls.[14] Their estimates suggest that a 1 percentage point surplus above a BHC's target capital ratio is associated with 25 basis points in additional loan growth. When they estimate their loan growth model using the level of BHC capital ratios (instead of deviations from estimated capital ratio targets) they find that 1 percentage point increase in BHC capital ratios are associated with a 1.2 percent increase in BHC loan growth. Overall their estimates are roughly comparable in magnitude to earlier estimates by Bernanke and Lown (1991) and Hancock and Wilcox (1994).

In contrast to Berrospide and Edge (2010) who take a macroeconomic approach to quantifying the credit crunch effect and do not carefully control for bank-level variation in loan demand, their Federal Reserve Board colleagues, Carlson, Shan and Warusawitharana (2011) use differences in loan growth between specifically matched BHCs to estimate the relationship between loan-growth and bank capital. Using data from 2001 through 2009, they create a sample of BHCs matched by geographic footprint, size, and balance sheet and income

[14] Their methodology closely follows Bernanke and Lown (1991) and Hancock and Wilcox (1994).

characteristics and control for demand variation using both difference in difference and MSA control variables. They exclude BHCs with de novos or BHCs that have been involved mergers. They estimate a model relating BHC loan growth to capital over the period 2001-2009 and find that a 1 percentage point increase in a BHC leverage ratio is associated with a 20 basis point increase in loan growth. Further analysis shows that this capital effect estimate is driven by the crisis years in the sample, 2007-2009, and in earlier year there is no reliable relationship between BHC capital and loan growth.

In yet another recent Federal Reserve Board credit crunch related study, Rice and Rose (2010) study the impact on bank lending associated with the losses generated by the September 2008 conservatorship of Fannie Mae and Freddie Mac. When the GSEs were put into conservatorship, a number of banks suffered sizable losses on GSE preferred shares as these shares suspended dividends. Rice and Rose argue that conservatorship was an exogenous event that lowered many banks capital ratios (and even caused a number of banks to fail or seek acquirers). They attempt to identify, through empirical filters, banks that were exposed to GSE preferred share losses and they assess the effects of these losses on bank loan growth. They do not differentiate between banks with GSE-related losses that reduced capital adequacy below the regulatory minimums from those that remained at least adequately capitalized because they do not have good estimates of the GSE-related losses each bank suffered. Their results show that banks that that were identified as experiencing GSE losses in 2008Q3 reduced loan growth by about 2 percentage points in 2008Q4 relative to banks that did not experience GSE losses. Within 2008Q4, after controlling for banks that suffered GSE losses, their estimates suggest that banks with higher Tier 1 RBC ratios experienced higher loan growth.[15]

[15] Banks with 1 percentage point higher Tier 1 RBC ratio were estimated to experience 29 basis points in additional loan growth.

[-------MORE SUMMARIES OF CREDIT CHANNELS PAPERS TO COME HERE---]

IV. The Supervisory Channel

Poor asset performance often necessitates increases in loan-loss provisions and reductions in security valuations which impair banks' profitability and may reduce banks' ability to raise new external capital. In extreme cases, poor asset performance can impair a banks' capital adequacy. Aside from these effects, there is also evidence that suggests that commensurate with these events, bank regulators often tighten their discretionary supervision policies in reaction to weak bank performance. This heightened regulatory scrutiny may for example include guidance for the use of stricter underwriting standards which can discourage bank lending or (as a second example) it may limit permissible concentrations among different classes of lending.[16] It is also possible that, in the absence of any explicit supervisory guidance, bank examiners react to a pattern of losses among institutions by "increasing the magnification factor on their supervisory microscopes" and applying stricter judgmental examination standards with the result that they downgrade bank supervisory CAMELS ratings more readily than in pre-loss epochs. As such, procyclical changes in the intensity of supervisory monitoring may induce banks to restrict loan supply at the same time they are facing reduced capital and increased costs of new uninsured funding. We label the impact of changing supervisory monitoring standards as the "supervisory channel."

