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Abstract

This paper quantifies the short-term and long-term impact of bank supervision (measured using CAMEL composite and component ratings) on different categories of loan growth: (a) commercial and industrial loans, (b) consumer loans, and (c) real estate loans. For each of these categories, we perform dynamic loan growth equations at the state level augmented by the inclusion of CAMEL ratings for all banks in the state, after controlling for banking and economic conditions. We perform these regressions for two distinct sub-periods: (1) 1985 through 1993 (which covers the credit crunch period), and (2) 1994 through 2004 (which covers the sustained recovery period).

For the first period, 1985 to 1993, we find that out of the three loan categories considered, business lending is the most sensitive to changes in CAMEL ratings (both the composite and the components), although the other loan categories also show some sensitivity. Overall, however, we find little evidence suggesting that the effects of changes in any of the components of CAMEL ratings differ systematically from the effects of changes in the composite CAMEL. For the second period, we find little evidence that changes in CAMEL ratings (the composite or its components) had any systematic effect on loan growth for any of the loan categories considered.

Keywords: Loan growth equations, CAMEL downgrades, banking sector conditions.

JEL Classification Codes: E44, G21

I. Introduction

It is widely accepted that bank regulation and prudential supervision exists to promote an efficient and competitive banking system; to prevent the occurrence of unnecessary financial disruptions caused by banking panics and failures; and to reduce depositor's risk exposure to episodes of financial distress. While these objectives serve to ensure the stability and growth of the macroeconomy, it is important to recognize that they may not be costless to the banking sector. Indeed, many studies of bank regulation focus on the identification and estimation of these costs.[1] 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, impacts 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. The evaluation results in the assignment of a "CAMEL" safety and soundness rating based on the overall financial health of the institution.[2] 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

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[1] 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).

[2] "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).

and potentially higher capital requirements at least in the short run. Thus, a poor rating has real consequences for how the bank operates.

In the past, especially in the early 1990s, bank examiners were perceived as being "too tough" with these ratings, and consequently, as being part of the cause of the credit crunch that the economy endured during those years (Peek and Rosengren, 1995; Berger, Scalise, and Kyle, 2001). This raises the issue of the "optimal" level of toughness for bank examiners. On one hand, it is clear that being too strict may be bad for economic growth as banks may react to these supervisory ratings by reducing loan growth too much. But if bank examiners are too lenient, the credit quality of bank portfolios may deteriorate too much at poorly performing institutions, thereby exposing the banking system to insolvencies, which could end up amplifying an economic downturn. The right level of toughness will invariably require some reduction in loan growth at institutions that are not performing adequately. Because of this, it would be useful to know the extent to which examinations have real economic costs—the rating elasticity of loan growth—so that bank examiners can properly assess the potential benefits and costs of these supervisory actions. The focus of this paper thus, is to estimate the effect of upgrades and downgrades in CAMEL ratings on bank lending operations.

As indicated above, recent research in banking regulation finds that bank supervision has had an adverse effect on bank lending. For example, Peek and Rosengren (1995) find that the sensational decline in the growth rate of bank lending in New England, which worsened the 1990-1991 recession, was partly attributable to credit contraction driven by the active enforcement of capital requirements, as institutions shrank their assets to meet the newly imposed requirements. Berger, Kyle, and Scalise (2001) use CAMEL ratings to examine the following three issues: (1) whether bank supervisors were particularly harsh

during the 1989-92 credit crunch period, (2) whether they were more lenient in their evaluations 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 indeed bank examiners had been tougher during the credit crunch period than during the 1993-98 period. However, they also find that these changes in the intensity of supervisory evaluations had a very small (though statistically significant) effect on bank lending practices.

In a related paper, Peek, Rosengren, and Tootell (2003) use the proportion of banks that have a CAMEL 5 rating (the worst rating) as an instrument for identifying loan supply shocks. They show that banks that receive this rating change their lending behavior dramatically. They go on to demonstrate that GDP growth forecast errors (the difference between actual GDP growth and its forecast) are correlated with this proxy for loan supply shocks.

This paper differs from the above-cited ones in many important respects. First, to measure the impact of regulatory oversight on bank lending, we estimate bank loan growth equations at the state-level augmented by the inclusion of (weighted) average CAMEL ratings for a constant sample of banks in the state, as well as other variables that control for banking conditions and local economic conditions. Although it is possible to estimate this equation at the aggregate (national) level, we choose to focus on the state level because of the important regional differences in the severity of economic fluctuations observed in the U.S in recent decades. These differences may be masked if the loan growth equations were estimated at the aggregate level. We could, alternatively, estimate this equation using bank-level data, since after all, the intuition that underlies our hypothesis applies to the bank as an entity. Our interest, however, is macroeconomic in nature. We investigate whether a "systemic" downgrade (i.e. a downgrade that affects a large enough proportion of bank

assets) has any implications for aggregate loan growth (at the state level), and hence subsequent output growth. More precisely, we seek to find an answer to questions such as: "If, say, 10 or 20 percent of the banks in a given state are downgraded, by how much will state-level loan growth be affected, if at all?" To the best of our knowledge, this question has not been addressed in the literature.

Second, although a few papers that have studied the impact of supervisory downgrades on loan growth and on economic conditions at various levels of aggregation, the issue of whether this effect is simply a reflection of existing banking conditions rather than the result of supervisory action still remains. In particular, it may be tempting to argue that changes in CAMEL ratings mostly pick up variations in financial ratios. If so, the conclusion that supervisory action has real effects for loan growth may be spurious, as it would simply be the result of changes in bank's financial conditions, and not due to regulatory oversight. In reality, however, changes in CAMEL ratings reflect two types of variations: (a) "financial-driven" changes, stemming from changes in banks' financial ratios, and (b) changes in the examiner's private information set, which reflect variations in "soft" information (DeYoung, Flannery, Lang, and Sorescu, 2001). To capture the effects of "soft" information (changes in private information), it is necessary to include a comprehensive set of variables that control for existing banking conditions. Although previous research attempts to deal with this problem in various ways (mostly by including a different set of controls and different lag structures), none has used what we consider to be the most superior one, the SCOR index. SCOR is an acronym that stands for "Statistical CAMELS Off-site Rating" and is a rating assigned to financial institutions purely based on financial information from the

Call Reports.[3] The SCOR model uses financial information to forecast CAMEL ratings (both the composite and components). Thus, with the SCOR rating, we are able to fully control for existing banking conditions, and examine the impact of unexpected downgrades on aggregate loan growth.

Third, we examine whether different categories of supervisory oversight lead to different outcomes for loan growth. Specifically, we test how changes in each of the five CAMEL components (Capital, Asset quality, Management, Earnings, and Liquidity) affect different categories of loan growth and compare these effects to those obtained by changes in the composite ratings. This is worth exploring since it is possible that changes or downgrades in one or more of the CAMEL components may result in different responses from the bank's perspective from those induced by changes in the composite rating. Moreover, it is possible that downgrades in different CAMEL components elicit different responses from the bank's perspective. For example, a downgrade in the asset quality component of CAMEL probably reflects deterioration in the bank's weighted classified asset ratio. A bank that receives such a downgrade will probably place more emphasis in monitoring past-due loans, insider loans, and perhaps reconsider its lending policies. A downgrade in the management component of CAMEL, by contrast, probably reflects a general deterioration in safe and sound managerial practices, from the perspective of the examiner. It may also reflect a lack of compliance with applicable banking laws and regulations. A severe enough downgrade in this component may result in the replacement of senior management. Although it is not clear which of these two downgrades will affect loan

[3] The SCOR system was developed by the FDIC in the late 1990s. Bank examiners and regulators currently use this rating system to help identify financial institutions that may require a more in-depth examination because of a deterioration in their financial condition since their last on-site examination For a detailed description of the SCOR system see Collier, Forbush, Nuxoll, and O'Keefe (2003).

growth (if at all) the most, it is unlikely that they will affect it in the exact same way. This is an empirical issue with policymaking implications, and thus, worthy of further investigation.

