How Does Bank Lending React to Unexpected Changes in Bank Supervision?

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I. Introduction

The financial crisis that the U.S. is currently experiencing has resulted in proposals for tighter regulation of financial institutions.[1] But implementing new regulatory reforms should be done after a careful analysis of its consequences on the financial system, and more specifically, on banking behavior. Undoubtedly, banking regulation and prudential supervision exists because it is thought to promote an efficient and competitive banking system. It is also thought to help prevent the occurrence of large and sustained financial disruptions caused by banking panics and failures, and, in addition, to reduce depositor's risk exposure to episodes of financial distress. While these objectives serve to ensure the stability and growth of the macroeconomy, they may not be costless to the banking sector. Indeed, many studies of bank regulation focus on the identification and estimation of these costs.[2] The concern stems from the possibility that regulatory oversight can unintentionally impose costs that may be unduly burdensome, thereby becoming financial straightjackets for bank lending operations.

The purpose of this paper is to study in greater detail how bank supervision, through its evaluation process, affects bank-lending operations. Regulatory oversight requires that all federally insured commercial banks be periodically evaluated through on-site examinations as well as off-site monitoring.[3] The evaluation results in the assignment of a "CAMEL" safety

[1] Recent examples of this are: (i) Treasury Department current plans for overhauling the U.S. financial system architecture, and (ii) the call by president Barack Obama for greater bank supervisory authority for the Fed, and the imposition of higher capital requirements for financial institutions; and (iii) the recent G-20 meetings in London which call for enhanced supervision and regulation of both financial institutions and markets; (iv) active discussions and hearings on this issue in the U.S. Congress.

[2] For a detailed review of the empirical literature on the cost of bank regulation, see Elliehausen (1998). For the cost associated bank supervision see Hawke (2000).

[3] In this paper, "federally insured commercial banks" refer to both commercial banks and thrift institutions.

and soundness rating based on the overall financial health of the institution.[4] A downgrade in this rating conveys the message that the bank's financial health has deteriorated, and that its management must take corrective action to improve its supervisory rating. It is, therefore, not far-fetched to think that "CAMEL" ratings downgrades, especially those to the 3, 4 or 5 level, would be associated with more conservative or restricted lending practices and potentially higher capital requirements at least in the short run. Thus, a poor rating has real consequences for how the bank operates.

We evaluate the effect of bank supervision on bank lending behavior by estimating a parsimonious loan growth regression that includes a measure of the unexpected change in CAMEL ratings as an independent variable. Of course, the regressions also include other variables that control for important aspects such as banking market and local demand conditions.[5] In order to gain a very thorough understanding of how bank supervision affects bank lending, we use bank level data to estimate loan growth regressions for several loan categories (commercial and industrial (C&I), real estate, and consumer loans). We estimate these regressions over two different time periods (1985-1993 and 1994-2005). In addition, we perform regressions for each component of CAMEL ratings (composite CAMEL rating plus the five components), different directions in the change of the unexpected supervisory change (downgrades versus upgrades), and, finally different set of controls (including and excluding the effect of banking market conditions). Undoubtedly, this results in a large number of tables and regressions. However, we do this in order to present a very comprehensive analysis of the effect of bank supervision on loan growth.

[4] "CAMEL" stands for: Capital, Asset quality, Management, Earnings, and Liquidity. These are the five categories supervisors use when examining banks until 1997. On January 1, 1997, a sixth rating component, Sensitivity to market risk, was added. We do not use this component in this study since it was not available for the entire sample period. The ratings are assigned on a scale from 1 to 5, with 1 being the highest (healthiest possible condition) and 5 being the lowest (worst possible financial condition). For more on this see FDIC (2004).

[5] A more precise definition of these terms is provided further below.

The literature that studies the extent to which banking regulation affects lending is certainly voluminous. However, only a handful of papers use supervisory ratings to study its implications for bank lending operations.[6] The four most relevant studies for the purposes of this paper are: Peek and Rosengren (1995), Peek, Rosengren, and Tootell (2003), Bizer (1993), and Berger, Kyle, and Scalise (2001).

Peek and Rosengren (1995) find that the large decline in the growth rate of bank lending in New England, which aggravated the 1990-1991 recession, was driven, in part, by the active enforcement of capital requirements, as institutions contracted their assets to meet the newly imposed requirements. Peek, Rosengren, and Tootell (2003) use the fraction of banks that have a CAMEL 5 rating (the worst rating) as an instrument for identifying loan supply shocks. They find that banks that receive this rating change their lending behavior considerably. They also show that GDP growth forecast errors (the difference between actual GDP growth and its forecast) are correlated with this instrument for loan supply shocks. Bizer (1993) presents evidence suggesting that worse CAMEL ratings appear to reduce bank lending.

Berger, Kyle, and Scalise (2001) use CAMEL ratings to investigate the following: (1) whether bank supervisors were particularly tough with their evaluations during the 1989-92 credit crunch period, (2) whether they were more lenient in the 1993-98 recovery period, and (3) whether these changes in the aggressiveness of bank supervision had any effect on bank lending behavior. They find that bank examiners had, in fact, been harsher during the credit crunch period than afterwards (1993-1998). Nonetheless, they find that these changes in the intensity of supervisory reviews had a relatively small effect on bank lending practices.

[6] Several other studies examine the effect of changes in supervisory ratings on stock market returns. See for example, Berger and Davis (1998) and Berger, Davis, and Flannery (2000).

Although these papers, in one way or another, investigate the effect of bank supervision on loan growth, there are several important issues they do not address, which may compromise the interpretation of the results. For example, the finding that downgrades, per se, appear to be associated with contractions in loan growth does not necessarily constitute evidence that supervisory toughness was responsible for the decline. A relationship between downgrades and loan growth could be driven by a third factor, for example the bank's financial conditions. Deterioration in financial health may result in both a reduction in bank lending as well as supervisory downgrades. Hence, studies that aim at measuring the effect of supervisory changes on loan growth must also control for a bank's financial condition. Although some of the papers cited above include standard financial ratios as a way of controlling for financial conditions, none of them use the SCOR index, a sophisticated rating system developed by the FDIC in the 1990s to help predict changes in CAMEL ratings.[7] In this paper we use the SCOR index to forecast CAMEL ratings (both the composite and components). Using the SCOR rating, we construct a measure of unexpected changes in supervisory ratings and examine how it affects bank lending.

Besides introducing this innovation, this paper contributes to the literature in three other important aspects. First, we explicitly control for possible strategic considerations in banking markets. Specifically, it is possible that bank *i* responds by increasing loan growth when other banks that operate in bank *i*'s market are being downgraded. Why? If downgrades do, in fact, affect lending, and bank *i*'s competitors are downgraded, their response may result in more lending opportunities for bank *i*, of course, controlling for bank *i*'s own conditions.

[7] SCOR is an acronym that stands for "Statistical CAMELS Off-site Rating." Bank examiners and regulators currently use this rating system to help identify financial institutions that may require a more in-depth examination because of deterioration in their financial situation since their last on-site examination. For a detailed description of the SCOR system see Collier, Forbush, Nuxoll, and O'Keefe (2003).

Second, while other papers concentrate on examining the effect of downgrades on the composite score, this paper goes a step further and measures the effect of downgrades in the CAMEL composite rating as well as the components. This is worth investigating since it is possible that banks may react differently to downgrades in different categories.

Third, this paper examines whether the effects of unexpected changes in bank supervision are asymmetric. Straightforward intuition tells us that unexpected downgrades should lead to a contraction in bank lending, but that unexpected upgrades should not necessarily result in a symmetric increase in loan growth.

As a preview we offer a brief summary of our main results. First, the evidence indicates that unanticipated changes in supervisory ratings have a large and protracted effect on all loan categories (commercial and industrial, real estate, and consumer loans), and both periods (1985-1993; 1994-2005). An unexpected downgrade of one unit reduces the growth rate of C&I lending by 10 to 11 percent, real estate lending by 6 to 7 percent, and consumer lending by 8 to 12 percent, after 3 years. By contrast, upgrades do not appear to consistently affect bank lending. Thus, we find strong evidence for the hypothesis that the effect of supervision on bank lending is largely asymmetric.

Second, we find that a downgrade in the liquidity component has the largest effect on loan growth, compared to the effects of downgrades in all of the other component categories as well as the composite ratings. In the discussion of the results section we address in more detail the significance of this finding.

Third, we do not find that downgrades to competitors in the same market affect an individual bank's loan growth behavior. More importantly, however, the inclusion of the competitor's variable in the regressions does not affect the magnitude of the effect of a downgrade on loan growth.

Finally, we do not find evidence in support of the hypothesis that the effect of unexpected downgrades declined between the two periods 1985-1993 and 1994-2005. In fact, if anything, we find that the effect of unexpected downgrades increased slightly. Thus, the effect of unexpected downgrades appears to be quite robust to different periods, and does not appear to be driven by regulatory "toughness" that may have taken place during the early 1990s (Peek and Rosengren, 1995; Berger, Kyle, and Scalise, 2001).

The rest of this paper is organized as follows. The following section II offers a description of the data underlying this paper. Section III discusses in more detail the methodology used to test they hypothesis and also discusses the results. Section IV offers some concluding remarks.

II. Data

To capture the effect of an unexpected downgrade on loan growth, we must be able to observe an institution over at least one full bank examination cycle, and preferably, over several examination cycles. Because the frequency of examinations ranges from one to two years, a given set of institutions should ideally be observed over several years. But observing a set of banks over time introduces attrition in the dataset, as banks leave the sample due to mergers, failures, voluntary closures, etc. The attrition problem clearly worsens with the length of time of the panel data. Undoubtedly, attrition introduces non-random distortions which may compromise the design of the model and any statistical inferences made from it. In the context of this study, it is very probably that banks that leave the sample are indeed those that are more likely to have financial problems. Banks that are truly in serious difficulty (and thus receive a large downgrade) are likely to seek a merger with banks that are in better financial health. They may also disappear from the sample because of failure or closure.

During the last few quarters immediately preceding their disappearance, if these institutions are severely downgraded they may be forced by regulators to reduce lending dramatically in an effort to improve their financial condition and try to avoid outright failure, or enhance its chances of a merger with a healthier institution. The inclusion of these institutions, therefore, will tend to enhance the chances of observing a statistically significant relationship between downgrades and loan growth. But if the results are driven by these institutions only, it would not be appropriate to conclude, from a more general perspective, that downgrades affects loan growth.

In order to be confident that our results were not driven by problem institutions that leave the sample, we make use of a balanced panel dataset. That is, we study the hypothesis for financial institutions that operated continuously during the sample period.[8] But working with a balanced panel dataset introduces one important complication: a trade-off between the length of the time of the time series component and the number of institutions included in the cross-section. It is easy to understand the nature of this trade-off: extending the time series compromises the cross-section component of the dataset because banks that leave the sample are obviously excluded. Hence, a panel dataset extending over a very long period is likely to include only a relatively thin set of banks. On the other hand, a panel dataset that is short (in the time dimension) may include a large number of banks, but may not be long enough to accurately identify the effect of unexpected downgrades.