The literature on the supervisory channel includes a number of studies that support the hypothesis that changes in supervisory monitoring intensity can reduce bank loan supply. Among

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16 See for example, O'Keefe and Wilcox (2011), Curry, Fissel and Hanweck (2007), Krainer and Lopez (2009), Berger, Kyle and Scalise (2001). For an example of guidance on loan concentration limits, see the joint banking agency 2006 guidance, "Concentrations in Commercial Real Estate Lending, Sound Risk Management Practices," Available at http://www.fdic.gov/news/news/press/2006/pr06114a.html.

earlier studies, Peek and Rosengren (1995b) revisit the New England capital crunch data and conclude that the apparent effects of capital regulation on loan growth were really the consequence of formal supervisory interventions into individual banks that mandated increased capital ratios, not voluntary management responses to a new regulation. Bernanke and Lown (1991) investigate the "overzealous regulation" channel as an explanation for the 1990-1991 credit crunch but do not find convincing the evidence in favor of a supervisory channel.

Among later studies, Berger, Kyle and Scalise (2000) find evidence that during the 1989-1992 period, supervisors behaved as if they applied stricter balance sheet and income statement criterion to arrive at a given CAMELS rating compared to the 1993-1998 "credit boom" period that followed, but they argue that this supervisory channel likely had only a small effect on aggregate lending. Wagster (1999) investigates the impact of the 1988 Basel Accord implementation using an international cross section and concludes that the supervisory channel is the only channel of influence that operates across the five countries examined in his analysis.[17] Curry, Fissel and Ramirez (2006) study the effects of the CAMELS ratings on loan growth over two periods. Over the period 1985-1993, they find that a lower CAMELS grade was associated with slower loan growth, especially for business loans. Over the mostly profitable 1994-2004 period, they do not find CAMELS ratings effects for any loan category.

O'Keefe and Wilcox (2011) estimate the financial characteristics associated with alternative CAMELS ratings and find that the criteria needed to achieve a given CAMELS rating changes over time. In particular, they find that the implicit CAMELS supervisory standards for equity capitalization increase during credit cycle recessions. O'Keefe and Wilcox do not estimate the importance of these changes for bank lending behavior.

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[17] The sample analyzed consisted of large banks from Canada, Germany, Japan, the United Kingdom, and the United States.

In addition to CAMELS bank supervisory ratings, the Federal Reserve also assigns supervisory ratings to BHCs. Curry, Fissel and Hanweck (2008) [CFH] and Krainer and Lopez (2009) analyze the implicit supervisory standards associated with these so-called BOPEC ratings. Both find evidence that the criterion for receiving a given BOPEC rating change over time. Krainer and Lopez find that the supervisory BOPEC standards were raised during the 1989-1992 period and then eased during the economic recovery of 1993-1998 before tightening again from 1999 to 2004. CFH find evidence that supervisory ratings are "sticky" in that a BOPEC rating a slow to change. They also find that BOPEC standards change over stages of the banking-business cycle, but do not find "widespread or systematic bias" in BOPEC ratings. Neither CFH or Krainer and Lopez investigate the affect of changing supervisory standards on BHC lending behavior.

V. Sampling Methodology and Data

Our data sample is derived from quarterly and annual regulatory bank filings of insured commercial and savings banks over the period 1994-2008. We exclude institutions with a specialization in credit card lending or with a specialization in non-lending activities, *de novo* or foreign banks, those with zero loan activity in the year or in the previous year.

Bank loan growth is generated through the interaction of customer demand and bank supply decisions. While loan demand is not directly unobservable, it is an important determinant of observed loan growth that must be accounted for in the analysis. We control for variation in loan demand by applying a series of filters to the bank population to generate a sample of banks for which we can control for the variation in loan demand at the local market level. We filter the data to identify and retain institutions with specific location and size characteristics that allow us to control for loan demand variation using either time and location covariates, or continuous time-series variables that reflect economic conditions within a banks' local markets.

Several filters were applied to determine bank-year observations that are eligible for inclusion in our analysis sample. Individual bank financial variables are obtained from Reports of Conditions and Income (CALL) regulatory filings.[18] We use merger-adjusted quarterly values in our analysis and adjust all reported values to constant year-2000 prices using the consumer price index.