Lastly, we analyze loan growth for three different types of loans separately—Commercial and Industrial (C&I) loans, consumer loans, and real estate loans. This is worth investigating since it is quite possible that unexpected CAMEL changes affect separate loan categories differently. As discussed above, a bank that receives an unexpected downgrade in the asset quality component of its CAMEL rating, for example, would probably react to it by, among other things, reconsidering its loan portfolio composition. If it is deemed to be too risky, the bank may adjust its composition at the margin by substituting loans that are perceived to be safer for those to be perceived to be riskier. Such an adjustment will almost surely imply that banks reduce loan growth differently for separate loan categories, thereby implying a differential effect of CAMEL changes on different categories of loan growth. The choice of these loan categories (C&I loans, consumer loans, and real estates loans) was almost natural. C&I loans, for example, are perhaps the most analyzed loan category in the banking literature precisely because of its importance for business investment and, thus, growth. Moreover, it is arguably the loan category over which bankers have the greatest amount of control. *Ex-ante*, thus, one would expect this category to be the most sensitive to supervisory oversight. Consumer loans are traditionally seen as being very important for financing consumer durables, a significant component of aggregate demand. Hence, if unexpected changes in CAMEL ratings affect consumer loan growth, this may have implications for aggregate consumption growth. Lastly, real estate loans (which include commercial real estate as well as construction and development loans) are notoriously known to be sensitive to economic conditions. It would therefore be interesting to investigate the effect of CAMEL changes on this category separately.

The results indicate that the impact of CAMEL changes on loan growth is period-specific as well as loan category-specific. In particular, our findings suggest that, during the 1985-1993 period, C&I lending displayed a high degree of sensitivity to changes in the CAMEL composite and component ratings. In terms of the magnitude, and unlike the results of other studies (e.g. Berger, Kyle, Scalise, 2001), our results suggest that they are quite sizable. A 10 percent increase in the average composite ratings (roughly equivalent to a one-standard deviation shock) is associated with a loan growth decline of about 8 percent in the short run, and 7 percent in the long run. The effects of changes in the CAMEL components appear to be quite similar, with an estimated long-run impact that ranges from 4 to 7 percent.

For consumer and real estate loans during the first period (1985-1993), the results are mixed. They depend on the CAMEL component and composite considered as well as the timing of the change. For example, the short-term effect of a 10 percent increase in any of the CAMEL components (but not the composite) is associated with a 5 to 10 percent decline in consumer loan growth during the 1985-1993 period. However, we do not find any significant evidence that real estate loan growth was affected in any systematic way by changes in the components of CAMEL ratings, although there is some evidence that the composite rating had a short term effect during the first period.

For the second period, we do not find any evidence that changes in CAMEL ratings (either the composite or the components) had any systematic effect on any of the loan categories. The results are spotty at best, with most coefficients being statistically insignificant. The only exception is for the asset quality component, where we do find statistical significance for C&I lending regression. There are several potential reasons for this, which we explore and analyze further below in the discussion subsection of the results.

The rest of this paper is organized as follows. The following section offers a general description of how CAMEL ratings are assigned by bank examiners. This brief overview is useful for understanding how downgrades in the different components may elicit a different reaction from banks. Section III describes the data underlying this study, and analyzes basic summary statistics. Section IV describes in more detail the econometric test, and discusses the main results of the paper. Lastly, section V concludes.

II. Factors considered in the assignment of component CAMEL ratings

Examiners evaluate different aspects of financial condition in order to assign the component CAMEL ratings.[4] The individual components then provide the foundation for the overall or "composite" rating for the institution. As mentioned with the composite rating, each component (Capital, Asset quality, Management, Earnings and Liquidity) is assigned a numerical rating of 1 to 5 with 1 being the highest rating with the least supervisory concern and 5 the lowest rating with most supervisory concern. Examiner assigned ratings do not reflect a cookie-cutter pattern. While there are guidelines in the examination manual, there are generally no hard and fast rules for determining each component rating but require the judgment and experience of supervisory officials on a case-by-case basis since no two cases are exactly the same. Furthermore, all the components overlap to some degree and are interrelated. For example, the volume of problem assets which is one of the primary determinants of the asset quality component (A) rating, will also influence the capital component (C) rating. Thus, to some extent, the assignment of ratings is like putting together a mosaic or puzzle, where the more pieces you have in place, the more clear the picture becomes.

[4] For further information on this subject see FDIC (2004).

The capital adequacy component (C) evaluates whether or not the institution maintains capital commensurate with the nature and extent of the risks such as credit, market, operational and other types such as off-balance-sheet activities. While there are minimum regulatory capital requirements, occasionally it becomes necessary to maintain capital at levels above regulatory minimums to properly account for the types and quantity of risks inherent in an institution's activities. For example, if an institution's loan portfolio is heavily weighted toward construction and real estate lending or sub-prime lending, then the supervisor may require higher capital levels. Overall, examiners may give a poor capital rating if in their view, the level of capital is insufficient in relation to the current and expected levels of problem assets which left uncorrected, may threaten the stability of the organization. In rendering this opinion, examiners consider such factors as the overall condition of the financial institution, the nature, trend and volume of problem assets and the adequacy of allowance for loan and lease losses. Other considerations include the level of market risk, concentration risk and risk associated with non-traditional activities. The quality and strength in earnings, access to capital markets and other sources of capital including the parent holding company will also play a key role in the rating assigned.

The asset quality component (A) rating reflects the quantity of existing and potential credit risks associated with loan and investment portfolios, other real estate owned as well as off-balance-sheet transactions. In particular, examiners may give a low grade for such factors as a deficiency in underwriting standards and soundness of credit administration practices, increasing levels in delinquent and nonperforming assets, inadequacy of the allowance for loan lease losses and other asset valuation reserves. Other factors may include enhanced credit risk arising from credit derivatives, commercial and standby letters of credit and lines of credit, a lack of diversification and quality of loan and investment portfolios, the

existence of high asset concentrations, deficiencies in credit documentation and the inadequacy of internal controls and information systems.

The quality of management as reflected in the management component (M) rating is critical to the overall operations and success of the institution. In particular, examiners may downgrade bank management for failure to identify, monitor and control problem loans and risks that could destabilize the institution. These include the failure to provide oversight and support for all institution activities, the lack of accuracy, timeliness and effectiveness of management information and risk monitoring systems, the inadequacy of audits and internal controls to promote effective operations and reliable financial and regulatory reporting. Other factors taken into consideration include management's lack of compliance with laws and regulations, an unwillingness to serve the legitimate banking needs of the community, a lack of response to auditor and supervisory concerns and self-dealing practices. In some circumstances, supervisors may be forced to strengthen or replace incumbent management or the Board to ensure safety and soundness of the institution.