A natural way of dealing with this problem is to construct balanced panel datasets over different time periods. In this study, we consider two distinct periods: 1985-1993 and 1994-2005. Thus, the first balanced panel dataset is a sample of 7914 federally insured

[8] Working with a balanced panel dataset is an inefficient way of dealing with the problem because it "throws away" information. Ultimately, however, whether we work with a balanced or unbalanced dataset is a moot point since the regression results were indeed very similar in any case.

financial institutions that operated continuously between the first quarter of 1985 and the fourth quarter of 1993.[9] The second panel is a sample of 6047 federally insured financial institutions that operated continuously between the first quarter of 1994 and the fourth quarter of 2005.[10]

We obtained data for all of these institutions from the Call Reports available at the FDIC. Also from the FDIC we obtained the supervisory ratings for the CAMEL composite and the components, as well as the SCOR ratings. Unemployment figures at the county level were obtained from Haver Analytics (www.haver.com).

The basic summary statistics are presented in Table 1. The figures are split by the time periods (1st period covers the years 1985 to 1993, and the 2nd period covers the years 1994 to 2005). As one would expect, the unemployment rate was higher in the first period than in the second period as the first period covers the 1990-91 recession, while the second period was generally more prosperous. The difference between the first period loan growth figures and the second period figures also reflect the difference in overall economic prosperity—they tend to be higher in the 2nd period. Also consistent with expectations are the mean and median CAMEL and SCOR ratings, which are generally higher during the 1st period. Thus, the typical bank improved its rating between the first and the second period. Also consistent with this statistic, is the decline in the proportion of problem banks (those with a composite CAMEL rating of 3, 4 or 5) from nearly 20 percent in the first period to about 5 percent in the second period.

[9] There are very good reasons for breaking up the sample in 1993. These are discussed in more detail in the empirical section of the paper.

[10] Excluded from the sample are "specialty" institutions, such as "credit card banks," banks that underwent a significant reorganization during either sample period, and "outlier" institutions—those that grew or contracted by more than 80 percent from one quarter to the next. It is very likely that these institutions were either undergoing a large reorganization or perhaps their data contain errors. Only a handful of institutions were eliminated as a result of these trimming effects.

III. Methodology and Results

A. Regression Specification

To examine the effect of bank supervision on bank lending, we estimate a parsimonious model of loan growth. In particular, we estimate, for each loan category (C&I, real estate, and consumer loans) the following regression:

$$\left(\frac{\Delta l_{i,t}^{k}}{l_{i,t-1}^{k}}\right) = \alpha + \sum_{j=0}^{n}\left(\beta_j \Delta SS_{i,t-j}^{c}\right) + \sum_{p=0}^{n}\left(\theta_p \Delta CS_{i,t-p}^{c}\right) + \sum_{m=0}^{n}\phi_m\left(controls_{i,t-m}\right) + \varepsilon_{i,t} \qquad (1)$$

Where *l* stands for bank *i*'s loans at time *t* for loan category *k* (*k*= C&I loans, real estate loans, consumer loans) and Δ indicates change. The dependent variable is multiplied by 100 in order to facilitate the interpretation of the coefficients as an effect on a percentage figure.

The independent variables included are:

(i) "$\Delta SS_{i,t}^{c}$" which stands for "change in supervisory shock" and it is defined as the change in the difference between the actual CAMEL rating received and the forecasted CAMEL rating (using SCOR ratings) for bank *i*, at time *t*, and for CAMEL category *c* (= composite, capital, asset quality, management, earnings, liquidity).[11] The change in supervisory shock is the variable of interest in this study since it measures the unexpected component of bank supervision. Recall that the underlying hypothesis is that it is the unexpected downgrade or upgrade that affects bank lending behavior. For example, a bank

[11] To be more specific, let c_t be the actual CAMEL rating received in period t, and f_t the SCOR rating for period t. The unexpected downgrade (or upgrade) is then:
$(c_t - c_{t-1}) - (f_t - f_{t-1}) = (c_t - f_t) - (c_{t-1} - f_{t-1}) \equiv \Delta SS_t$, where $(c_t - c_{t-1})$ is the actual downgrade (or upgrade) and $(f_t - f_{t-1})$ is the expected downgrade (or upgrade).

that receives a downgrade from say, a 1 to a 2, and did not expect it (the current SCOR is relatively close to the previous one) is expected to contract lending by a larger magnitude than a bank that is also downgraded by the same amount, but "expected it." In this particular case, "expecting it" means that the difference of the current and the previous period SCOR would be similar in magnitude to the difference in the actual downgrade. The change in the supervisory shock captures this effect. In equation (1), $\beta_j s$ measures these effects for all banks in the sample. We allow the βs to affect loan growth with a lag since we did not want to restrict the effect of the shock on loan growth to be only contemporaneously. Indeed, it is quite conceivable that supervisory shocks will affect bank lending with a lag of a year or more, since it may take some time for banks to respond to the shock. Moreover, the frequency with which banks are examined ranges from once a year to once every year and a half. Hence, in order to capture as much of a comprehensive effect as possible, we estimate all regressions with a 3 year lag.[12]

(ii) "$\Delta CS_{i,t}^{c}$," which stands for "change in competitor's shock" and is the change in the average supervisory shock (for CAMEL rating c) for all banks (other than bank i) that are operating in bank i's market.[13] This variable is introduced to allow for the possibility that banks can change their lending behavior in response to supervisory shocks to their competitors—banks that operate in the same banking market. We are agnostic as to how this

[12] Allowing for longer lags did not add significantly more explanatory power to the regressions.

[13] We assume that the county in which bank i operates defines the market. Undoubtedly, this is an imperfect measure of defining the appropriate banking market—it will tend to overstate the relevant banking market in relatively sparse rural areas and understate it in more concentrated urban areas. There are two reasons why we kept this definition of banking markets. First, despite its drawbacks, it seems reasonable to use given that existing research finds that over 90 percent of households and small businesses choose a local bank (within a radius of 30 miles) in which to make their transactions. For evidence, see Kwast, Starr-McCluer, and Wolken (1997). This implies that a bank's most important competitors are, essentially, those that lie in the vicinity. Given that the area of the typical county in the US is approximately 1,200 squared miles (about 35 x 35 miles), using the county as the relevant market may not be a bad approximation. Second, unfortunately, we are somewhat constrained to use this definition as the variable that control for demand conditions, unemployment, is only defined at the county level.

variable affects bank *i*'s lending behavior. A priori, one could make the argument that the effect of this variable should be positive, negative, or even zero. The argument for a positive effect can be made as follows: if bank *i's* competitors contract lending in response to an unexpected downgrade, bank *i* may increase its lending because it may be picking up the business left behind by its competitors. In this case, the cumulative effect of the ΔCS variable should be positive—an unexpected downgrade for bank *i's* competitors (an increase in CS) means that bank *i* may increase lending, of course, controlling for bank *i's* own shock as well as market conditions.

On the other hand, one could make an argument for a negative effect. If the control variables fail to capture all market-specific conditions (perhaps because they cannot capture information that is not quantifiable), it is possible that the competitor's shock variable does.[14] If so, an unexpected downgrade to bank *i*'s competitors could be a signal that localized banking market conditions may have deteriorated. Hence, it is possible that bank *i* may end up contracting lending as well. Lastly, one could make the argument that supervisory shocks to banks *i* and *j* should be uncorrelated with each other, especially if the information content of the shock is private. Evidently, then, how a bank reacts to an unexpected downgrade on its competitors is an empirical issue.

(iii) "Controls," which refers to the series of variables included in equation (1) that control for other important considerations such as demand conditions and regulatory agencies. To control for demand conditions we include the change in the unemployment rate in bank *i*'s market. Just as we do for the previously discussed variables, we include a 3 -year

[14] It is not uncommon to observe a deterioration of "soft" information when economic conditions deteriorate. Problems such as adverse selection and moral hazard in financial markets may become more pronounced during economic downturns. This particular aspect has been emphasized in the "credit channel" literature. For an overview of this issue see Bernanke and Gertler (1995). For empirical evidence suggesting that soft information deteriorates when economic conditions worsen see Samolyk (1994).

lag window as well since it is possible that demand shocks affect loan demand with a delay. We expect the cumulative effect of the unemployment variable to be negative—all else constant; an increase in unemployment should have a negative effect on loan demand. We also include in "controls" a series of dummy variables that control for the supervisory agency for bank *i* at time *t*. The banks in our sample were supervised by one of the following agencies: the Federal Reserve, the FDIC, the OCC, the OTS, and/or state regulators. These variables are included as dummy variables and hence, no lag structure was imposed on them.

Equation (1) is estimated using OLS with individual fixed effects as well as year effects.[15] We estimate equation (1) for two different time periods: (1) 1985-1993 and (2) 1994-2005. We have several reasons for doing this: (i) we seek to investigate whether the credit crunch period affects the results. For example, according to Peek and Rosengren (1995) the decline in bank lending between 1989 and 1991 was, in part, attributable to the active enforcement of capital requirements. (ii) FDICIA (which was passed in 1991 and implemented two years later) may have also affected the relationship between unexpected CAMEL shocks and loan growth. (iii) There is some evidence suggesting that these two periods are very different in the stringency of bank examiners. In particular, Berger, Kyle, and Scalise (2001) argue that during the earlier period examiners were much tougher with bank ratings than they were during the second period.

B.1 Benchmark Results

B.1.1 Overview and Composite CAMEL Effects

The basic results are presented in Tables 2 through 7. Table 2 presents the results of surprises in the composite CAMEL rating, while Tables 3 through 7 present the results of

[15] We also estimated a dynamic version of equation (1), which allows for serially correlated residuals. The estimated autoregressive order parameter was nearly always small and statistically insignificant, suggesting that there little evidence that the residuals were serially correlated. Unsurprisingly, in the vast majority of the regressions presented below, the results remained essentially unchanged.

surprises in each of the CAMEL components. Overall, the results indicate that unanticipated supervisory ratings (supervisory shocks) have a consistent and long-lasting effect on all loan categories and in both periods. The results in Table 2 (composite CAMEL effects), for example, indicate that a bank that receives an unexpected downgrade of 1 point (say the bank was expecting composite CAMEL rating of 1, and received a 2 rating instead), results in an immediate decline in loan growth estimated to be anywhere from –0.35 (real estate loans, first period, second column) to as much as –1.38 percent (commercial and industrial loans, second period, first column). While this contemporaneous effect does not appear to be very large, the cumulative effect can be quite substantial—after 3 years the cumulative effect can increase to nearly –7.5 percent, depending on the regression specification considered.

Table 2 also reports the regression results split by the two periods considered: 1985-1993 (period 1) and 1994-2005 (period 2). The results indicate that the effect of an unexpected downgrade appear to be robust to the time periods. The point estimate of the supervisory shock variable are either approximately the same or even slightly higher in the second period. This suggests that unexpected downgrades continue to be an important determinant of loan growth.

The results in Table 2 also suggest that, for the most part, the "competitor's shock" variable does appear to have a negatively consistent effect on loan growth—the estimated coefficient is always negative and, in addition, is statistically significant in 5 out the 6 regressions in Table 2. As discussed earlier, we do not have a priori expectations on the value (or magnitude) of this coefficient. In theory, one could make an argument for expecting it to be positive, negative, or even zero. The fact that it is generally negative (and significant) may be evidence for the argument made above suggesting that a deterioration in CAMEL ratings

at the local market level could be an indicator that market-specific banking conditions have deteriorated, thereby resulting in a reduction in bank *i*'s lending.