Our bank-specific data also includes confidential supervisory data on composite CAMELS scores and individual CAMELS component scores.[19] In the CAMELS rating system, a rating of 1 indicates the strongest rating, while 5 is the weakest. The most recent rating is associated with each bank's quarterly data.[20]

Beginning in 1994, data on the location of banks' branches and deposits as of June 30th of each year are reported in the FDIC Summary of Deposits (SOD) database. We use SOD data as a proxy for the location of a bank's lending activities. While banks need not lend exclusively in the locations in which they collect deposits, the Community Reinvestment Act (CRA) of 1978 charges lenders with the responsibility of meeting the credit needs of its local communities and requires federal financial supervisory agencies to monitor compliance with the provisions of the CRA. In addition, a number of academic studies find that there are bank lending, especially in the case of community banks, is location dependent.[21] Thus, we assume that a geographic area's

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[18] Specifically, our analysis used data on total loans and leases, loans and leases 30-89 days past due and still accruing interest, loans and leases 90 days or more past due and non-accruing, and total bank assets.

[19] (C) Capital adequacy, (A) Asset quality, (M) Management, (E) Earnings, (L) Liquidity, and (S) Supervision

[20]If a component rating was missing but the composite value was available, then the composite value was used for the component.

[21] Studies include, *inter alia*, Petersen and Rajan (1994, 2002), Cole, Wolken and Woodburn (1996), Cole, Goldberg and White (2004), Avery and Samolyk (2004), Elyasiani and Goldberg (2004), Heitfield and Prager (2004), DeYoung, Glennon and Nigro (2008), and Brevoort Holmes, and Wolken (2010),

concentration of deposits is also indicative of the bank's geographic concentration of borrowers for the following year.

We use SOD data and data on bank mergers to construct an estimate of the merger-adjusted location and deposits in every banking institution's branch at year-end.[22] From this information, we determine the county that includes the greatest share of a banking institution's deposits at each June 30.

Nominal June 30 values of bank assets were used to define bank size categories: banks with assets of less than 100 million are labeled "small"; banks with assets of greater than 1 million but less than 1 billion are labeled "medium-sized"; banks with assets of greater than 1 billion but less than 10 billion are labeled "large'; and banks with assets of 10 billion or more are labeled "huge".

From the previously described population of banks, we selected banks that met the following criteria:

- A bank must raise at least 50 percent of its deposits in a single county
- There must be at least one other same-sized bank that also receives a majority of its deposits from the same county.

From banks that meet these criteria, we dropped observations for banks that did not have a supervisory CAMELS rating and we also dropped observations for which reported loan growth values were in the 5 percent tails of the loan growth distribution to mitigate the influence of outliers.[23] We also include a dummy variables that identify when a bank is a specialized

[22] Data on bank mergers is from the FDIC's Research Information System (RIS) warehouse

[23] The use of a filter to exclude outliers is common. For example, the FDIC's Uniform Bank Performance Report excludes the upper and lower 5 percent tails. Berger and Udell (1994) exclude observations when loan balances change by more than 25 percent or when a bank's 0 or 100 percent risk weighted asset categories change by more than 75 percent.

commercial, consumer or mortgage lender.[24] After our filter we are left with a sample of 367,219 banks-quarter observations. Among these, we eliminate 26 banks that have reported negative capital or were the only match to a bank with negative capital. We also have to eliminate some bank clusters because we do not have county-level measures of economic activity. The final sample for our analysis includes 366,540 bank-quarter observations on 12,897 individual banks. Our sample includes 2,151 unique counties with, on average, 4.2 banks per county-quarter observation.

The filters we apply to arrive at our final sample ensure that our sample will include only banks that have at least one "matched" bank in terms of size and county location of operation. In our subsequent estimations, we include county-quarter[25] covariates as well as quarterly county data on unemployment rate, housing price appreciation, and credit card delinquency rates to control for the regional loan demand variation experienced by the matched sample of banks.

Our county-level control variables include unemployment (from the U.S. Bureau of Labor Statistics) and housing price indices (from Case Schiller). One-year and five-year house price growth rates were calculated by averaging the quarterly values reported for each year and then adjusting for inflation using the Consumer Price Index series less shelter for all urban consumers. For counties where no HPI value is available, we substitute the state HPI. County-level data on percentage of credit card accounts more than 60 days past dues was acquired from Trendata. Table 1 reports summary statistics for our sample. [Tables follow the references section.]

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[24] Our definition of specialized lender follows FDIC Quarterly banking profile conventions: Commercial lenders have commercial and industrial loans, plus real estate construction and development loans, plus loans secured by commercial real estate properties that exceed 25 percent of total assets. Mortgage Lenders are institutions with residential mortgage loans, plus mortgage-backed securities that exceed 50 percent of total assets. Consumer lenders are institutions whose residential mortgage loans, plus credit-card loans, plus other loans to individuals, exceed 50 percent of total assets.