The earnings component rating (E) reflects not only the quantity and trend of earnings but also factors that may affect the sustainability of earnings like excessive credit risks that result in loan losses or market risks that may unduly expose an institution earnings to the volatility in interest rates. In general, the assignment of an unsatisfactory rating for this category is associated with earnings which are insufficient to support operations and maintain appropriate capital and allowance for loan loss levels. Specific factors include high levels of expenses in relation to operations, erratic fluctuations in net income or net interest margin, significant earnings exposure to market risks such as interest rate, foreign exchange and price risks. Other factors taken into consideration may be the development of a

significant negative trend in earnings, nominal or non-sustainable earnings, or a substantive drop in earnings from the previous years.

The liquidity rating (L) is associated with the financial institution's funds management position. In general, funds management practices should ensure that the institution is able to maintain a level of liquidity sufficient to meet its financial obligations in a timely manner. In addition, effective liquidity management requires that liquidity is not maintained at a high cost or over reliance on funding sources that may not be available in times of financial stress or adverse changes in market conditions. An examiner assigned downgrade in this component is associated with factors such as the unavailability of assets readily convertible to cash without undue loss, the lack of access to money markets and other sources of funding, including an over reliance on short-term volatile funds like broker deposits and other borrowings. In addition, the inability to securitize certain pools of assets as well as the instability of deposits are also taken into consideration.

Downgrades in any of these categories is a clear indication that the general financial health of the institution has deteriorated somewhat. In one way or another they may imply a reduction in lending. However, the effect is unlikely to be symmetrical across component rating, loan category, or even over time. The effect of changes in CAMEL ratings, thus, is an empirical issue, which we investigate in the next two sections.

III. Data

For each state, we select a constant sample of federally insured depository institutions for two different periods: 1985-1993 (which we define as the first period) and 1994 -2004 (which we define as the second period). For each of these two periods and for each state, we gather data for the sample of all banks that existed throughout the entire period. We are able to identify these institutions by the unique CERT number, assigned to

the charter of a federally insured institution. Hence, banks that either disappear (for whatever reason), or new institutions formed during the period (either *de novo* organizations or new institutions formed by mergers or acquisitions) did not make it into our sample. We concentrate on a constant sample of banks, rather than all banks in the state, because we want to avoid the inclusion of changes in aggregate loan figures or changes in average CAMEL ratings due to banks entering or leaving the sample. If, for example, a downgrade increases the probability of a merger, and, as a result of the merger, loans disappear from the state (say because the new entity is incorporated in another state), we will find that downgrades lead to a decline in loan growth, but we could not attribute this effect directly to supervisory actions. Aggregate financial figures as well as (weighted) average CAMEL and SCOR ratings are computed for the selected sample of banks for every quarter in each of the two periods. [5]

The adequacy of the sample is, needless to say, an issue of concern. To demonstrate that our sample is fairly representative of the entire population of banks in each state, it is useful to compare our sample to the entire population in terms of number and assets. In terms of numbers, the sample is quite comprehensive. The median state in our sample has 130 banks in the first period (the average number of banks per state is 193.3). Had we included every bank in the state, the median would have increased to 176 (the average to 279.15) at the beginning of the first period. Thus, our sample captures about 74 percent of all banks. In terms of assets, the percentage is somewhat lower but still quite sizable. On a per state basis, the median aggregate asset figure for all banks in our sample is $25.5 billion

[5] All balance sheet figures come from the Call Reports available at the FDIC. We complemented this dataset by including quarterly figures of state product income obtained from the Bureau of Economic Analysis website (www.bea.doc.gov). All nominal variables were converted into real ones using the Consumer Price Index. In addition, we computed the weighted (by asset size) average CAMEL as well as the SCOR rating for the constant sample of banks.

(average $46 billion). The median figure would have increased to $40.3 billion (average $78.8 billion) had we included every bank in the state. Thus, our sample captures approximately 60 percent of all bank assets.

For the second period, we are able to capture roughly 50 percent of the population of banks (in terms of number) and approximately 56 percent of the population in terms of assets. The median number of banks on a per state basis is 94 (average 142.39). This figure would have increased to 199 (average 255.23) had we included every bank in the sample. In terms of assets, the median figure for our sample of banks is $29.3 billion (average $76.2 billion), while, for the entire population, this figure would have been $52.5 billion (average $119 billion). These lower percentage figures are probably due to the fact that during the second period, there was more merger activity in the banking industry than there was during the first period. Since we select the sample of the basis of survivability, we naturally end up with a relatively smaller percentage during the second period than during the first period.

Table 1 offers a more detailed comparison of our sample of banks with respect to the total population of banks. The table presents basic summary statistics (averages, standard deviations in italics, and medians) for CAMEL composite and component figures as well as for loan figures. We compute all statistics for each period (averaged over all states plus the District of Columbia and all quarters) for our sample of banks as well as for the entire population of banks. Overall, the results show that, for CAMEL ratings, both samples are quite comparable. For example, the average composite CAMEL rating for all banks in our sample was 2.075 during the first period. The corresponding figure for all banks is 2.176. A test of means reveals that these two figures are statistically equal to each other. Indeed, this test reveals that none of the other CAMEL rating figures differ systematically from each other.

The same is not true for the loans figures, however. It is clear from the table that the average loans figures for the sample of banks is smaller than that for the entire population. For all three loan categories and for both periods, the difference in means is statistically significant at the 1 percent level. This difference serves as an indicator of the amount of loans we are able to capture in our sample relative to those for the entire population of banks. The percentages are similar to the figures we obtained for total assets discussed above. For example, the table indicates that for the first period, we have roughly 70 percent of all C&I and consumer loans (comparing the averages for the sample and the entire population). This percentage drops to about 50 percent for the second period. For real estate loans, we are able to capture about 40 percent of the entire market during the first period, and although this percentage increases to 60 during the second period.[6]

To feel more confident that our sample is indeed representative of the entire population, we present in Table 2 the overall R-squared of fixed-effect regressions of each of these variables computed for all banks (dependent variable) on the corresponding variable computed for our sample of banks (independent variable). This statistic is a measure of the explained variation of the dependent variable in a linear model. Thus, it is useful for assessing the overall correlation between our sample and the entire population of banks. The results generally confirm the claim that our sample of banks is quite representative of the entire population of banks. For the first period, the R-squared is very high for just about every variable considered. For the second period, the R-squared is generally lower (the lowest being for the composite and the earnings component of CAMEL ratings), which is

[6] Also noteworthy from the table is the fact that both C&I and consumer lending appears to decline between the two periods, while real estate lending increases. This change is a reflection of the portfolio composition modifications banks were generally doing during this period, away from what they perceived were less profitable loans to more profitable ones, especially during the real estate boom of the 1990s. This observation also helps to justify why it is perhaps more important to examine the effect of CAMEL ratings on different categories of loan growth, rather than on aggregate bank lending.

what we expect, given that our sample of banks for the second period is smaller relative to the general population of banks.[7]

The relatively lower R-squared for the second period (especially for the composite CAMEL rating) calls for a robustness check on the similarity of the two samples. To this end, it is useful to look at the time series pattern of the average CAMEL composite rating computed for all banks with the average for our sample of banks. Figure 1 presents both series from 1985 to 2004. Notice that both of them increase during the credit crunch period, before declining during the second period. This trend is consistent with the notion that supervisory assessments significantly deteriorated during the credit crunch period, and eased quite dramatically during the boom years, although, by the beginning of 2000, they were deteriorating again although more gradually. More importantly, notice that the composite rating for our sample moves more or less in tandem with the composite rating for the entire population of banks. The correlation coefficient between these two series is a striking 0.97. With such a high correlation, it is hard to disagree that these two series parallel each other.