More importantly, however, controlling for a competitor's shock does not ameliorate the effect of supervisory shocks on loan growth. In Table 2 (and, for that matter, in tables 3 through 7 as well), each set of regressions results is presented with and without the competitor's shock variable in order to examine its impact on the supervisory shock coefficients. A glance at the results clearly suggests that the inclusion of the average competitor's shock does not change the magnitude of the supervisory shock coefficients significantly.

As expected, the cumulative effects of unemployment, included as a control for demand conditions, is generally associated with a decline in loan growth. Curiously, it appears to be statistically insignificant for real estate loans in the first period (for the most part).

B.1.2. Component CAMEL Effects

The results in Table 2 are, for the most part, replicated in tables 3 through 7. Thus, most component CAMEL ratings shocks affect bank loan growth. Nonetheless, it is worth investigating whether there are systematic differences in the degree to which these shocks affect bank loan growth. Do unexpected downgrades in the composite CAMEL ratings cause more of a contraction in loan growth than unexpected downgrades in the CAMEL components? To answer this question we present in Tables 8 through 12 the difference in coefficient tests for the composite CAMEL effect versus the components. Specifically, we test whether the effects of a downgrade in the composite rating is statistically different from the effect of a downgrade in any of the components. Since there are 5 component ratings in the CAMEL scores, we have 5 tables. A negative value on the coefficient difference means

that the particular component causes less of an effect on loan growth than a downgrade on the composite rating. For example, in Table 8, for commercial and industrial loans in the 1st period, the differences in the "Effect after 3 years" coefficients are: –3.501 for the first regression and –2.979 for the second regression. These figures are obtained by subtracting the corresponding coefficient in Table 2 (which measures the effect of downgrades in the composite CAMEL scores) from the corresponding coefficient in Table 3 (which measures the effect of downgrades in the capital component). (-3.501 = -7.285 – (-3.784), and -2.979 = -6.587 – (-3.608))

The results in Table 8 through 12 suggest downgrades in the composite ratings appear to cause a larger contraction in loan growth than downgrades in any of the other components, with the exception of downgrades in the liquidity component. In tables 8, 9, 10, and 11 we mostly see that the differences in the coefficients are negative (and most are statistically significant). However, the same is not true for table 12 (liquidity component). For this last table what we see instead are mostly positive (and statistically significant) differences, implying that a downgrade in the liquidity component causes more of a contraction in loan growth than a downgrade in the composite CAMEL ratings. By implication then, a downgrade in the liquidity component causes the largest contraction in loan growth. These results should not be too surprising. When banks receive a downgrade in the liquidity component the institution in question is most likely facing difficulty in its ability to obtain relatively inexpensive sources of funds, and it is probably tapping more expensive sources such as brokered deposits, uninsured deposits, or borrowings. A bank that receives an unexpected downgrade when it is already confronting such a high degree of financing difficulties is essentially tantamount to receiving a mandate to reduce loan growth, perhaps

drastically, in an effort to improve its liquidity position and restore a more acceptable liquidity management policy.[16]

B.2 Testing for Asymmetries

An important issue worth addressing is whether supervisory shocks have an asymmetric effect on loan growth. Straightforward economic intuition would suggest that unexpected CAMEL downgrades may result in a reduction in lending, but unexpected upgrades should not necessarily result in a symmetric increase in lending. If there are asymmetries present, the results in Tables 2 through 7, which includes both unexpected downgrades and upgrades, may be masking important differences that may exist in the direction of the shock.

To test for asymmetries, we follow the well-established methodology used in the macroeconomics literature that investigates whether monetary policy shocks have an asymmetric effect on output.[17] The basic idea is to create two variables out of the supervisory shock variable: one that picks up only downgrades, while the other one, only upgrades. The "downgrade only supervisory shock" is, thus, defined to be the supervisory shock if the shock is negative (it is set to zero, otherwise). The "upgrade only supervisory shock," is defined to be the supervisory shock if the shock is positive (it is set to zero, otherwise). These two variables would then replace "ΔSS" (along with the lags) in equation (1).

[16] For a more detailed discussion of the implication of a downgrade in the liquidity component see the FDIC's Risk Management Manual of Examination Policies (www.fdic.gov/regulations/safety/manual/section6-1.html).

[17] This literature investigates whether unanticipated monetary policy shocks affect output differently depending on whether the shock is negative or positive. Some recent papers include Cover (1992) and Senda (2001).

Table 13 reports the regression results of equation (1) with the supervisory shock variable being replaced by the two newly created variables: downgrades (dg) and upgrades (up) supervisory shocks. Just as in Tables 2 through 7, there are six panels of results: one for each of the CAMEL components, and one for the composite CAMEL rating.

A glance at the results reveals that there is significant evidence of asymmetries in the supervisory shock variable. Essentially all of the downgrade coefficients are much larger in magnitude than the upgrade coefficients. Moreover, a difference in coefficients test reveals that virtually all of them are statistically significant. Out of the 288 tests performed (= 4 coefficients per regression times 12 regressions per table times 6 tables), 286 of them were statistically significant at the 5 percent level or lower. Thus, we can safely conclude that unexpected downgrades contract lending, while unexpected upgrades do not necessarily result in increases in loan growth.

IV. Conclusion

This paper measures the extent to which bank supervisory shocks, defined as unexpected changes in CAMEL ratings, affects bank lending. We investigate this hypothesis using a large, bank level dataset covering two different time periods: 1985 through 1993 (which we identify as the 1st period, and covers the credit crunch and pre-FDICIA period) and 1994 through 2005 (the 2nd period, which covers the sustained growth, post-FDICIA period).

The evidence indicates that unanticipated changes in supervisory ratings have a large and protracted effect on all loan categories considered (commercial and industrial, real estate, and consumer loans) and in both periods. The effect is much more pronounced for downgrades than it is for upgrades, a result consistent with the notion that banks react much

more strongly to "tough" supervisory actions, than they are to lax supervisory changes. Depending on the specification considered, we find that an unexpected downgrade reduces loan growth by about 2 percent immediately after the downgrade takes place, and by about 10 percent after 3 years, especially for commercial and industrial loans. Our results are robust to a variety of specifications, the inclusion of different controls (including shocks to bank competitors), and even to different time periods.

These results imply that bank supervision does appear to have a large and long-lasting effect on bank lending behavior. While it is socially desirable to actively monitor banks in order to foster a stable and reliable financial system, it is important to recognize that there may be important "side-effects," such as having too much of a contraction in loan growth, and consequently, too much of an adverse effect on economic activity.

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Table 1 Summary Statistics

	MEDIAN		MEAN		STANDARD DEVIATION	
	1st Period	2nd Period	1st Period	2nd Period	1st Period	2nd Period
C&I Loan Growth	0.097	1.508	0.843	2.546	15.785	14.693
Real Estate Loan Growth	1.754	2.011	2.785	2.639	9.082	6.626
Consumer Loan Growth	0.171	0.364	0.597	0.795	10.886	9.864
CAMEL Composite	2	2	2.003	1.625	0.810	0.613
CAMEL Capital	2	1	1.770	1.447	0.806	0.573
CAMEL Asset	2	1	2.011	1.546	0.908	0.668
CAMEL Mgmt	2	2	2.115	1.754	0.752	0.643
CAMEL Earnings	2	2	2.127	1.747	1.025	0.714
CAMEL Liquidity	2	1	1.641	1.477	0.662	0.563
SCOR Composite	1.940	1.624	2.050	1.651	0.556	0.323
SCOR Capital	1.750	1.457	1.812	1.473	0.602	0.353
SCOR Assets	1.891	1.453	2.044	1.545	0.653	0.379
SCOR Mgmt.	2.076	1.737	2.165	1.778	0.401	0.266
SCOR Earnings	1.979	1.748	2.146	1.777	0.725	0.429
SCOR Liquidity	1.672	1.495	1.697	1.513	0.434	0.325
Problem Banks	0	0	0.190	0.053	0.392	0.223
Unemployment rate	6.2	4.7	6.703	5.02	3.182	2.18

Notes: This table presents a basic set of summary statistics of the variables used in the regression analysis. 1st Period refers to the 1985-1993 period. 2nd Period refers to the 1994-2005 period. "C&I Loan Growth" is the rate of change in commercial and industrial loans. "Real Estate Loan Growth" is the rate of change in real estate loans. "Consumer Loan Growth" is the rate of change in consumer loans. "CAMEL Composite" is the CAMEL composite rating. "CAMEL Capital" is the CAMEL capital component rating. "CAMEL Asset" is the CAMEL asset quality component rating. "CAMEL Mgmt" is the CAMEL management component rating. "CAMEL Earnings" is the CAMEL earnings component rating. "CAMEL Liquidity" is the CAMEL liquidity component rating. The SCOR ratings are the "forecasts" of the CAMEL ratings. See text for a more detailed definition. "Problem Banks" is an indicator variable equal to 1 if the bank had a composite CAMEL rating of 3, 4, or 5. "Unemployment rate" is the percentage unemployment rate at the county level.

Table 2: Bank Lending Regressions—Composite CAMEL Effect

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Contemp effect	-1.118	-1.098	-1.381	-1.342	-0.411	-0.349	-1.054	-1.010	-0.591	-0.583	-0.713	-0.686
	0.151	0.159	0.161	0.178	0.087	0.092	0.081	0.089	0.111	0.118	0.108	0.122
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 1 year	-4.409	-4.049	-4.489	-4.410	-2.150	-1.923	-3.096	-3.019	-2.921	-2.765	-3.540	-3.554
	0.459	0.486	0.431	0.478	0.246	0.261	0.220	0.239	0.320	0.345	0.282	0.318
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 2 years	-6.503	-5.981	-6.143	-5.930	-3.110	-2.808	-4.467	-4.423	-4.481	-4.354	-5.941	-6.001
	0.730	0.776	0.674	0.748	0.385	0.409	0.342	0.372	0.503	0.544	0.446	0.505
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 3 years	-7.285	-6.587	-7.451	-7.170	-3.825	-3.557	-5.085	-5.285	-5.337	-5.246	-7.406	-7.487
	0.945	1.010	0.872	0.965	0.496	0.527	0.440	0.478	0.648	0.701	0.573	0.646
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Competitor's Shock		-3.418		-3.642		-2.219		-0.981		-3.011		-2.169
		1.661		1.404		0.817		0.658		1.038		0.856
		0.040		*0.010*		*0.007*		*0.136*		*0.004*		*0.011*
Unemployment chg	-2.057	-2.011	-0.580	-0.588	0.024	-0.125	-0.855	-0.557	-0.557	-0.777	-0.707	-0.810
	0.335	0.371	0.321	0.379	0.160	0.173	0.153	0.001	0.193	0.219	0.192	0.230
	0.000	*0.000*	*0.071*	*0.120*	*0.880*	*0.472*	*0.000*	*0.000*	*0.004*	*0.000*	*0.000*	*0.000*
Num. of Obs.	119575	105657	163158	135677	119575	105657	163158	135677	119575	105657	163158	135677
R-sq. Within	0.007	0.006	0.007	0.008	0.004	0.004	0.010	0.011	0.015	0.015	0.027	0.026
R-sq. Between	0.006	0.003	0.002	0.001	0.006	0.009	0.008	0.002	0.005	0.007	0.005	0.015
R-sq. Overall	0.007	0.006	0.006	0.005	0.004	0.005	0.010	0.007	0.013	0.014	0.022	0.024

Notes: Dependent variable: Rate of change of loan growth for each loan category (commercial and industrial, real estate, and consumer loans) as defined in equation (1) in the text. "Contemp effect" is the contemporaneous effect of an unexpected change in supervisory ratings (as defined in equation (1) in the text). "Effect after x year" is the cumulative effect of an unexpected change in supervisory ratings after x years (x = 1,2,3). "Competitor's Shock" is the average unexpected change in supervisory ratings for bank competitors. "Unemployment chg" is the change in unemployment rate in the banking market. The first line of numbers reports the estimated coefficient. The second line reports the standard error. The third line (in italics) reports the associated p-value.