[25] That is, a dummy variable for each county for each quarter.

VI. Results

Initially, we estimate our model and control for variation in banks' demand by including quarterly fixed effects to account for nationwide macroeconomic conditions and quarterly county-level measures of economic activity to further control for local bank demand conditions. To minimize endogeniety issues, all bank specific control variables are lagged 1 quarter. Table 2 reports model estimates with and without bank fixed effects. We focus our discussion on the specifications that include bank fixed effects (Table 2 columns 6-10).[26]

In the regression estimates reported in Table 2, the dependent variable is the quarterly growth rate in bank loans. Consistent with the credit channel hypothesis, estimates suggest that the cost of bank funds has a large negative effect on bank loan growth. The coefficient estimates are statistically significant at the one percent level and the magnitude of the estimate is stable across model parameterizations. Other things held constant, the most conservative specification suggests that a 1 percentage point increase in the cost of bank funds lowers lending growth by about 1.6 percentage points.

The coefficient estimates in column 8 suggest that banks that are weakly capitalized relative to PCA standards post statistically significant lower subsequent loan growth, but this effect is attenuated once controls for the supervisory channel are included in the model (columns 9 and 10). Thus, much of the loan growth variation that might be attributed to binding or near-binding regulatory capital requirements is more likely a consequence of heightened supervisory monitoring. The coefficient estimates on the dummy variables that indicate a CAMELS 3 or CAMELS 4 or 5 rating are large, negative and statistically significant at the one percent level. These results are consistent with Peek and Rosengren (1995b), Wagster (1999), and Berger, Kyle and Scalise (2000) who found that the supervisory channel, and not the imposition of minimum

[26] Hausman (1978) test results (not reported) indicate that a fixed effects specification is appropriate.

regulatory capital requirements, is a better explanation for the lull in bank lending following the S&L crisis of the late 1980s.

Table 3 reports estimation results when we include quarterly-county level dummy variables to control for local bank demand conditions. The specifications in Table 3 also include quarterly covariates to control for nationwide macro conditions and bank fixed effects. The estimation results reported in Table 3 closely correspond with those reported in Table 2. The largest most important factor influencing loan growth among all banks is the cost of bank funds. Other things held fixed, the estimates suggest that one average, a 1 percentage increase in the cost of bank funding reduced bank loan growth by at least 1.15 percentage points. Once the negative loan growth effects of bank supervisory monitoring intensity are accounted for in the specification, there is no statistically significant effect associated with less than well-capitalized status under PCA rules. Other things equal, the enhanced supervisory monitoring associated with a CAMELS 3 or CAMELS 4 or 5 rating clearly reduces bank loan growth among the banks in our sample.

In the regression results reported in Table 4, we take a closer look at the importance of a bank's level of capitalization for determining its subsequent loan growth by introducing continues measures of a bank's capitalization rate into the Table 3 regression specification. We introduce the leverage ratio (total capital to assets), the Tier 1 regulatory capital ratio (Tier 1 capital to risk-weighted assets) and the total RBC ratio (total regulatory capital to risk-weighed assets) as alternative measures of the level of a bank's capitalization. We focus our discussion on Table 4 column 1 results that measure bank capital with a bank's leverage ratio. In these regressions, other controls held constant, a bank's leverage ratio is a positive and statistically significant (at the 1 percent level) determinant of its subsequent loan growth. While the effect is strongly statistically significant, the economic importance of bank capital is minor. Our estimates suggest that a 1 percentage point increase in a bank's leverage ratio is on average associated with only a 5 basis point increase in loan growth the subsequent quarter.

In this specification which controls for bank funding costs, bank capital levels and the intensity of supervisory monitoring, minimum regulatory capital constraints are not statistically significant. Regardless of the measure of bank capital introduced, a bank's of costs of funds is negative and statistically significant. Estimates suggest that when we hold constant the level of bank capitalization and other control variables, on average, a 1 percent increase in a bank's cost of funds reduces its subsequent loan growth by about 1 percentage point. These results clearly do not support credit crunch hypothesis that conjecture that binding regulatory capital requirements are an important constraint on bank credit supply. While it remains for us to formally test, the results are consistent with banks endogenously increasing their capital in anticipation of undertaking additional loan growth perhaps to lower the cost of the external uninsured funding that will be required to fund the growth.