A central aspect of this paper is the estimation of the impact of the CAMEL components on different categories of loan growth. Hence, it is important to also examine the time series pattern of the components, relative to that of the composite index. Figure 2 presents these patterns over time. The pattern for the composite index mimics, as it should, the time series presented in Figure 1—rapidly raising to a peak of 2.51 in early 1991, and gradually declining until 1997 after which it was relatively flat throughout the rest of the sample period. It should also be clear from the figure that although the composite and the components generally share the same trend over time—rising during the early 1990s and declining during the boom period, there is enough difference among them to warrant further

[7] The relatively lower R-squared for the second period can also be explained by the possibility that the second period contains fewer troubled banks, as these may have merged out of existence.

investigation. First, there is a clear convergence of these series during the mid 1990s—the components and the composite are much further apart from each other during the beginning of the sample period, much closer together during the 1996 to 1998 period, and again, a slightly divergent path during the last part of the period (2000 to 2004). These differences in patterns suggest that supervisory assessments emphasized different categories over time. For example, near the peak of the composite index (early 1991), the asset quality component was above all others, clearly implying that the bank's weighted classified asset ratio had significantly deteriorated during this period. By the mid 1990s, however, this component was below all others, suggesting that the other components had deteriorated by a relatively larger margin. Overall, however, there is a convergence in the ratings during the second period. This is not surprising given that bank's financial health improved significantly after 1994. As a bank financial health improves, its CAMEL composite and component ratings also improve, leading to a convergence in the series.

Having consistent data at the state level is crucial for ensuring that the results reflect changes in loan growth driven purely by bank's reaction to changes in CAMEL ratings, and not to mergers and acquisitions, or by banks entering or leaving the sample. However, an important issue still remains. In particular, it is well known that a few states contain the largest financial institutions in the country, which tend to do business mostly out of their state of incorporation. For example, Utah hosts a few institutions that specialize in credit card loans, while North Carolina and New York are home for some of the mega banks in the country. It is clear that keeping these states with such "outlier institutions" in the sample may affect the accuracy of the results. To deal with this issue, we eliminated from the sample states which contain the largest financial institutions or that have very lax incorporation laws. The complete list of eliminated states includes: Delaware, District of Columbia, North

Carolina, New Jersey, New York, North Dakota, Pennsylvania, and Utah. Eliminating these states affected the summary statistics only marginally. To demonstrate that this is indeed the case, we include in Table 3 the summary statistics for the reduced-state sample. The variables in this table are those used in the regressions—C&I loans, consumer loans, real estate loans, CAMEL composite and component ratings, SCOR composite and component ratings, and state product income. Notice the similarity between the summary statistics in Table 1 (where the sample includes every state plus the District of Columbia) and Table 3 (with the reduced sample of states). Unsurprisingly, the general pattern we observed for Table 1, we also observe for Table 3.

IV. Methodology and Results

A. Regression Specification

To estimate and quantify the effect of CAMEL ratings on bank lending, we construct a parsimonious model of loan growth that applies to all three loan categories (C&I, real estate, and consumer), and augment it by the inclusion of the ratings. Thus, the estimated model takes on the following form:

$$\Delta l_{i,t}^{k} = \alpha + \sum_{j=1}^{n_l} \beta_j \Delta l_{i,t-j}^{k} + \sum_{j=1}^{n_{camel}} \theta_j \Delta CAMEL_{i,t-j} + \sum_{j=1}^{n_{controls}} \gamma_j \Delta controls_{i,t-j} + \varepsilon_{i,t} \qquad (1)$$

Where l stands for the log of loans in real terms in state i and time t for loan category k (k= C&I loans, real estate loans, consumer loans) and Δ indicates change. The β's coefficients measure the effect of the lagged dependent variable, which is included to model the autoregressive component of loan growth. *CAMEL* is defined as the log of the asset-weighted average of the CAMEL rating for all banks in the sample. It is important to realize that this variable is continuous by construction, and will change from one quarter to the next if at least one bank in the sample has a revision in its rating. The *CAMEL* variables included

are the log of the composite index and its five components. The finite distributed lag specification allows the CAMEL variable to affect loan growth with a lag. The two *controls* included are: the log of the weighted average SCOR rating for all banks in the sample, and the log of real state product income. The log of the weighted average SCOR rating serves as control for the financial condition of financial institutions. The second control variable, lagged changes in state income, is included to capture the influence of demand conditions on loan growth.

Because we have a balanced panel dataset and the model calls for lagged dependent variables, we estimate all regressions using the Blundell and Bond (1998) two-step system GMM procedure, and implement the Windmeijer (2000) correction for finite samples. This econometric procedure is appropriate to estimate equation (1).[8] The number of lags for the dependent variable, the CAMEL ratings, and the control variables used in all regressions is 2.[9]

We estimate the model for two different time periods: (1) 1985-1993 and (2) 1994-2004. We do this for several reasons. First, we wanted to evaluate the possibility the credit crunch made a difference. As indicated earlier, previous research has argued that the most important reason behind the slowdown in bank lending during the 1989-91 period was the active enforcement of capital requirements (Peek and Rosengren, 1995). Second, it is possible that FDICIA, which was passed in 1991, and implemented two years later, may have also influenced the effect of CAMEL on loan growth. Lastly, according to Berger, Kyle, and Scalise (2001) these two periods are very different from each other in terms of the

[8] According to Bond (2002), the Blundell and Bond (1998) procedure is superior to the more generally used Arellano and Bond (1991) GMM estimator, which, in order to identify the model coefficients, relies on instruments that are often inadequate, especially when the model is estimated in first differences and the series display some level of persistence.

[9] The choice of 2 lags was made to fulfill the 1st and 2nd order autocorrelation test in the regressions, while at the same time, keeping the estimated number of parameters to a minimum. See Arellano and Bond (1991) and Bond (2002) for more details.

examination stringency of bank examiners—during the earlier period examiners were much tougher in their component rating assessments than they were during the second period, although recent research has challenged this finding.[10]

B.1 Regression Results: Composite

The results are presented in Tables 4 through 9. Table 4 presents the results for the composite CAMEL rating for all three loan categories (C&I loans, consumer loans, and real estate loans) and both periods (1985-1993 and 1994 to 2004). The table indicates that for C & I loans in the first period, a one percent increase in the average composite CAMEL rating leads to a first-quarter (first lag) decline in the growth rate of C&I lending of about 0.6 percent. The estimated coefficient is so precisely estimated that it is significant at the 1 percent level. The cumulative first and second quarter impact (defined in the table as the "short term" effect) is -0.811 and also statistically significant. Thus, increases in the composite CAMEL rating are associated with a sizable reduction in C&I lending two quarters later.