Table 3: Bank Lending Regressions—Component Capital Effect

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Contemp effect	-1.104	-1.161	-1.840	-1.898	-0.426	-0.432	-1.853	-1.847	-0.252	-0.238	-0.655	-0.649
	0.147	0.154	0.183	0.201	0.083	0.089	0.099	0.108	0.108	0.116	0.128	0.144
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.021*	*0.040*	*0.000*	*0.000*
Effect after 1 year	-2.831	-2.716	-3.733	-3.703	-1.573	-1.621	-3.965	-3.861	-1.681	-1.475	-2.523	-2.382
	0.457	0.486	0.479	0.529	0.255	0.271	0.252	0.274	0.327	0.351	0.321	0.360
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 2 years	-3.673	-3.508	-5.892	-5.659	-1.562	-1.749	-5.159	-5.000	-2.601	-2.507	-4.545	-4.243
	0.735	0.783	0.750	0.823	0.402	0.427	0.383	0.415	0.524	0.565	0.505	0.571
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 3 years	-3.784	-3.608	-6.698	-6.711	-1.496	-1.799	-5.689	-5.547	-3.014	-3.042	-5.638	-5.279
	0.956	1.021	0.962	1.059	0.519	0.552	0.485	0.527	0.678	0.731	0.653	0.738
	0.000	*0.000*	*0.000*	*0.000*	*0.004*	*0.001*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Competitor's Shock		-1.841		-0.351		-0.278		-0.384		-0.427		-0.426
		1.703		1.581		0.847		0.711		1.081		0.984
		0.280		*0.010*		*0.742*		*0.588*		*0.692*		*0.665*
Unemployment chg	-2.106	-2.072	-0.584	-0.589	0.014	-0.112	-0.850	-0.558	-0.585	-0.808	-0.706	-0.820
	0.335	0.370	0.322	0.379	0.159	0.173	0.153	0.175	0.193	0.219	0.193	0.231
	0.000	*0.000*	*0.069*	*0.120*	*0.931*	*0.518*	*0.000*	*0.001*	*0.002*	*0.000*	*0.000*	*0.000*
Num. of Obs.	119575	105657	163158	135677	119575	105657	163158	135677	119575	105657	163158	135677
R-sq. Within	0.006	0.006	0.007	0.008	0.004	0.004	0.012	0.013	0.014	0.014	0.026	0.026
R-sq. Between	0.003	0.002	0.002	0.001	0.003	0.003	0.008	0.002	0.003	0.004	0.006	0.017
R-sq. Overall	0.006	0.005	0.005	0.005	0.004	0.004	0.011	0.008	0.012	0.013	0.022	0.024

Notes: Dependent variable: Rate of change of loan growth for each loan category (commercial and industrial, real estate, and consumer loans) as defined in equation (1) in the text. "Contemp effect" is the contemporaneous effect of an unexpected change in supervisory ratings (as defined in equation (1) in the text). "Effect after x year" is the cumulative effect of an unexpected change in supervisory ratings after x years (x = 1,2,3). "Competitor's Shock" is the average unexpected change in supervisory ratings for bank competitors. "Unemployment chg" is the change in unemployment rate in the banking market. The first line of numbers reports the estimated coefficient. The second line reports the standard error. The third line (in italics) reports the associated p-value.

Table 4: Bank Lending Regressions—Component Asset Quality Effect

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Contemp effect	-0.757	-0.825	-1.167	-1.069	-0.398	-0.340	-0.602	-0.586	-0.410	-0.403	-0.569	-0.554
	0.125	0.132	0.126	0.139	0.071	0.074	0.065	0.071	0.089	0.096	0.085	0.095
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 1 year	-2.356	-2.436	-3.802	-3.655	-1.649	-1.582	-2.180	-2.197	-1.815	-1.783	-2.897	-2.922
	0.402	0.428	0.351	0.387	0.217	0.231	0.179	0.196	0.274	0.296	0.234	0.261
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 2 years	-3.123	-3.346	-5.461	-5.204	-2.233	-2.158	-3.272	-3.383	-2.645	-2.689	-4.759	-4.755
	0.651	0.693	0.563	0.621	0.345	0.367	0.286	0.314	0.438	0.474	0.374	0.419
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 3 years	-3.884	-3.967	-6.841	-6.539	-2.581	-2.521	-3.736	-4.011	-3.329	-3.351	-6.146	-6.056
	0.845	0.903	0.731	0.804	0.446	0.476	0.364	0.404	0.568	0.616	0.486	0.543
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Competitor's Shock		-1.101		-2.459		-2.218		-0.116		-3.304		-3.469
		1.474		1.205		0.715		0.543		0.918		0.725
		0.455		*0.041*		*0.002*		*0.831*		*0.000*		*0.000*
Unemployment chg	-2.086	-2.031	-0.560	-0.565	0.021	-0.137	-0.846	-0.551	-0.572	-0.823	-0.702	-0.805
	0.335	0.370	0.321	0.379	0.159	0.173	0.153	0.175	0.193	0.219	0.193	0.230
	0.000	*0.000*	*0.082*	*0.136*	*0.895*	*0.428*	*0.000*	*0.002*	*0.003*	*0.000*	*0.000*	*0.000*
Num. of Obs.	119575	105657	163158	135677	119575	105657	163158	135677	119575	105657	163158	135677
R-sq. Within	0.006	0.006	0.007	0.008	0.004	0.004	0.009	0.010	0.014	0.014	0.026	0.026
R-sq. Between	0.004	0.002	0.002	0.001	0.005	0.009	0.009	0.002	0.005	0.007	0.006	0.016
R-sq. Overall	0.006	0.005	0.005	0.005	0.004	0.005	0.009	0.006	0.012	0.013	0.022	0.024

Notes: Dependent variable: Rate of change of loan growth for each loan category (commercial and industrial, real estate, and consumer loans) as defined in equation (1) in the text. "Contemp effect" is the contemporaneous effect of an unexpected change in supervisory ratings (as defined in equation (1) in the text). "Effect after x year" is the cumulative effect of an unexpected change in supervisory ratings after x years (x = 1,2,3). "Competitor's Shock" is the average unexpected change in supervisory ratings for bank competitors. "Unemployment chg" is the change in unemployment rate in the banking market. The first line of numbers reports the estimated coefficient. The second line reports the standard error. The third line (in italics) reports the associated p-value.

Table 5: Bank Lending Regressions—Component Management Effect

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Contemp effect	-0.570	-0.573	-0.939	-1.034	-0.195	-0.156	-0.488	-0.469	-0.086	-0.106	-0.297	-0.305
	0.132	0.140	0.138	0.154	0.072	0.076	0.068	0.075	0.095	0.103	0.092	0.103
	0.000	*0.000*	*0.000*	*0.000*	*0.007*	*0.042*	*0.000*	*0.000*	*0.369*	*0.305*	*0.000*	*0.003*
Effect after 1 year	-2.712	-2.632	-3.975	-4.119	-1.725	-1.158	-1.852	-1.768	-1.683	-1.663	-2.580	-2.626
	0.421	0.447	0.376	0.418	0.222	0.236	0.187	0.205	0.290	0.316	0.247	0.279
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 2 years	-3.725	-3.640	-5.868	-5.886	-2.532	-2.379	-2.916	-2.830	-2.971	-3.058	-4.433	-4.500
	0.678	0.719	0.593	0.657	0.355	0.377	0.295	0.320	0.459	0.497	0.388	0.483
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 3 years	-4.469	-4.217	-6.913	-6.996	-2.984	-2.931	-3.442	-3.461	-3.941	-4.109	-5.672	-5.785
	0.884	0.939	0.766	0.848	0.459	0.487	0.379	0.413	0.595	0.642	0.500	0.564
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Competitor's Shock		-2.204		-1.991		-1.347		0.391		-2.238		-1.301
		1.568		1.235		0.780		0.571		0.972		0.742
		0.160		*0.107*		*0.085*		*0.493*		*0.021*		*0.080*
Unemployment chg	-2.082	-2.043	-0.596	-0.625	0.019	-0.133	-0.865	-0.575	-0.579	-0.821	-0.724	-0.846
	0.335	0.371	0.322	0.379	0.159	0.173	0.153	0.175	0.192	0.219	0.193	0.231
	0.000	*0.000*	*0.064*	*0.099*	*0.904*	*0.443*	*0.000*	*0.001*	*0.003*	*0.000*	*0.000*	*0.000*
Num. of Obs.	119575	105657	163158	135677	119575	105657	163158	135677	119575	105657	163158	135677.000
R-sq. Within	0.006	0.006	0.007	0.008	0.004	0.004	0.009	0.010	0.014	0.015	0.026	0.026
R-sq. Between	0.002	0.001	0.002	0.000	0.004	0.004	0.007	0.002	0.003	0.004	0.006	0.015
R-sq. Overall	0.006	0.005	0.005	0.005	0.004	0.004	0.008	0.005	0.012	0.013	0.022	0.024

Notes: Dependent variable: Rate of change of loan growth for each loan category (commercial and industrial, real estate, and consumer loans) as defined in equation (1) in the text. "Contemp effect" is the contemporaneous effect of an unexpected change in supervisory ratings (as defined in equation (1) in the text). "Effect after x year" is the cumulative effect of an unexpected change in supervisory ratings after x years (x = 1,2,3). "Competitor's Shock" is the average unexpected change in supervisory ratings for bank competitors. "Unemployment chg" is the change in unemployment rate in the banking market. The first line of numbers reports the estimated coefficient. The second line reports the standard error. The third line (in italics) reports the associated p-value.