In all of the model specification that we have estimated, past-due and non-accruing bank assets are negative and statistically significant at the 1 percent level. The level of bank non-performing assets is also economically significant in all specifications. Holding constant all other control variables, if non-performing assets (past-due and non-accrual) increase by 1 percentage point (respectively), bank loan growth declines by about 50 basis points. The magnitude of the estimated effect of total non-performing assets on subsequent loan growth is remarkably stable across all the model specifications we have estimated. We think this phenomenon merits further explanation.

Our current favorite explanation for the stability and importance of the effect of non-performing assets on subsequent loan growth is that the share of non-performing assets is a proxy for a bank's future risk-return tradeoff in lending.

One reason why lagged loan performance may effect subsequent bank loan growth may be in part related the nature of the banks included in our sample. Our matching process ensures that our sample is dominated by relatively small "community" banks. Many studies including Berger and Udell (1996, 1998), Berger, Miller, Petersen, Rajan, and Stein (2002), Cole, Goldberg and White (2004) [and others studies to be added] find that smaller banks are more likely to specialize in relationship lending. A banking relationship can be described as long-term implicit contract that involves repeated lending interactions between a borrower and a lender. Relationship borrowers have been found to benefit from better loan terms (Petersen and Rajan (1994), Berger and Udell (1995), Santos and Winton (2008), and Bharath, Dahiya, Saunders and Srinivasan (2011)), more easily accessible capital (Cole (1998), Petersen (1999) and Jiangli, Unal and Yom (2008)) and improved liquidity. While bank relationships are profitable for banks overall (Hale ands Santos (2009)), relationships take time to establish and relationship loans can, at times, be costly for banks to administer (Dahiya, Saunders and Srinivasan (2003)).

The size and risk characteristics of a community bank's lending opportunity set is quasi-fixed by existing customer relationships. The credit profile of its relationship customers are likely to change slowly through time. Measures of credit worthiness are strongly positively correlated with observed measures of loan performance. A negative performance shock to a relationship loan portfolio is likely to lower bank management's expectations of future loan portfolio performance. Thus, one explanation for a reliable independent bank loan performance effect on subsequent bank lending growth is that loan performance is a proxy for bank management expectations about the profitability of a bank's investment opportunity set.

Table 5 reports the results of a regression specification that we had hoped might provide some limited evidence about our conjecture. In the regressions results reported in Table 5, we have added bank indictors for specialty lender status to the regression specification of Table 3 and also inter-acted these specialty lender dummy variables with lagged non-performing loan measures. We had hoped that the interaction of these specialty dummy variables would show a pattern consistent with our expectations about the importance of relationships for bank lending. We would expect commercial lending to be, on average, the most relationship intensive, and mortgage lending the least. While Table 5 estimates do provide some evidence that lagged commercial loan performance has an especially negative and statistically significant effect on subsequent lending growth for specialty commercial lenders (as we expected), we do not find the evidence from these tests to be conclusive and we are continuing our research on this issue.

V. Policy Implications

Prior to the 2008 crisis and government financial sector support, the macroeconomic literature on the credit channel clearly identified the possibility that governments may need to use direct funding subsidies to borrowers or intermediaries as a means to mitigate financial fragility. For example, Bernanke and Gertler (1990) argue that, in some circumstances, direct subsidies to borrowers or intermediaries may be an appropriate policy to overcome extreme informational asymmetries in order to promote efficient investment. In the choice about whether to subsidize borrowers or intermediaries, Bernanke and Gertler argue in favor of subsidizing intermediaries. They argue that competition among intermediaries will insure that government support is passed on to borrowers and, because of intermediaries accumulated information capital, the involvement of intermediaries solve the policymakers problem of identifying the borrowers most worthy of receiving government financing assistance.