The "long term" (steady-state) effect[11] is somewhat lower that the short term impact, a decline of 0.694, but still relatively large and statistically significant at the 1 percent level. The tests of autocovariance in residuals indicate that the null hypothesis of first-order autocovariance is rejected, while the null hypothesis of second-order autocovariance is not. According to Arellano and Bond (1991), this suggests that the estimated equation is well-specified.

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[10] For more on this, see Curry, Fissel, and Hanweck (2006).

[11] The long term effect measures the dynamic impact of a CAMEL shock on loan growth in the long run, holding everything constant. It is computed by assuming that equation (1) reaches a steady-state, and then solving out the difference equation. More specifically, if $A(L)y_{i,t} = B(L)x_{i,t} + \varepsilon_{i,t}$, where *A(L)* and *B(L)* are polynomials in the lag operator, the long-term effect is given by $B(L)/A(L)$ for $L = 1$. For more on this, see Enders (2004), chapter 1.

In the second period, the results suggest that the composite CAMEL rating does not have any statistically significant impact on C&I lending. While the first quarter impact is approximately -0.3, it is so inefficiently estimated that we cannot statistically rule out that the true impact is actually zero. The short-term and long-term effects are estimated to be around -0.7, although they are not significant at standard levels.

The results for consumer lending do not exactly parallel those obtained for C&I lending. In the first period the short-term and long-term effects are estimated to be around -0.7 and -0.6 respectively, roughly in magnitude with the coefficients for C&I loans, but they are statistically insignificant at standard levels. As in the C&I lending regressions, none of the second period coefficients is significant at standard levels. Thus, we reach similar conclusions for consumer lending as we do for C&I lending for the second period.

For real estate lending, the results are more in line with those of C&I lending. During the first period, we find that a one percent increase in the growth rate of the composite CAMEL rating is associated with a decline of about 0.374 percent in real estate lending in the short run, and a decline of 0.412 in the long run (both statistically significant at the 5 percent level). For the second period (1994-2004) we find that CAMEL composite downgrades do not affect real estate lending.

For the 1985-1993 period, the results imply that downgrades in CAMEL ratings were associated with subsequent declines in C&I and real estate lending, but no apparent decline in consumer lending. But these results are not exactly replicated for the component regressions, presented in Tables 5 through 9.

B.2 Regression Results: Components

The evidence presented in Tables 5 through 9 provides only partial support for the hypothesis that banks react to changes in the components of CAMEL ratings. For example,

for C&I loans in the first period, holding all else constant, a one percent increase in the capital component (Table 5) is associated with a subsequent decline in C&I lending in the short term and long term. However, for the second period, we do not find any evidence that changes in the capital component of CAMEL ratings have any statistically significant effect on C&I lending. Moreover, the results for consumer loans and real estate loans, however, are not as strong as those estimated for C&I lending. The only elasticity that is systematically statistically significant is for consumer lending in the first period, and only in the short run. For real estate lending, there is virtually no relationship between the component CAMEL ratings and loan growth in either the first or the second period.

An interesting issue to investigate is whether the estimated short term and long term coefficients for the components are different, in a statistical sense, from those obtained for the composite CAMEL ratings. A t-test on the equality of coefficients reveals that only a few of the coefficients estimated in Tables 5 through 9 are statistically different from those in Table 4. Out of the 60 estimated coefficients for the short term and the long term effects in Tables 5 through 9, only 18, or less than 1/3, are statistically different from those obtained for the composite CAMEL ratings. And of these 18, 12 are from the real estate loan regressions, which are statistically indistinguishable from zero in any case. With this evidence, it is hard to conclude that banks react differently to downgrades in the component of CAMEL ratings than to downgrades from the composite ratings.

Out of all the CAMEL component regressions, the asset quality appears to have the most consistent effects on C&I loan growth. The results in Table 6 indicate that a downgrade in this component is associated with a decline in business lending in both the short term and the long term and in both the first period and the second period. This result is not surprising in light of what a downgrade in this component implies. As indicated in

section II above, this component represents an assessment of a bank's weighted classified asset ratio (FDIC, 2004). In making an assessment, bank examiners also look at how effective the bank is in monitoring past-due loans, and how prudent the bank is in its lending policies. Thus, it is evident that, holding other variables constant, changes in this component should affect bank lending behavior.

C. Discussion

Taken together, the tables tell a consistent set of results. The most obvious one is the fact that in all tables (composite CAMEL ratings and its components) downgrades are associated with a decline in C&I lending in the first period, but not in the second one. In virtually all regressions, the estimated coefficient ranges from about -0.4 to about -0.8 in the short run and the long run. The same is not true, for the most part, for consumer lending or real estate lending. This raises three important questions which we discuss here: (1) Why C&I loans and not consumer or real estate? (2) Are these elasticities economically meaningful? (3) What's different about the second period?

C.1: Why C&I loans?

The fact that the CAMEL variable coefficients are significant for C&I loans, but not for the other loan categories, can be explained by two interrelated facts. Firstly, C&I loans were the riskiest loan category during the almost the entire 1985-2004 period. To see this, Figure 3 plots the time series of the proportion of problem loans (90 past due loans plus non-accrual loans) to total loans in all three categories: C&I loans, consumer loans, and real estate loans. The figure is self-explanatory—C&I problem loans were on average nearly 30 percent higher than real estate problem loans, the second highest category; and nearly 2.5 times higher, on average, than consumer problem loans. Naturally, thus, a banker that seeks to adjust its loan portfolio from a riskier one to a safer one would most probably resort to

reducing its relative exposure to C&I loans. The second related issue has to do with the fact that from a practical perspective, bankers typically find it easier to reduce C&I lending than to reduce loan growth in any other category. This has to do with the fact that proportionally more C&I loans tend to be self-liquidating, at least relative to consumer loans and real estate loans, and thus it is relatively easier to deny renewals.

C.2: Are Elasticities "High Enough"?

As indicated above, the estimated elasticities for C&I loans range from -0.4 to -0.8 in the first period. These figures are large enough to have a sizable impact to the local economy if the downgrades become systemic. To see this, consider the following (admittedly artificial) example.

Suppose that there are 100 equally small-sized banks ($500 million in assets) in a given state. Assume, further, that they all start with a CAMEL composite rating of 1. If, say, 10 of them are downgraded to a 2, clearly the average composite CAMEL rating for the state will increase by 10 percent (from 100 to 110). Given the estimated long term elasticity of -0.5, and $50 billion in total assets at the state level, this "systemic" downgrade will result in a decline of $2.5 billion in assets at the state level, which would be equivalent to closing down five banks in the state. Thus, from a purely quantitative perspective, it is plausible that a sudden increase in the "toughness" of bank examiners (manifested in a systemic unexpected downgrade of banks) may result in a contraction of loan supply that, in turn, may depress economic activity, holding all else equal.

It is important to qualify this dire scenario. First of all, the elasticity of -0.5 applies only for C&I lending, not for consumer loans or real estates loans. Thus, the aggregate impact of a "systemic" downgrade is somewhat mitigated by the fact that banks may contract C&I lending, but not necessarily other loan categories (or at least, not by the same

amount). Secondly, it only reflects the results for the first period, not the second one. As commented in the introduction, we do not find evidence suggesting that CAMEL ratings had a systematic effect on loan growth during the second period.

C.3: What's different about the Second Period?