Table 6: Bank Lending Regressions—Component Earnings Effect

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Contemp effect	-0.376	-0.413	-0.291	-0.270	-0.074	-0.037	-0.170	-0.196	-0.091	-0.071	-0.288	-0.273
	0.108	0.114	0.134	0.148	0.060	0.063	0.071	0.077	0.079	0.084	0.092	0.103
	0.001	*0.000*	*0.029*	*0.069*	*0.214*	*0.563*	*0.017*	*0.011*	*0.251*	*0.401*	*0.002*	*0.008*
Effect after 1 year	-0.979	-0.985	-0.668	-0.758	-0.246	-0.116	-0.309	-0.267	-0.673	-0.495	-1.044	-1.089
	0.337	0.358	0.364	0.403	0.188	0.199	0.188	0.207	0.237	0.256	0.241	0.271
	0.004	*0.006*	*0.067*	*0.060*	*0.191*	*0.562*	*0.100*	*0.197*	*0.005*	*0.053*	*0.000*	*0.000*
Effect after 2 years	-1.176	-1.229	-0.923	-0.929	-0.183	-0.001	-0.354	-0.339	-0.963	-0.783	-2.131	-2.143
	0.541	0.575	0.586	0.649	0.300	0.315	0.297	0.327	0.377	0.410	0.390	0.437
	0.030	*0.033*	*0.115*	*0.153*	*0.542*	*0.999*	*0.234*	*0.301*	*0.011*	*0.056*	*0.000*	*0.000*
Effect after 3 years	-1.430	-1.461	-0.924	-0.948	-0.365	-0.179	-0.354	-0.365	-0.976	-0.759	-2.761	-2.724
	0.698	0.743	0.756	0.837	0.384	0.404	0.383	0.421	0.485	0.525	0.508	0.569
	0.041	*0.049*	*0.000*	*0.258*	*0.343*	*0.657*	*0.356*	*0.386*	*0.044*	*0.148*	*0.000*	*0.000*
Competitor's Shock		-1.277		0.029		-1.122		-1.409		-1.435		-2.181
		1.228		1.234		0.616		0.551		0.769		0.742
		0.298		*0.981*		*0.069*		*0.011*		*0.062*		*0.003*
Unemployment chg	-2.087	-2.048	-0.601	-0.615	0.019	-0.122	-0.867	-0.575	-0.569	-0.798	-0.726	-0.830
	0.335	0.370	0.322	0.379	0.159	0.173	0.153	0.175	0.193	0.219	0.193	0.231
	0.000	*0.000*	*0.062*	*0.104*	*0.904*	*0.481*	*0.000*	*0.001*	*0.003*	*0.000*	*0.000*	*0.000*
Num. of Obs.	119575	105657	163158	135677	119575	105657	163158	135677	119575	105657	163158	135677
R-sq. Within	0.006	0.005	0.007	0.007	0.003	0.004	0.008	0.009	0.014	0.014	0.026	0.025
R-sq. Between	0.002	0.001	0.002	0.000	0.001	0.001	0.005	0.001	0.003	0.004	0.007	0.019
R-sq. Overall	0.006	0.004	0.005	0.005	0.003	0.003	0.008	0.005	0.012	0.012	0.022	0.024

Notes: Dependent variable: Rate of change of loan growth for each loan category (commercial and industrial, real estate, and consumer loans) as defined in equation (1) in the text. "Contemp effect" is the contemporaneous effect of an unexpected change in supervisory ratings (as defined in equation (1) in the text). "Effect after x year" is the cumulative effect of an unexpected change in supervisory ratings after x years (x = 1,2,3). "Competitor's Shock" is the average unexpected change in supervisory ratings for bank competitors. "Unemployment chg" is the change in unemployment rate in the banking market. The first line of numbers reports the estimated coefficient. The second line reports the standard error. The third line (in italics) reports the associated p-value.

Table 7: Bank Lending Regressions—Components Liquidity Effect

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Contemp effect	-2.356	-2.435	-3.369	-3.632	-1.433	-1.388	-2.803	-2.823	-0.935	-0.965	-1.166	-1.179
	0.161	0.169	0.167	0.184	0.089	0.096	0.090	0.096	0.114	0.123	0.112	0.125
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 1 year	-4.895	-4.715	-5.911	-6.085	-3.429	-3.375	-5.493	-5.596	-3.276	-3.360	-3.279	-3.498
	0.478	0.509	0.426	0.473	0.255	0.272	0.215	0.233	0.326	0.356	0.284	0.317
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 2 years	-7.303	-6.985	-8.171	-8.290	-4.830	-4.946	-7.603	-7.578	-4.827	-4.957	-5.032	-5.217
	0.765	0.817	0.677	0.751	0.401	0.427	0.335	0.363	0.527	0.578	0.449	0.504
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Effect after 3 years	-8.279	-7.718	-9.538	-9.786	-5.626	-5.857	-8.699	-8.658	-5.714	-6.024	-6.106	-6.262
	0.997	1.068	0.872	0.966	0.521	0.557	0.428	0.463	0.684	0.750	0.576	0.645
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Competitor's Shock		-4.318		-2.501		-1.731		-0.739		-2.209		-2.521
		1.839		1.441		0.888		0.636		1.151		0.870
		0.019		*0.083*		*0.051*		*0.245*		*0.055*		*0.004*
Unemployment chg	-2.059	-2.014	-0.563	-0.541	0.041	-0.090	-0.832	-0.525	-0.559	-0.794	-0.701	-0.790
	0.335	0.370	0.321	0.379	0.159	0.173	0.153	0.175	0.192	0.219	0.193	0.231
	0.000	*0.000*	*0.080*	*0.153*	*0.798*	*0.602*	*0.000*	*0.000*	*0.004*	*0.000*	*0.000*	*0.000*
Num. of Obs.	119575	105657	163158	135677	119575	105657	163158	135677	119575	105657	163158	135677
R-sq. Within	0.008	0.008	0.001	0.011	0.006	0.007	0.018	0.019	0.015	0.015	0.027	0.027
R-sq. Between	0.004	0.002	0.003	0.000	0.007	0.009	0.005	0.002	0.005	0.006	0.008	0.022
R-sq. Overall	0.008	0.007	0.008	0.008	0.006	0.007	0.016	0.013	0.013	0.014	0.023	0.025

Notes: Dependent variable: Rate of change of loan growth for each loan category (commercial and industrial, real estate, and consumer loans) as defined in equation (1) in the text. "Contemp effect" is the contemporaneous effect of an unexpected change in supervisory ratings (as defined in equation (1) in the text). "Effect after x year" is the cumulative effect of an unexpected change in supervisory ratings after x years (x = 1,2,3). "Competitor's Shock" is the average unexpected change in supervisory ratings for bank competitors. "Unemployment chg" is the change in unemployment rate in the banking market. The first line of numbers reports the estimated coefficient. The second line reports the standard error. The third line (in italics) reports the associated p-value.

Table 8: Difference in Coefficients Test: Composite (Table 2) vs. Capital (Table 3)

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Contemp effect	-0.014	0.063	0.459	0.556	0.015	0.083	0.799	0.837	-0.339	-0.345	-0.058	-0.037
	0.211	0.221	0.244	0.268	0.120	0.128	0.128	0.140	0.155	0.165	0.167	0.189
	-0.066	*0.285*	*1.883*	*2.071*	*0.125*	*0.648*	*6.246*	*5.981*	*-2.189*	*-2.085*	*-0.346*	*-0.196*
Effect after 1 year	-1.578	-1.333	-0.756	-0.707	-0.577	-0.302	0.869	0.842	-1.240	-1.290	-1.017	-1.172
	0.648	0.687	0.644	0.713	0.354	0.376	0.335	0.364	0.458	0.492	0.427	0.480
	-2.436	*-1.939*	*-1.173*	*-0.992*	*-1.628*	*-0.803*	*2.598*	*2.316*	*-2.710*	*-2.621*	*-2.380*	*-2.440*
Effect after 2 years	-2.830	-2.473	-0.251	-0.271	-1.548	-1.059	0.692	0.577	-1.880	-1.847	-1.396	-1.758
	1.036	1.102	1.008	1.112	0.557	0.591	0.513	0.557	0.726	0.784	0.674	0.762
	-2.732	*-2.243*	*-0.249*	*-0.244*	*-2.781*	*-1.791*	*1.348*	*1.035*	*-2.588*	*-2.355*	*-2.072*	*-2.306*
Effect after 3 years	-3.501	-2.979	-0.753	-0.459	-2.329	-1.758	0.604	0.262	-2.323	-2.204	-1.768	-2.208
	1.344	1.436	1.298	1.433	0.718	0.763	0.655	0.711	0.938	1.013	0.869	0.981
	-2.604	*-2.074*	*-0.580*	*-0.320*	*-3.244*	*-2.304*	*0.922*	*0.368*	*-2.477*	*-2.176*	*-2.035*	*-2.251*

Notes: Difference in coefficient tests table. The coefficients compared are the supervisory shock coefficients obtained for the composite CAMEL regression (Table 2), with the supervisory shock coefficients for the components CAMEL regressions (Tables 3 through 7). The first line reports the magnitude of the difference (component coefficient minus composite coefficient), while the second line reports the standard error of the difference. The third line (in italics) reports the t-statistic. t-stat>1.66: significant at the 10 percent level; t-stat>1.96: significant at the 5 percent level.

Table 9: Difference in Coefficients Test: Composite (Table 2) vs. Asset Quality (Table 4)

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Contemp effect	-0.361	-0.273	-0.214	-0.273	-0.013	-0.009	-0.452	-0.424	-0.181	-0.180	-0.144	-0.132
	0.196	0.207	0.204	0.226	0.112	0.118	0.104	0.114	0.142	0.152	0.137	0.155
	-1.842	*-1.321*	*-1.047*	*-1.209*	*-0.116*	*-0.076*	*-4.352*	*-3.724*	*-1.272*	*-1.183*	*-1.048*	*-0.854*
Effect after 1 year	-2.053	-1.613	-0.687	-0.755	-0.501	-0.341	-0.916	-0.822	-1.106	-0.982	-0.643	-0.632
	0.610	0.648	0.556	0.615	0.328	0.349	0.284	0.309	0.421	0.455	0.366	0.411
	-3.365	*-2.491*	*-1.236*	*-1.228*	*-1.527*	*-0.978*	*-3.230*	*-2.659*	*-2.625*	*-2.160*	*-1.755*	*-1.536*
Effect after 2 years	-3.380	-2.635	-0.682	-0.726	-0.877	-0.650	-1.195	-1.040	-1.836	-1.665	-1.182	-1.246
	0.978	1.040	0.878	0.972	0.517	0.550	0.446	0.487	0.667	0.722	0.582	0.656
	-3.456	*-2.533*	*-0.777*	*-0.747*	*-1.696*	*-1.183*	*-2.680*	*-2.136*	*-2.753*	*-2.308*	*-2.031*	*-1.899*
Effect after 3 years	-3.401	-2.620	-0.610	-0.631	-1.244	-1.036	-1.349	-1.274	-2.008	-1.895	-1.260	-1.431
	1.268	1.355	1.138	1.256	0.667	0.710	0.571	0.626	0.862	0.933	0.751	0.844
	-2.683	*-1.934*	*-0.536*	*-0.502*	*-1.865*	*-1.459*	*-2.362*	*-2.036*	*-2.330*	*-2.031*	*-1.677*	*-1.696*

Notes: Difference in coefficient tests table. The coefficients compared are the supervisory shock coefficients obtained for the composite CAMEL regression (Table 2), with the supervisory shock coefficients for the components CAMEL regressions (Tables 3 through 7). The first line reports the magnitude of the difference (component coefficient minus composite coefficient), while the second line reports the standard error of the difference. The third line (in italics) reports the t-statistic. t-stat>1.66: significant at the 10 percent level; t-stat>1.96: significant at the 5 percent level.