Prior to 2008, the debate about how best to subsidize intermediation to help promote optimal investment was only an important issue for academics. Beginning in the fall of 2008, the U.S. government initiated numerous programs that provided direct support for the financial sector and the debate about how best to subsidize financial intermediation became all too real for policymakers.[27] By providing liquidity, reducing interest margins, and strengthening financial institutions' capital bases, these programs offset the effects of accumulating losses on poorly performing securities and loan investments. Without this assistance, policy makers predicted that a weakened banking system would restrict loan supply, reduce consumer and business access to credit, and result in a much deeper and prolonged recession. [28]

Subsequently, there has been significant public debate about whether any of the direct bank assistance programs initiated in 2008 helped to attenuate the post-crisis recession. The results of this study strongly suggest that government programs like the FDIC's TLGP and Federal Reserve special lending facilities—programs that reduced banks' cost of funding--should have had the greatest effect at maintaining bank loan supply. Our results suggest that capital injections likely had only a positive small impact on bank loan supply.

[Will add some analysis about supervisory channel in next draft]

VII. Conclusions [Still to be written]

[27] The Federal Reserve Term Auction Facility, Term Asset-Backed Securities Loan Facility, and Mortgage-Backed Securities Program provided institutions with subsidized direct financing when private market liquidity evaporated. The FDIC Temporary Liquidity Guarantee Program provided full government guarantees for non-interest bearing transactions accounts and newly issued senior unsecured liabilities on banks and bank holding companies. The U.S. Treasury Capital Purchase Program component of the Troubled Asset Relief Program provided direct capital injections into selected institutions.

[28] For example, see Chairman Bernanke's October 7, 2008 speech at the National Association for Business Economics 50th Annual Meeting, Washington, D.C. or Secretary of Treasury Paulson's public statement on the need for the Troubled Asset relief Program, September 19, 2008.

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Table 1: Summary Statistics

Variable	N	Mean	Std. Dev.	Min	Max
Quarter-to-Quarter Loan Growth (Pct)	367,219	1.8	4.0	-9.6	18.8
Loan Growth Demeaned by County-Qtr LG Average (Pct)	367,219	0.0	3.1	-13.7	15.1
Past Due to Assets, 1-Qtr Lag (Pct)	367,219	0.9	0.9	0.0	59.9
Non-current to Assets, 1-Qtr Lag (Pct)	367,219	0.7	1.0	0.0	52.4
Cost of Funds to Liabilities, 1-Qtr Lag (Pct)	367,219	0.8	0.3	-3.4	10.7
=1 if PCA Adequately Capitalized, 1-Qtr Lag	367,219	0.02	0.12	0	1
=1if PCA Under or Significantly Undercapitalized, 1-Qtr Lag	367,219	0.00	0.03	0	1
=1 if Composite Rating = 3, 1-Qtr Lag	367,219	0.05	0.22	0	1
=1 if Composite Rating = 4 or 5, 1-Qtr Lag	367,219	0.01	0.10	0	1
=1 if Small Bank, 1-Qtr Lag	367,219	0.58	0.49	0	1
=1 if Medium Bank, 1-Qtr Lag	367,219	0.40	0.49	0	1
Leverage Capital Ratio, 1-Qtr Lag (Pct)	367,191	10.1	3.5	0.0	100.5
Tier 1 Risk-Based Capital Ratio, 1-Qtr Lag (Pct)	367,191	16.6	10.4	0.0	1307.5
Total Risk-Based Capital Ratio, 1-Qtr Lag (Pct)	367,191	17.7	10.4	0.0	1309.4
=1 if Commercial Specialization, 1-Qtr Lag	367,219	0.40	0.49	0	1
=1 if Consumer Specialization, 1-Qtr Lag	367,219	0.02	0.15	0	1
=1 if Mortgage Specialization, 1-Qtr Lag	367,219	0.15	0.35	0	1
County Unemployment Rate (Pct)	366,560	5.0	1.9	0.6	31.9
County HPI Growth Rate (Pct)	366,568	0.4	1.9	-18.6	14.9
County Credit Card 60 Days DQ Rate (Pct)	366,548	2.7	1.2	0.0	15.7