Here we explore in more detail four reasons that explain why we find no evidence that changes in CAMEL ratings had any systematic effect on any of the categories of loan growth:

First, these two periods are very different from a regulatory perspective. In particular, the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA) may have resulted in the improvement in CAMEL ratings during this period, as this Act imposed risk-based deposit insurance pricing and stipulated specific procedures for banks and thrifts that are weakly capitalized. Because FDICIA also requires that the deposit insurance premium depend on the capitalization and the overall financial condition of the institution, banks had a stronger incentive to stay well capitalized and have healthy balance sheet figures during the second period than during the first period. Hence, we see far fewer unexpected downgrades during the second than during the first one.

Second, it is clear that the predominant action during the first period was a downgrade, while during the second period it was an upgrade. During the first period, all states plus the District of Columbia finished with a (composite and component) CAMEL rating that was higher than the one they began with. During the second period, only about 20 percent of the states suffered this fate—ending with a worse average CAMEL rating than the one they began with. It is possible that banks react asymmetrically to these two events. That is, banks react by contracting loans when they are downgraded, but they do not necessarily increase loans when they are upgraded. We test for this possibility by interacting

with the CAMEL variable an indicator variable equal to 1 if the state was an upgrade state in the second period, and 0 if it was a downgrade state in the second period. The results show that the CAMEL coefficients in upgraded states were not systematically different from the CAMEL coefficients in downgraded states. Thus, we do not find strong evidence that banks reacted differently to these two events.

Thirdly, the technological environment in which banks operated was very different between the two periods. In particular, during the second period, technological advances in banking services facilitated the degree to which banks could do business outside of their state. Operating across states boundaries weakens the accuracy of the results, especially for states with the largest banks. We find some evidence suggesting that this was indeed the case. In particular, as discussed above in the data section of the paper, we eliminated from the sample states that contained the largest financial institutions or that have very lax incorporation laws, such as North Carolina, Utah and Delaware. Including all of these states in the regressions does not change the statistical significance of the coefficients that already are. However, we find a discrepancy of about 90 percent (in absolute terms) between the coefficients estimated with all of the states and those estimated for the restricted sample of states for the first period. This discrepancy increases to about 300 percent for the second period. This is precisely what one would tend to observe if technological innovations in banking made it easier for them to do out-of-state business over time.

Fourth, the mid 1990s trend in bank CAMEL ratings upgrade evidently implies that some point most financial institutions will reach the highest rating of 1. Clearly, once this happens, continuing improvements in their balance sheets cannot be reflected in further upgrades. Hence, at some point the nature of the data does not allow for the necessary

variation to reliably detect the influence of CAMEL rating changes (and in particular, downgrades) on loan growth.

V. Conclusion

This paper investigates how bank supervision, through its evaluation process using CAMEL ratings, affects bank-lending operations. In particular, for each state, we gather data for a constant sample of banks for two different periods (1985 to 1993, and 1994 to 2004) and perform loan growth regressions in each period for the largest three loan categories (C&I, real estate, and consumer loans). In each regression we included weighted average CAMEL ratings, the SCOR index to control for existing banking conditions, and state product income to control for aggregate demand.

For the first period, we find that changes in both the composite and most of the component of CAMEL ratings, had a significant negative effect on C&I lending. The estimated short-term elasticity is about -0.6, while the estimated long-term elasticity is somewhat lower, about -0.4. However, for the other loan categories, the evidence is not strong enough to support the conclusion that CAMEL ratings had a systemic effect on them. For the second period, we do not find systematic evidence that changes in CAMEL ratings affected any of the categories of loan growth. The only exception to this is for the asset quality component, which we find had a significant effect on C&I lending, but not on consumer or real estate lending.

There are at least two possible reasons which may explain why there is hardly any effect during the second period. First, the regulatory environment of the mid to late 1990s was very different from that of the mid 1980s to early 1990s. The introduction of FDICIA encouraged banks to stay well-capitalized and maintain healthy financial conditions in order to avoid paying a deposit insurance premium. Because of this, there are far fewer unexpected

downgrades during the second period. Second, the technological environment between these two periods was very different indeed. Technological advances over the last 2 decades have enabled banks to do an increasing proportion of their business outside of their states, thereby weakening the results. We find some evidence that this was indeed the case.

One may argue that the fact that the effect of CAMEL ratings on loan growth appears to take place during the first period but not the second one, suggests that the effect is mostly one-sided—during periods of systematic downgrades only. However, we do not find any systematic evidence indicating that downgrades and upgrades had different effects on loan growth.

In further research we plan to investigate whether there were regional differences on the effect of CAMEL changes on loan growth. This is an interesting issue to examine given that many argue that the banking crises of the late 1980s and early 1990s was concentrated in a few states in New England, Texas, and California.