Table 10: Difference in Coefficients Test: Composite (Table 2) vs. Management (Table 5)

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Contemp effect	-0.548	-0.525	-0.442	-0.308	-0.216	-0.193	-0.566	-0.541	-0.505	-0.477	-0.416	-0.381
	0.201	0.212	0.212	0.235	0.113	0.119	0.106	0.116	0.146	0.157	0.142	0.160
	-2.732	*-2.478*	*-2.084*	*-1.309*	*-1.913*	*-1.617*	*-5.352*	*-4.648*	*-3.456*	*-3.045*	*-2.932*	*-2.386*
Effect after 1 year	-1.697	-1.417	-0.514	-0.291	-0.425	-0.765	-1.244	-1.251	-1.238	-1.102	-0.960	-0.928
	0.623	0.660	0.572	0.635	0.331	0.352	0.289	0.315	0.432	0.468	0.375	0.423
	-2.725	*-2.146*	*-0.899*	*-0.458*	*-1.283*	*-2.174*	*-4.308*	*-3.973*	*-2.867*	*-2.355*	*-2.561*	*-2.194*
Effect after 2 years	-2.778	-2.341	-0.275	-0.044	-0.578	-0.429	-1.551	-1.593	-1.510	-1.296	-1.508	-1.501
	0.996	1.058	0.898	0.996	0.524	0.556	0.452	0.491	0.681	0.737	0.591	0.699
	-2.788	*-2.213*	*-0.306*	*-0.044*	*-1.104*	*-0.771*	*-3.434*	*-3.246*	*-2.217*	*-1.759*	*-2.551*	*-2.148*
Effect after 3 years	-2.816	-2.370	-0.538	-0.174	-0.841	-0.626	-1.643	-1.824	-1.396	-1.137	-1.734	-1.702
	1.294	1.379	1.161	1.285	0.676	0.718	0.581	0.632	0.880	0.951	0.760	0.858
	-2.176	*-1.719*	*-0.464*	*-0.135*	*-1.244*	*-0.872*	*-2.829*	*-2.887*	*-1.587*	*-1.196*	*-2.280*	*-1.985*

Notes: Difference in coefficient tests table. The coefficients compared are the supervisory shock coefficients obtained for the composite CAMEL regression (Table 2), with the supervisory shock coefficients for the components CAMEL regressions (Tables 3 through 7). The first line reports the magnitude of the difference (component coefficient minus composite coefficient), while the second line reports the standard error of the difference. The third line (in italics) reports the t-statistic. t-stat>1.66: significant at the 10 percent level; t-stat>1.96: significant at the 5 percent level.

Table 11: Difference in Coefficients Test: Composite (Table 2) vs. Earnings (Table 6)

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Contemp effect	-0.742	-0.685	-1.090	-1.072	-0.337	-0.312	-0.884	-0.814	-0.500	-0.512	-0.425	-0.413
	0.186	0.196	0.209	0.231	0.106	0.112	0.108	0.118	0.136	0.145	0.142	0.160
	-3.997	*-3.501*	*-5.204*	*-4.631*	*-3.189*	*-2.798*	*-8.207*	*-6.917*	*-3.670*	*-3.535*	*-2.996*	*-2.587*
Effect after 1 year	-3.430	-3.064	-3.821	-3.652	-1.904	-1.807	-2.787	-2.752	-2.248	-2.270	-2.496	-2.465
	0.569	0.604	0.564	0.625	0.310	0.328	0.289	0.316	0.398	0.430	0.371	0.418
	-6.024	*-5.076*	*-6.773*	*-5.841*	*-6.150*	*-5.506*	*-9.631*	*-8.704*	*-5.645*	*-5.284*	*-6.729*	*-5.900*
Effect after 2 years	-5.327	-4.752	-5.220	-5.001	-2.927	-2.807	-4.113	-4.084	-3.518	-3.571	-3.810	-3.858
	0.909	0.966	0.893	0.990	0.488	0.516	0.453	0.495	0.629	0.681	0.592	0.668
	-5.863	*-4.920*	*-5.845*	*-5.050*	*-5.997*	*-5.437*	*-9.080*	*-8.246*	*-5.597*	*-5.242*	*-6.431*	*-5.777*
Effect after 3 years	-5.855	-5.126	-6.527	-6.222	-3.460	-3.378	-4.731	-4.920	-4.361	-4.487	-4.645	-4.763
	1.175	1.254	1.154	1.277	0.627	0.664	0.583	0.637	0.809	0.876	0.766	0.861
	-4.984	*-4.088*	*-5.656*	*-4.871*	*-5.516*	*-5.087*	*-8.110*	*-7.724*	*-5.388*	*-5.123*	*-6.066*	*-5.533*

Notes: Difference in coefficient tests table. The coefficients compared are the supervisory shock coefficients obtained for the composite CAMEL regression (Table 2), with the supervisory shock coefficients for the components CAMEL regressions (Tables 3 through 7). The first line reports the magnitude of the difference (component coefficient minus composite coefficient), while the second line reports the standard error of the difference. The third line (in italics) reports the t-statistic. t-stat>1.66: significant at the 10 percent level; t-stat>1.96: significant at the 5 percent level.

Table 12: Difference in Coefficients Test: Composite (Table 2) vs. Liquidity (Table 7)

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Contemp effect	1.238	1.337	1.988	2.290	1.022	1.039	1.749	1.813	0.344	0.382	0.453	0.493
	0.221	0.232	0.232	0.256	0.124	0.133	0.121	0.131	0.159	0.170	0.156	0.175
	5.609	*5.762*	*8.570*	*8.945*	*8.212*	*7.814*	*14.445*	*13.849*	*2.162*	*2.241*	*2.912*	*2.822*
Effect after 1 year	0.486	0.666	1.422	1.675	1.279	1.452	2.397	2.577	0.355	0.595	-0.261	-0.056
	0.663	0.704	0.606	0.672	0.354	0.377	0.308	0.334	0.457	0.496	0.400	0.449
	0.733	*0.946*	*2.347*	*2.491*	*3.610*	*3.852*	*7.792*	*7.721*	*0.777*	*1.200*	*-0.652*	*-0.125*
Effect after 2 years	0.800	1.004	2.028	2.360	1.720	2.138	3.136	3.155	0.346	0.603	-0.909	-0.784
	1.057	1.127	0.955	1.060	0.556	0.591	0.479	0.520	0.729	0.794	0.633	0.713
	0.757	*0.891*	*2.123*	*2.227*	*3.094*	*3.616*	*6.551*	*6.070*	*0.475*	*0.760*	*-1.436*	*-1.099*
Effect after 3 years	0.994	1.131	2.087	2.616	1.801	2.300	3.614	3.373	0.377	0.778	-1.300	-1.225
	1.374	1.470	1.233	1.365	0.719	0.767	0.614	0.665	0.942	1.027	0.812	0.913
	0.724	*0.769*	*1.692*	*1.916*	*2.504*	*2.999*	*5.888*	*5.069*	*0.400*	*0.758*	*-1.600*	*-1.342*

Notes: Difference in coefficient tests table. The coefficients compared are the supervisory shock coefficients obtained for the composite CAMEL regression (Table 2), with the supervisory shock coefficients for the components CAMEL regressions (Tables 3 through 7). The first line reports the magnitude of the difference (component coefficient minus composite coefficient), while the second line reports the standard error of the difference. The third line (in italics) reports the t-statistic. t-stat>1.66: significant at the 10 percent level; t-stat>1.96: significant at the 5 percent level.

Table 13: Testing for Asymmetries in Bank Lending Regressions—Composite CAMEL Effect

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Dn contemp Effect	-2.640	-2.692	-2.606	-2.650	-0.802	-0.769	-1.580	-1.528	-1.404	-1.346	-1.311	-1.248
	0.247	0.258	0.236	0.264	0.143	0.153	0.117	0.129	0.189	0.203	0.160	0.179
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 1 yr	-7.740	-7.341	-7.867	-7.807	-4.126	-4.074	-5.101	-4.881	-5.568	-5.307	-7.051	-6.830
	0.632	0.673	0.572	0.640	0.348	0.367	0.302	0.328	0.468	0.499	0.378	0.429
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 2 yr	-10.592	-10.019	-9.877	-9.792	-5.769	-5.610	-6.717	-6.582	-7.368	-7.018	-10.465	-10.256
	0.933	0.996	0.847	0.944	0.508	0.538	0.430	0.470	0.679	0.730	0.553	0.629
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 3 yr	-11.142	-10.405	-10.558	-10.446	-6.744	-6.671	-7.080	-7.026	-8.103	-7.921	-12.323	-11.936
	1.179	1.262	1.090	1.212	0.639	0.678	0.553	0.607	0.853	0.920	0.709	0.802
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Up contemp Effect	0.200	0.273	-0.006	0.103	-0.050	0.035	-0.430	-0.403	0.130	0.089	0.016	-0.009
	0.224	0.235	0.253	0.276	0.127	0.132	0.125	0.139	0.157	0.163	0.168	0.191
	0.373	*0.246*	*0.982*	*0.708*	*0.692*	*0.793*	*0.001*	*0.004*	*0.410*	*0.582*	*0.925*	*0.961*
Up effect after 1 yr	-1.019	-0.740	-0.344	-0.299	-0.111	0.266	-0.631	-0.746	-0.220	-0.203	0.702	0.362
	0.652	0.685	0.631	0.701	0.353	0.370	0.327	0.363	0.447	0.474	0.418	0.476
	0.118	*0.280*	*0.585*	*0.670*	*0.754*	*0.472*	*0.054*	*0.040*	*0.622*	*0.669*	*0.093*	*0.447*
Up effect after 2 yr	-1.832	-1.438	-1.121	-0.855	-0.039	0.389	-1.429	-1.540	-1.157	-1.324	-0.088	-0.557
	1.011	1.067	0.910	1.009	0.535	0.563	0.470	0.518	0.689	0.731	0.602	0.685
	0.070	*0.179*	*0.218*	*0.397*	*0.943*	*0.489*	*0.002*	*0.003*	*0.093*	*0.070*	*0.884*	*0.417*
Up effect after 3 yr	-2.493	-1.920	-2.737	-2.354	-0.155	0.297	-2.102	-2.622	-1.883	-1.962	-0.769	-1.476
	1.305	1.385	1.133	1.256	0.690	0.728	0.581	0.639	0.878	0.936	0.749	0.851
	0.056	*0.166*	*0.016*	*0.061*	*0.823*	*0.683*	*0.000*	*0.000*	*0.032*	*0.036*	*0.304*	*0.083*
Competitor's Shock		-3.022		-3.782		-1.885		-1.066		-2.765		-2.216
		1.664		1.403		0.818		0.659		1.039		0.855
		0.069		*0.007*		*0.021*		*0.106*		*0.008*		*0.000*
Unemployment chg	-1.997	-1.929	-0.568	-0.567	0.053	-0.082	-0.851	-0.546	-0.508	-0.716	-0.700	-0.788
	0.335	0.371	0.321	0.378	0.159	0.173	0.153	0.175	0.193	0.219	0.192	0.230
	0.000	*0.000*	*0.077*	*0.135*	*0.741*	*0.638*	*0.000*	*0.002*	*0.009*	*0.001*	*0.000*	*0.000*
Num. of Obs.	119575	105657	163158	135677	119575	105657	163158	135677	119575	105657	163158	135677
R-sq. Within	0.008	0.007	0.008	0.009	0.005	0.005	0.011	0.012	0.015	0.016	0.028	0.028
R-sq. Between	0.021	0.014	0.000	0.000	0.028	0.031	0.009	0.003	0.014	0.015	0.009	0.018
R-sq. Overall	0.010	0.008	0.006	0.006	0.009	0.010	0.010	0.007	0.015	0.016	0.023	0.025

Notes: dn – downgrades, up – upgrades. The rest of the variables are defined as in Tables 2 through 7.