Table 2: OLS Estimates, Qtr-to-Qtr Bank Loan Growth

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Past Due to Assets, 1-Qtr Lag (Pct)	-0.18***	-0.17***	-0.18***	-0.17***	-0.17***	-0.15***	-0.14***	-0.14***	-0.12***	-0.12***
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Non-current to Assets, 1-Qtr Lag (Pct)	-0.38***	-0.38***	-0.38***	-0.31***	-0.31***	-0.54***	-0.53***	-0.53***	-0.43***	-0.43***
	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Cost of Funds to Liabilities, 1-Qtr Lag (Pct)		-0.07	-0.08	-0.06	-0.06		-1.78***	-1.77***	-1.70***	-1.56***
		(0.10)	(0.10)	(0.11)	(0.11)		(0.13)	(0.13)	(0.13)	(0.12)
=1 if PCA Adequately Capitalized, 1-Qtr Lag			0.57***	0.79***	0.79***			-0.32***	-0.15*	-0.13
			(0.10)	(0.10)	(0.10)			(0.09)	(0.09)	(0.09)
=1if PCA Under or Sign. Undercapitalized, 1-Qtr Lag			-0.43	0.32	0.32			-0.53	0.09	0.11
			(0.36)	(0.33)	(0.33)			(0.34)	(0.32)	(0.32)
=1 if Composite Rating = 3, 1-Qtr Lag				-0.81***	-0.81***				-1.32***	-1.33***
				(0.06)	(0.06)				(0.05)	(0.05)
=1 if Composite Rating = 4 or 5, 1-Qtr Lag				-1.49***	-1.49***				-2.11***	-2.14***
				(0.10)	(0.10)				(0.10)	(0.10)
=1 if Small Bank, 1-Qtr Lag					0.07					0.83***
					(0.08)					(0.16)
=1 if Medium Bank, 1-Qtr Lag					0.09					0.29*
					(0.07)					(0.16)
County Unemployment Rate (Pct)	-0.06***	-0.06***	-0.06***	-0.06***	-0.06***	-0.12***	-0.12***	-0.12***	-0.12***	-0.12***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
County HPI Growth Rate (Pct)	0.09***	0.09***	0.09***	0.09***	0.09***	0.07***	0.06***	0.06***	0.06***	0.06***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
County Credit Card 60 Days DQ Rate (Pct)	0.12***	0.12***	0.12***	0.12***	0.12***	-0.00	-0.01	-0.01	-0.00	-0.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Constant	0.13	0.19	0.18	0.19	0.12	1.26***	2.65***	2.65***	2.65***	1.90***
	(0.09)	(0.12)	(0.12)	(0.12)	(0.13)	(0.09)	(0.14)	(0.14)	(0.14)	(0.19)
Bank Fixed Effects	N	N	N	N	N	Y	Y	Y	Y	Y
Quarterly Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	366540	366540	366540	366540	366540	366540	366540	366540	366540	366540
R-sq	0.12	0.12	0.12	0.12	0.12	0.25	0.25	0.25	0.26	0.26

Note: Robust standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01

Table 3: OLS Estimates, with County/Qtr Fixed Effects

	(1)	(2)	(3)	(4)	(5)
Past Due to Assets, 1-Qtr Lag (Pct)	-0.14***	-0.14***	-0.13***	-0.12***	-0.13***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Non-current to Assets, 1-Qtr Lag (Pct)	-0.35***	-0.35***	-0.35***	-0.28***	-0.28***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Cost of Funds to Liabilities, 1-Qtr Lag (Pct)		-1.35***	-1.34***	-1.29***	-1.14***
		(0.11)	(0.11)	(0.11)	(0.11)
=1 if PCA Adequately Capitalized, 1-Qtr Lag			-0.21***	-0.10	-0.08
			(0.08)	(0.07)	(0.07)
=1if PCA Under or Sign. Undercapitalized, 1-Qtr Lag			-0.35	0.05	0.07
			(0.30)	(0.28)	(0.28)
=1 if Composite Rating = 3, 1-Qtr Lag				-0.87***	-0.88***
				(0.04)	(0.04)
=1 if Composite Rating = 4 or 5, 1-Qtr Lag				-1.38***	-1.41***
				(0.10)	(0.10)
=1 if Small Bank, 1-Qtr Lag					1.07***
					(0.17)
=1 if Medium Bank, 1-Qtr Lag					0.54***
					(0.17)
Constant	0.68***	1.71***	1.70***	1.73***	0.72***
	(0.03)	(0.10)	(0.10)	(0.10)	(0.17)
Bank Fixed Effects	Y	Y	Y	Y	Y
Quarterly Fixed Effects	Y	Y	Y	Y	Y
N	366568	366568	366568	366568	366568
R-sq	0.13	0.13	0.13	0.13	0.14