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Figure 1

CAMEL Composite Ratings-All Banks vs. Sample

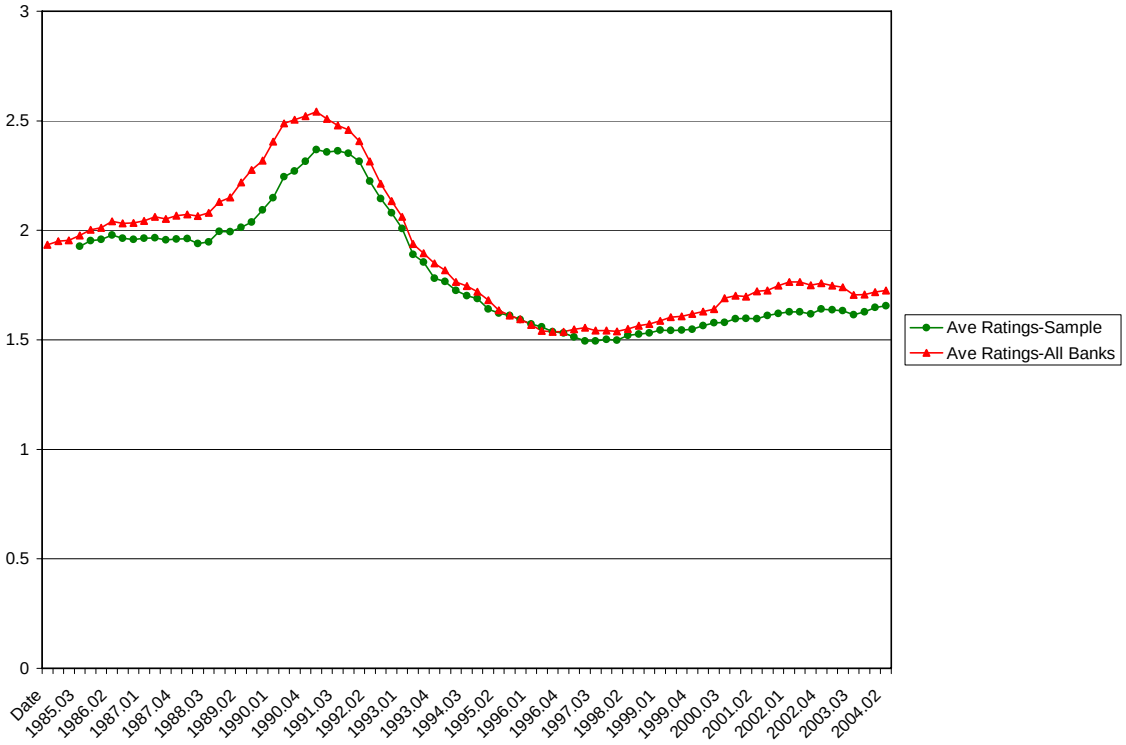

Figure 2

CAMEL Composite and Components Over Time – Sample

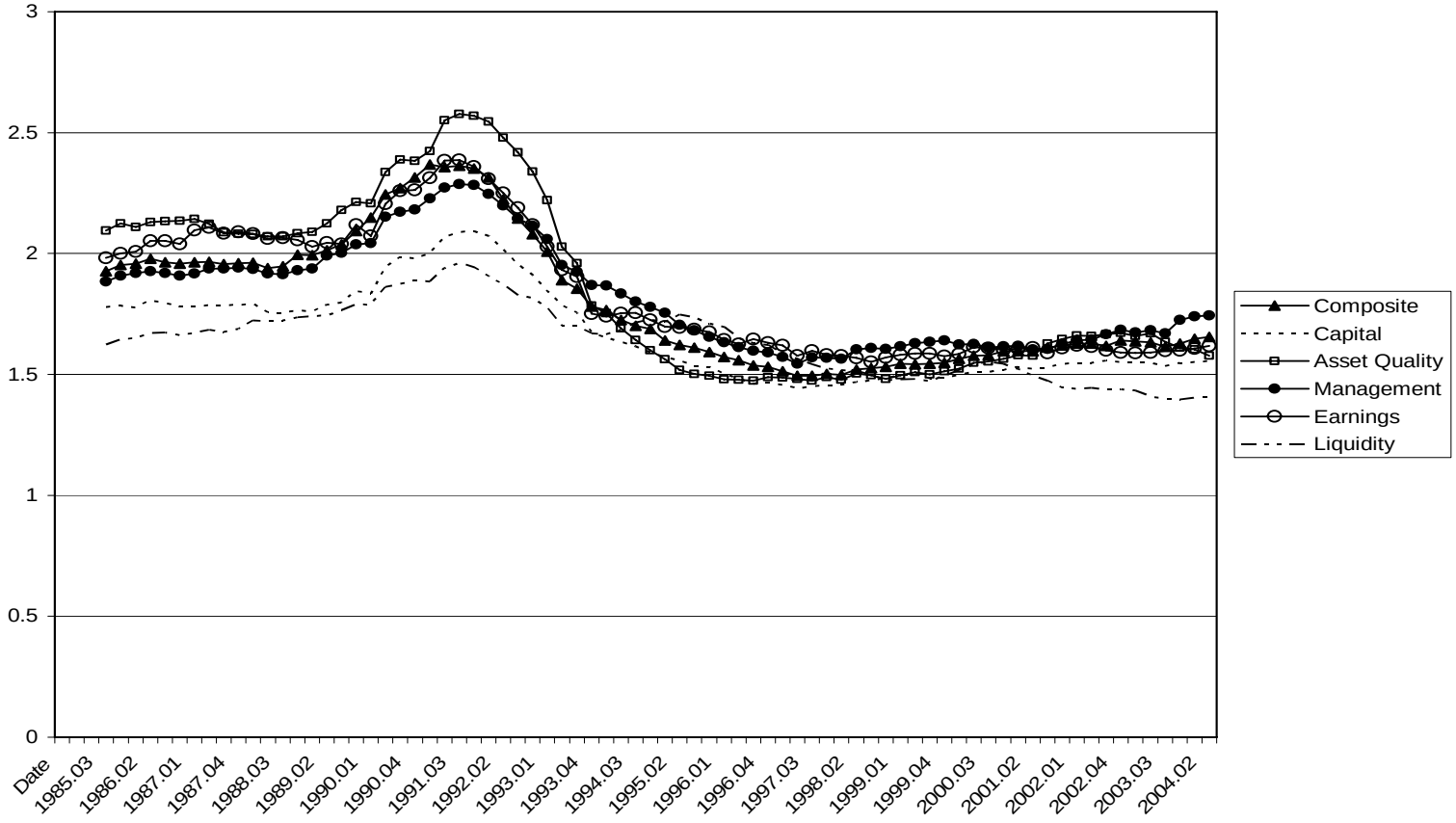

Figure 3

Proportion of Problem Loans Over Time

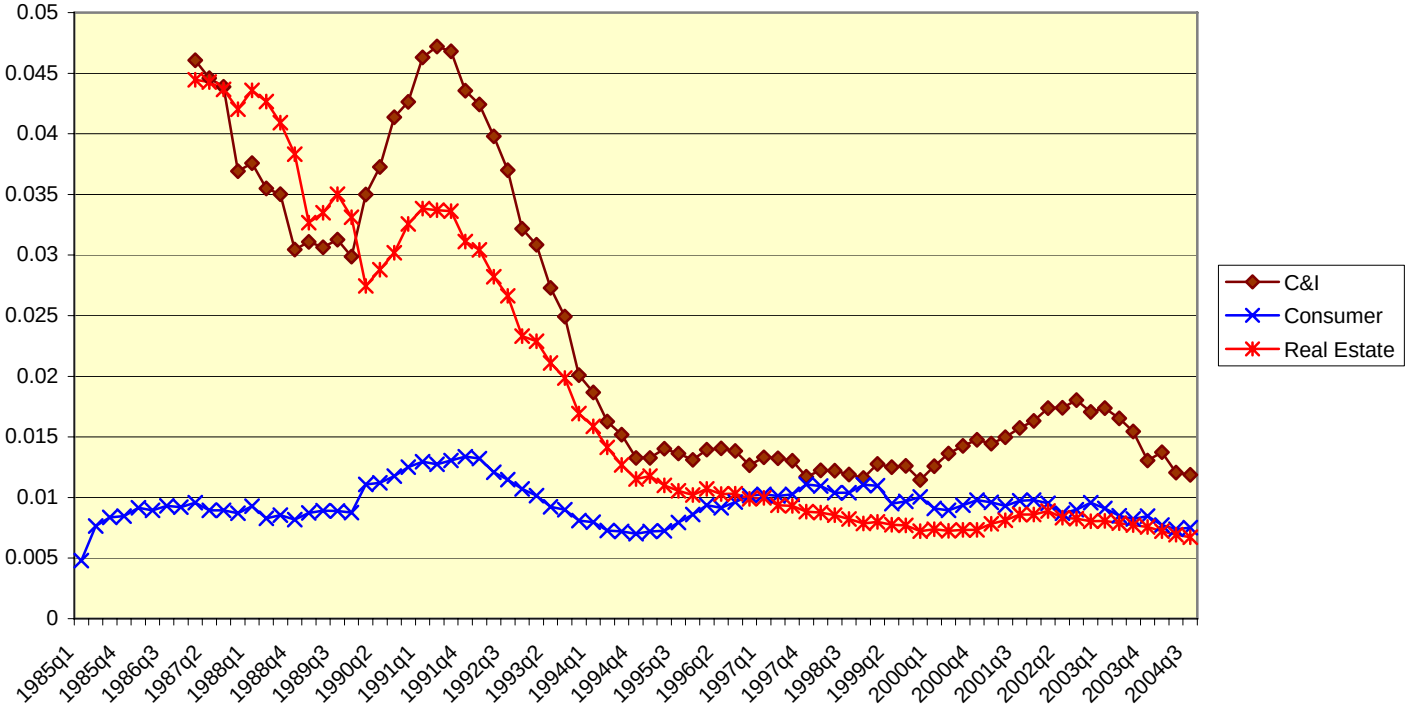

Table 1
Summary Statistics:
Comparing Sample to Entire Population

Variable	1st Period (1985-1993)		2nd Period (1994-2004)	
	Sample	*All Banks*	*Sample*	*All Banks*
Composite	2.075	2.176	1.597	1.660
	0.476	*0.482*	*0.257*	*0.264*
	2.010	2.114	1.562	1.642
Capital	1.862	1.996	1.526	1.600
	0.402	*0.411*	*0.243*	*0.255*
	1.825	1.968	1.519	1.605
Asset quality	2.227	2.286	1.567	1.632
	0.548	*0.529*	*0.325*	*0.326*
	2.131	2.220	1.509	1.598
Management	2.034	2.097	1.659	1.705
	0.395	*0.389*	*0.265*	*0.253*
	2.027	2.088	1.647	1.694
Earnings	2.121	2.244	1.624	1.680
	0.572	*0.543*	*0.282*	*0.296*
	2.017	2.161	1.601	1.663
Liquidity	1.767	1.863	1.545	1.574
	0.329	*0.350*	*0.265*	*0.262*
	1.738	1.826	1.549	1.571
C&I Loans	57,745	78,891	50,610	83,211
	90,415	*122,601*	*104,816*	*131,677*
	27,173	37,144	16,662	29,726
RE Loans	96,297	225,326	160,186	251,911
	147,383	*381,916*	*301,217*	*390,469*
	43,703	100,479	68,059	112,200
Cons Loans	41,929	62,592	40,932	69,160
	49,387	*73,746*	*71,940*	*93,552*
	25,519	39,238	14,513	30,786

This table presents basic summary statistics—averages (first line), standard deviations in italics (second line), and medians (third line), for CAMEL composite and component ratings, as well as the three categories of loan growth. "C&I Loans" stands for commercial and industrial loans; "RE Loans"—real estate loans; "Cons Loans"—consumer loans, all of them are in hundred thousand real 1982-84 dollars. All figures are computed over all states and all years. The "Sample" column reports figures for our sample of banks in all states plus the District of Columbia. The "All Banks" column reports figures for the entire population of banks.

Table 2-A
How representative is the sample? First period results

		Sample								
		C&I Loans	Cons Loans	Real Estate	Comp.	Capital	Asset quality	Mgment	Earnings	Liquidity
All Banks	C&I Loans	0.949								
	Cons Loans		0.923							
	Real Estate			0.900						
	Composite				0.849					
	Capital					0.771				
	Asset quality						0.896			
	Management							0.851		
	Earnings								0.869	
	Liquidity									0.738

Table 2-B
How representative is the sample? Second period results

		Sample								
		C&I Loans	Cons Loans	Real Estate	Comp.	Capital	Asset quality	Mgment	Earnings	Liquidity
All Banks	C&I Loans	0.768								
	Cons Loans		0.786							
	Real Estate			0.855						
	Composite				0.394					
	Capital					0.409				
	Asset quality						0.446			
	Management							0.515		
	Earnings								0.368	
	Liquidity									0.452