Table 14: Testing for Asymmetries in Bank Lending Regressions—Component Capital Effect

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Dn contemp Effect	-2.344	-2.470	-2.975	-3.012	-0.851	-0.845	-2.108	-2.100	-1.116	-1.022	-1.298	-1.261
	0.236	0.246	0.258	0.284	0.144	0.155	0.140	0.154	0.179	0.192	0.182	0.202
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 1 yr	-5.973	-5.819	-6.543	-6.575	-2.969	-3.132	-5.335	-5.230	-4.210	-3.918	-6.092	-5.584
	0.619	0.657	0.640	0.707	0.351	0.371	0.340	0.370	0.463	0.490	0.425	0.479
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 2 yr	-7.078	-6.906	-9.325	-9.269	-3.343	-3.669	-6.755	-6.809	-5.227	-5.078	-9.085	-8.178
	0.903	0.961	0.930	1.032	0.507	0.539	0.478	0.521	0.680	0.725	0.619	0.704
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 3 yr	-6.173	-6.085	-9.801	-9.988	-3.377	-3.880	-6.949	-7.068	-5.042	-5.159	-10.283	-9.145
	1.151	1.231	1.184	1.312	0.642	0.684	0.604	0.659	0.859	0.920	0.789	0.899
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Up contemp Effect	0.032	0.023	-0.581	-0.668	-0.030	-0.044	-1.539	-1.541	0.539	0.477	0.121	0.033
	0.216	0.229	0.286	0.314	0.116	0.121	0.155	0.167	0.159	0.167	0.200	0.040
	0.882	*0.919*	*0.042*	*0.034*	*0.795*	*0.715*	*0.000*	*0.000*	*0.001*	*0.004*	*0.545*	*0.413*
Up effect after 1 yr	0.290	0.321	-0.332	-0.268	-0.145	-0.085	-2.295	-2.208	0.785	0.881	1.803	1.439
	0.610	0.642	0.702	0.769	0.340	0.361	0.369	0.409	0.440	0.468	0.466	0.530
	0.634	*0.617*	*0.636*	*0.727*	*0.670*	*0.815*	*0.000*	*0.000*	*0.074*	*0.060*	*0.000*	*0.007*
Up effect after 2 yr	-0.204	-0.115	-1.380	-0.973	0.407	0.360	-3.019	-2.633	0.010	0.020	1.451	0.932
	0.955	1.007	1.011	1.112	0.524	0.555	0.522	0.575	0.670	0.714	0.675	0.767
	0.830	*0.909*	*0.172*	*0.381*	*0.438*	*0.517*	*0.000*	*0.000*	*0.988*	*0.977*	*0.032*	*0.225*
Up effect after 3 yr	-1.257	-1.079	-2.209	-2.006	0.696	0.597	-3.738	-3.283	-0.937	-0.893	0.919	0.231
	1.245	1.319	1.261	1.384	0.686	0.725	0.639	0.705	0.869	0.931	0.842	0.953
	0.313	*0.413*	*0.080*	*0.147*	*0.311*	*0.410*	*0.000*	*0.000*	*0.281*	*0.337*	*0.275*	*0.808*
Competitor's Shock		-1.812		-0.262		-0.092		-0.343		-0.408		-0.348
		1.707		1.580		0.848		0.711		1.081		0.984
		0.289		*0.868*		*0.914*		*0.629*		*0.706*		*0.723*
Unemployment chg	-2.068	-2.025	-0.598	-0.601	0.023	-0.094	-0.855	-0.561	-0.556	-0.771	0.728	-0.828
	0.335	0.370	0.322	0.379	0.159	0.173	0.153	0.175	0.193	0.219	0.193	0.230
	0.000	*0.000*	*0.063*	*0.113*	*0.885*	*0.587*	*0.000*	*0.001*	*0.004*	*0.000*	*0.000*	*0.000*
Num. of Obs.	119575	105657	163158	135677	119575	105657	163158	135677	119575	105657	163158	135677
R-sq. Within	0.007	0.007	0.008	0.008	0.004	0.005	0.012	0.013	0.015	0.015	0.027	0.027
R-sq. Between	0.014	0.009	0.001	0.000	0.018	0.020	0.006	0.002	0.011	0.012	0.009	0.021
R-sq. Overall	0.009	0.007	0.006	0.006	0.007	0.008	0.011	0.008	0.014	0.015	0.023	0.025

Notes: dn – downgrades, up – upgrades. The rest of the variables are defined as in Tables 2 through 7.

Table 15: Testing for Asymmetries in Bank Lending Regressions—Component Asset Quality Effect

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Dn contemp Effect	-1.983	-2.063	-2.349	2.365	-0.823	-0.856	-1.175	-1.143	-0.917	-0.876	-1.136	-0.196
	0.202	0.212	0.189	0.211	0.114	0.123	0.096	0.104	0.147	0.159	0.128	0.142
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 1 yr	-5.650	-5.924	-7.303	-7.227	-3.375	-3.566	-4.519	-4.519	-3.796	-3.691	-5.451	-5.524
	0.548	0.580	0.464	0.513	0.298	0.313	0.236	0.259	0.393	0.432	0.316	0.352
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 2 yr	-7.345	-7.632	-9.463	-9.407	-4.779	-4.920	-5.719	-5.662	-4.760	-4.608	-8.294	-8.266
	0.819	0.869	0.695	0.766	0.446	0.471	0.347	0.381	0.584	0.630	0.463	0.519
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 3 yr	-7.659	-7.854	-10.755	-10.433	-5.508	-5.649	-6.165	-6.220	-5.144	-5.104	-9.874	-9.547
	1.044	1.111	0.894	0.985	0.566	0.602	0.450	0.493	0.742	0.803	0.594	0.664
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Up contemp Effect	0.386	0.327	0.184	0.415	0.021	0.160	-0.067	0.101	0.084	0.056	0.118	0.218
	0.192	0.203	0.201	0.220	0.108	0.109	0.026	0.112	0.134	0.141	0.135	0.152
	0.044	*0.106*	*0.359*	*0.060*	*0.000*	*0.141*	*0.011*	*0.367*	*0.528*	*0.688*	*0.381*	*0.151*
Up effect after 1 yr	1.139	1.221	0.648	0.943	0.216	0.512	0.727	0.730	0.217	0.142	0.295	0.364
	0.557	0.588	0.525	0.581	0.312	0.331	0.277	0.307	0.385	0.411	0.357	0.405
	0.041	*0.038*	*0.217*	*0.105*	*0.489*	*0.121*	*0.009*	*0.017*	*0.573*	*0.730*	*0.409*	*0.369*
Up effect after 2 yr	1.608	1.405	0.174	0.796	0.705	0.969	0.223	-0.043	-0.342	-0.629	0.068	0.114
	0.873	0.924	0.772	0.851	0.482	0.509	0.405	0.445	0.593	0.636	0.522	0.591
	0.066	*0.129*	*0.822*	*0.350*	*0.143*	*0.057*	*0.583*	*0.923*	*0.564*	*0.323*	*0.896*	*0.846*
Up effect after 3 yr	0.648	0.609	-0.816	-0.317	0.949	1.174	0.000	-0.501	-1.230	-1.377	-0.687	-0.757
	1.136	1.206	0.966	1.065	0.620	0.655	0.495	0.547	0.765	0.822	0.654	0.739
	0.568	*0.613*	*0.399*	*0.766*	*0.126*	*0.073*	*0.999*	*0.360*	*0.108*	*0.094*	*0.294*	*0.306*
Competitor's Shock		-0.828		-2.440		-1.944		-0.117		-3.236		-3.438
		1.477		1.204		0.715		0.543		0.918		0.724
		0.575		*0.043*		*0.007*		*0.830*		*0.000*		*0.000*
Unemployment chg	-1.992	-1.919	-0.534	-0.538	0.063	-0.079	-0.830	-0.539	-0.518	-0.769	-0.680	-0.784
	0.336	0.371	0.322	0.379	0.159	0.173	0.153	0.175	0.193	0.219	0.193	0.230
	0.000	*0.000*	*0.097*	*0.155*	*0.692*	*0.647*	*0.000*	*0.002*	*0.007*	*0.000*	*0.000*	*0.000*
Num. of Obs.	119575	105657	163158	135677	119575	105657	163158	135677	119575	105657	163158	135677
R-sq. Within	0.007	0.007	0.009	0.009	0.005	0.006	0.011	0.012	0.015	0.015	0.028	0.028
R-sq. Between	0.019	0.013	0.000	0.000	0.023	0.026	0.044	0.002	0.013	0.014	0.007	0.015
R-sq. Overall	0.010	0.008	0.006	0.006	0.008	0.010	0.009	0.007	0.015	0.015	0.023	0.024

Notes: dn – downgrades, up – upgrades. The rest of the variables are defined as in Tables 2 through 7.

Table 16: Testing for Asymmetries in Bank Lending Regressions—Component Management Effect