Note: Robust standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01

Table 4: OLS Estimates, with County/Qtr Fixed Effects

	(1) *Leverage*	(2) *Tier1*	(3) *Risk-Based*
Past Due to Assets, 1-Qtr Lag (Pct)	-0.13***	-0.12***	-0.12***
	(0.01)	(0.01)	(0.01)
Non-current to Assets, 1-Qtr Lag (Pct)	-0.28***	-0.28***	-0.28***
	(0.02)	(0.02)	(0.02)
Cost of Funds to Liabilities, 1-Qtr Lag (Pct)	-0.97***	-1.08***	-1.09***
	(0.11)	(0.11)	(0.11)
=1 if PCA Adequately Capitalized, 1-Qtr Lag	0.00	-0.04	-0.05
	(0.08)	(0.08)	(0.08)
=1if PCA Under or Sign. Undercapitalized, 1-Qtr Lag	0.33	0.21	0.20
	(0.28)	(0.28)	(0.28)
Capital Ratio, 1-Qtr Lag (Pct)	0.05***	0.01***	0.01***
	(0.01)	(0.00)	(0.00)
=1 if Composite Rating = 3, 1-Qtr Lag	-0.86***	-0.88***	-0.88***
	(0.04)	(0.04)	(0.04)
=1 if Composite Rating = 4 or 5, 1-Qtr Lag	-1.34***	-1.39***	-1.39***
	(0.10)	(0.10)	(0.10)
=1 if Small Bank, 1-Qtr Lag	1.01***	1.04***	1.04***
	(0.17)	(0.17)	(0.17)
=1 if Medium Bank, 1-Qtr Lag	0.53***	0.54***	0.54***
	(0.17)	(0.17)	(0.17)
Constant	0.09	0.45**	0.46**
	(0.18)	(0.19)	(0.19)
Bank Fixed Effects	Y	Y	Y
Quarterly Fixed Effects	Y	Y	Y
N	366540	366540	366540
R-sq	0.14	0.14	0.14

Note: Robust standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01

Table 5: OLS Estimates, with County/Qtr Fixed Effects

	(1) *Commercial*	(2) *Consumer*	(3) *Mortgage*
Past Due to Assets, 1-Qtr Lag (Pct)	-0.10***	-0.12***	-0.14***
	(0.01)	(0.01)	(0.01)
Non-current to Assets, 1-Qtr Lag (Pct)	-0.25***	-0.28***	-0.28***
	(0.02)	(0.02)	(0.02)
Speciality Dummy, 1-Qtr Lag	0.04	-0.11	-0.15***
	(0.04)	(0.08)	(0.05)
*PD, 1-Qtr Lag * Speciality, 1-Qtr Lag*	-0.06***	-0.04	0.06**
	(0.02)	(0.04)	(0.03)
*NC, 1-Qtr Lag * Specialty, 1-Qtr Lag*	-0.04	0.07	0.05
	(0.03)	(0.07)	(0.03)
Cost of Funds to Liabilities, 1-Qtr Lag (Pct)	-0.97***	-0.97***	-0.97***
	(0.11)	(0.11)	(0.10)
=1 if PCA Adequately Capitalized, 1-Qtr Lag	0.01	0.00	0.00
	(0.08)	(0.08)	(0.08)
=1if PCA Under or Sign. Undercapitalized, 1-Qtr Lag	0.37	0.33	0.34
	(0.28)	(0.28)	(0.28)
Leverage Capital Ratio, 1-Qtr Lag (Pct)	0.05***	0.05***	0.05***
	(0.01)	(0.01)	(0.01)
=1 if Composite Rating = 3, 1-Qtr Lag	-0.86***	-0.86***	-0.86***
	(0.04)	(0.04)	(0.04)
=1 if Composite Rating = 4 or 5, 1-Qtr Lag	-1.32***	-1.34***	-1.34***
	(0.11)	(0.10)	(0.10)
=1 if Small Bank, 1-Qtr Lag	1.01***	1.01***	1.01***
	(0.17)	(0.17)	(0.17)
=1 if Medium Bank, 1-Qtr Lag	0.54***	0.53***	0.53***
	(0.17)	(0.17)	(0.17)
Constant	0.07	0.09	0.11
	(0.18)	(0.18)	(0.18)
Bank Fixed Effects	Y	Y	Y
Quarterly Fixed Effects	Y	Y	Y
N	366540	366540	366540
R-sq	0.14	0.14	0.14

Note: Robust standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01