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Dn contemp Effect	-1.625	-1.654	-2.008	-2.195	-0.429	-0.399	-1.032	-0.975	-0.827	-0.785	-1.021	-1.107
	0.208	0.221	0.205	0.230	0.113	0.121	0.097	0.106	0.146	0.159	0.135	0.151
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 1 yr	-6.199	-6.301	-7.386	-7.509	-3.241	-3.319	-3.988	-3.778	-3.897	-3.821	-5.643	-5.576
	0.552	0.585	0.517	0.574	0.284	0.300	0.261	0.287	0.389	0.418	0.339	0.385
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 2 yr	-7.101	-7.251	-9.296	-9.377	-4.771	-4.788	-5.284	-4.943	-5.459	-5.449	-8.417	-8.278
	0.863	0.889	0.764	0.847	0.438	0.463	0.386	0.421	0.588	0.634	0.499	0.566
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 3 yr	-7.394	-7.431	-9.777	-10.002	-5.233	-5.289	-5.747	-5.449	-6.242	-6.478	-9.886	-9.756
	1.081	1.153	0.992	1.098	0.567	0.603	0.497	0.545	0.761	0.823	0.641	0.725
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Up contemp Effect	0.476	0.498	0.158	0.159	0.038	0.089	-0.069	0.069	0.648	0.567	0.446	0.524
	0.201	0.211	0.217	0.240	0.107	0.111	0.026	0.120	0.144	0.153	0.143	0.161
	0.018	*0.018*	*0.467*	*0.508*	*0.719*	*0.423*	*0.009*	*0.565*	*0.000*	*0.000*	*0.002*	*0.001*
Up effect after 1 yr	1.280	1.544	-0.104	-0.275	-0.024	0.354	0.541	0.502	0.887	0.815	0.732	0.584
	0.583	0.618	0.551	0.608	0.315	0.334	0.274	0.303	0.404	0.438	0.361	0.410
	0.028	*0.013*	*0.849*	*0.652*	*0.939*	*0.289*	*0.049*	*0.097*	*0.028*	*0.063*	*0.043*	*0.154*
Up effect after 2 yr	0.776	1.153	-1.262	-1.229	0.233	0.607	0.120	-0.042	0.298	0.053	0.307	0.050
	0.908	0.958	0.792	0.875	0.484	0.513	0.396	0.436	0.616	0.667	0.514	0.584
	0.393	*0.229*	*0.111*	*0.160*	*0.630*	*0.236*	*0.762*	*0.922*	*0.628*	*0.936*	*0.551*	*0.931*
Up effect after 3 yr	0.022	0.649	-2.399	-2.348	0.092	0.318	-0.196	-0.537	-0.550	-0.721	-0.292	-0.633
	1.175	1.243	0.979	1.082	0.627	0.663	0.486	0.533	0.794	0.856	0.638	0.724
	0.985	*0.601*	*0.014*	*0.030*	*0.884*	*0.631*	*0.000*	*0.314*	*0.489*	*0.400*	*0.648*	*0.385*
Competitor's Shock		-1.886		-1.966		-1.138		0.412		-1.987		-1.225
		1.571		1.234		0.780		0.571		0.972		0.741
		0.230		*0.111*		*0.145*		*0.471*		*0.041*		*0.098*
Unemployment chg	-1.988	-1.936	-0.599	-0.625	0.068	-0.074	-0.865	-0.574	-0.488	-0.724	-0.715	-0.837
	0.335	0.371	0.321	0.378	0.159	0.173	0.153	0.175	0.193	0.219	0.193	0.230
	0.000	*0.000*	*0.062*	*0.099*	*0.669*	*0.667*	*0.000*	*0.001*	*0.012*	*0.001*	*0.000*	*0.000*
Num. of Obs.	119575	105657	163158	135677	119575	105657	163158	135677	119575	105657	163158	135677
R-sq. Within	0.007	0.007	0.008	0.008	0.005	0.006	0.010	0.011	0.015	0.016	0.028	0.028
R-sq. Between	0.017	0.013	0.000	0.000	0.025	0.026	0.007	0.002	0.014	0.014	0.008	0.016
R-sq. Overall	0.009	0.008	0.006	0.006	0.008	0.009	0.009	0.006	0.016	0.017	0.023	0.025

Notes: dn – downgrades, up – upgrades. The rest of the variables are defined as in Tables 2 through 7.

Table 17: Testing for Asymmetries in Bank Lending Regressions—Component Earnings Effect

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Dn contemp Effect	-1.107	-1.157	-1.193	-1.247	-0.393	-0.340	-0.502	-0.474	-0.573	-0.492	-0.893	-0.924
	0.182	0.192	0.201	0.223	0.101	0.107	0.103	0.112	0.133	0.142	0.137	0.153
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.002*	*0.000*	*0.000*	*0.000*	*0.001*	*0.000*	*0.000*
Dn effect after 1 yr	-3.099	-3.094	-3.292	-3.344	-1.403	-1.318	-1.151	-1.127	-2.249	-1.996	-3.466	-3.508
	0.458	0.487	0.493	0.547	0.257	0.269	0.262	0.288	0.329	0.351	0.330	0.371
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 2 yr	-3.158	-3.165	-3.492	-3.685	-1.719	-1.519	-1.111	-1.220	-2.589	-2.255	-4.691	-4.633
	0.668	0.712	0.721	0.802	0.374	0.389	0.375	0.415	0.477	0.513	0.480	0.541
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.003*	*0.003*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 3 yr	-2.990	-2.925	-3.251	-3.258	-1.852	-1.729	-0.678	-0.781	-2.346	-2.082	-5.203	-5.057
	0.852	0.910	0.917	1.019	0.471	0.492	0.474	0.523	0.606	0.651	0.612	0.691
	0.000	*0.001*	*0.000*	*0.000*	*0.000*	*0.000*	*0.153*	*0.136*	*0.000*	*0.001*	*0.000*	*0.000*
Up contemp Effect	0.308	0.283	0.703	0.795	0.229	0.257	-0.070	0.114	0.365	0.330	0.405	0.459
	0.158	0.166	0.207	0.230	0.087	0.091	0.027	0.121	0.116	0.122	0.141	0.160
	0.051	*0.089*	*0.001*	*0.001*	*0.009*	*0.005*	*0.008*	*0.345*	*0.002*	*0.007*	*0.004*	*0.004*
Up effect after 1 yr	1.250	1.228	2.364	2.222	1.009	1.177	0.667	0.745	0.990	1.067	1.778	1.688
	0.461	0.489	0.524	0.580	0.250	0.266	0.268	0.293	0.329	0.352	0.350	0.393
	0.007	*0.012*	*0.000*	*0.000*	*0.000*	*0.000*	*0.013*	*0.011*	*0.003*	*0.002*	*0.000*	*0.000*
Up effect after 2 yr	1.169	1.042	2.338	2.481	1.667	1.832	0.616	0.786	0.960	0.936	1.159	1.005
	0.720	0.765	0.783	0.868	0.388	0.414	0.391	0.427	0.500	0.537	0.521	0.584
	0.105	*0.173*	*0.003*	*0.004*	*0.000*	*0.000*	*0.115*	*0.066*	*0.055*	*0.082*	*0.026*	*0.085*
Up effect after 3 yr	0.644	0.442	2.295	2.246	1.618	1.854	0.216	0.348	0.832	0.921	0.635	0.483
	0.935	0.992	0.983	1.087	0.502	0.533	0.493	0.540	0.643	0.693	0.660	0.740
	0.491	*0.656*	*0.020*	*0.039*	*0.001*	*0.001*	*0.660*	*0.519*	*0.196*	*0.184*	*0.337*	*0.514*
Competitor's Shock		-1.141		0.153		-0.971		-1.355		-1.319		-2.072
		1.229		1.233		0.617		0.551		0.769		0.741
		0.353		*0.901*		*0.116*		*0.014*		*0.086*		*0.005*
Unemployment chg	-2.037	-1.993	-0.592	-0.596	0.038	-0.096	-0.867	-0.562	-0.536	-0.761	-0.710	-0.800
	0.335	0.370	0.321	0.379	0.159	0.173	0.153	0.176	0.193	0.220	0.192	0.231
	0.000	*0.000*	*0.066*	*0.116*	*0.809*	*0.582*	*0.000*	*0.001*	*0.006*	*0.001*	*0.000*	*0.001*
Num. of Obs.	119575	105657	163158	135677	119575	105657	163158	135677	119575	105657	163158	135677
R-sq. Within	0.007	0.006	0.007	0.008	0.004	0.004	0.009	0.010	0.014	0.006	0.027	0.026
R-sq. Between	0.013	0.007	0.001	0.000	0.015	0.018	0.007	0.001	0.001	0.003	0.007	0.018
R-sq. Overall	0.008	0.006	0.005	0.005	0.007	0.007	0.008	0.005	0.014	0.006	0.023	0.024

Notes: dn – downgrades, up – upgrades. The rest of the variables are defined as in Tables 2 through 7.

Table 18: Testing for Asymmetries in Bank Lending Regressions—Component Liquidity Effect

	Commercial & Industrial Loans				Real Estate Loans				Consumer Loans			
	1st Period		2nd Period		1st Period		2nd Period		1st Period		2nd Period	
Dn contemp Effect	-3.575	-3.740	-4.025	-4.367	-2.038	-2.002	-3.085	-3.153	-1.688	-1.711	-1.926	-1.904
	0.261	0.272	0.249	0.279	0.144	0.156	0.136	0.147	0.184	0.199	0.171	0.190
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 1 yr	-7.418	-7.369	-8.146	-8.533	-5.238	-5.321	-7.122	-7.262	-5.524	-5.587	-6.092	-5.973
	0.688	0.728	0.612	0.684	0.367	0.391	0.327	0.357	0.478	0.520	0.412	0.466
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 2 yr	-10.204	-9.891	-11.183	-11.349	-7.303	-7.477	-10.158	-9.986	-7.018	-6.953	-9.418	-9.258
	1.025	1.091	0.897	1.004	0.554	0.589	0.461	0.507	0.727	0.769	0.604	0.686
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Dn effect after 3 yr	-10.197	-9.928	-12.824	-12.819	-8.634	-8.523	-11.577	-11.354	-7.905	-7.926	-11.169	-10.945
	1.313	1.403	1.131	1.266	0.714	0.767	0.572	0.624	0.928	1.015	0.754	0.852
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Up contemp Effect	-1.281	-1.292	-2.748	-2.936	-0.909	-0.857	-2.536	-2.513	-0.271	-0.305	-0.443	-0.498
	0.228	0.244	0.251	0.273	0.125	0.133	0.129	0.138	0.159	0.173	0.168	0.181
	0.000	*0.000*	*0.982*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.089*	*0.079*	*0.006*	*0.006*
Up effect after 1 yr	-2.371	-2.095	-3.760	-3.709	-1.672	-1.486	-3.921	-3.987	-1.068	-1.175	-0.574	-1.158
	0.660	0.702	0.610	0.676	0.362	0.386	0.307	0.333	0.459	0.499	0.402	0.451
	0.000	*0.003*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.020*	*0.019*	*0.153*	*0.010*
Up effect after 2 yr	-4.078	-3.811	-5.144	-5.136	-2.206	-2.269	-5.059	-5.167	-2.455	-2.804	-0.710	-1.331
	1.023	1.091	0.884	0.980	0.558	0.597	0.443	0.482	0.709	0.771	0.582	0.654
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.001*	*0.000*	*0.223*	*0.042*
Up effect after 3 yr	-5.976	-5.167	-6.056	-6.432	-2.551	-2.887	-5.695	-5.833	-3.199	-3.861	-0.890	-1.549
	1.347	1.437	1.107	1.225	0.721	0.771	0.544	0.593	0.927	1.006	0.728	0.817
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.001*	*0.000*	*0.221*	*0.058*
Competitor's Shock		-4.177		-2.473		-1.648		-0.711		-2.100		-2.478
		1.839		1.440		0.888		0.636		1.150		0.869
		0.023		*0.086*		*0.063*		*0.264*		*0.068*		*0.004*
Unemployment chg	-2.039	-1.999	-0.550	-0.525	0.047	-0.082	-0.821	-0.510	-0.544	-0.779	-0.684	-0.768
	0.335	0.370	0.321	0.379	0.159	0.173	0.153	0.175	0.193	0.219	0.193	0.231
	0.000	*0.000*	*0.087*	*0.135*	*0.769*	*0.635*	*0.000*	*0.003*	*0.005*	*0.000*	*0.000*	*0.001*
Num. of Obs.	119575	105657	163158	135677	119575	105657	163158	135677	119575	105657	163158	135677
R-sq. Within	0.009	0.008	0.010	0.011	0.007	0.007	0.019	0.020	0.015	0.016	0.028	0.027
R-sq. Between	0.007	0.005	0.003	0.001	0.015	0.016	0.001	0.001	0.010	0.011	0.008	0.020
R-sq. Overall	0.009	0.008	0.008	0.008	0.008	0.009	0.015	0.011	0.014	0.015	0.023	0.025

Notes: dn – downgrades, up – upgrades. The rest of the variables are defined as in Tables 2 through 7.