These tables present the overall R-squared of fixed-effect regressions of the "All Banks" variable (in rows) with the corresponding "Sample" variable (in columns). "First period results" cover the 1985-1993 period, while "Second period results" cover the 1994-2004 period.

Table 3
Summary Statistics

	Median		Mean		Standard Deviation	
	1st period	2nd period	1st period	2nd period	1st period	2nd period
C&I loans	25,925	15,893	46,307	36,035	59,104	64,338
Consumer loans	24,051	13,590	35,668	28,525	37,637	45,493
Real Estate loans	43,703	63,630	80,864	134,019	109,585	263,918
Com CAMEL	2.009	1.550	2.073	1.591	0.463	0.253
Cap CAMEL	1.813	1.519	1.854	1.529	0.396	0.236
Asset CAMEL	2.111	1.494	2.212	1.565	0.529	0.325
Mgmt CAMEL	2.030	1.647	2.037	1.655	0.387	0.257
Earn CAMEL	1.987	1.596	2.103	1.616	0.554	0.269
Liq CAMEL	1.732	1.557	1.761	1.554	0.324	0.264
Com SCOR	2.185	1.663	2.291	1.659	0.382	0.160
Cap SCOR	2.068	1.552	2.125	1.550	0.372	0.153
Asset SCOR	2.238	1.542	2.352	1.581	0.478	0.225
Mgmt SCOR	2.223	1.754	2.301	1.763	0.279	0.137
Earn SCOR	2.228	1.692	2.319	1.681	0.486	0.218
Liq SCOR	2.033	1.657	2.062	1.693	0.332	0.264
Log state income	6.065	6.324	5.998	6.244	0.988	0.999

This table presents summary statistics—medians, means, and standard deviations for all variables included in the regressions. "1st period" refers to 1985-1993 period, and "2nd period" refers to 1994-2004 period. All loans figures are in hundred thousand (x100,000) of 1982-84 dollars (deflated using CPI). "Com CAMEL" refers to the composite CAMEL rating; "Cap CAMEL" refers to the capital component of CAMEL ratings; "Asset CAMEL" refers to the asset quality component of CAMEL ratings; "Mgmt CAMEL" refers to the management component of CAMEL ratings; "Earn CAMEL" refers to the earnings component of CAMEL ratings; "Liq CAMEL" refers to the liquidity component of CAMEL ratings. A similar definition applies to the SCOR ratings. "Log state income" refers to the logarithm of real state product income.

Table 4
CAMEL COMPOSITE EFFECT

	C&I		*Consumer*		*Real Estate*	
	First Period	Second Period	First Period	Second Period	First Period	Second Period
Dep Var-1st lag	**-0.196**	-0.031	-0.032	0.098	0.049	-0.025
	(0.083)	(0.024)	(0.057)	(0.058)	(0.051)	(0.013)
	[0.024]	[0.218]	[0.586]	[0.099]	[0.338]	[0.061]
Dep Var-2nd lag	0.028	-0.011	**-0.144**	0.090	0.042	-0.006
	(0.060)	(0.032)	(0.066)	(0.043)	(0.054)	(0.011)
	[0.640]	[0.746]	[0.036]	[0.043]	[0.439]	[0.573]
1st lag-CAMEL	**-0.578**	-0.291	-0.337	-1.527	0.188	-0.445
	(0.194)	(0.421)	(0.394)	(1.078)	(0.210)	(0.495)
	[0.005]	[0.494]	[0.397]	[0.164]	[0.374]	[0.373]
2nd lag-CAMEL	-0.233	-0.455	-0.392	1.019	**-0.563**	0.049
	(0.171)	(0.554)	(0.261)	(0.831)	(0.158)	(0.299)
	[0.181]	[0.415]	[0.141]	[0.227]	[0.001]	[0.870]
1st lag-SCOR	**0.927**	0.339	-0.394	-0.119	0.093	-0.064
	(0.318)	(0.592)	(0.464)	(0.398)	(0.183)	(0.155)
	[0.006]	[0.570]	[0.400]	[0.765]	[0.613]	[0.682]
2nd lag-SCOR	-0.040	0.547	0.027	-0.227	0.057	0.092
	(0.370)	(0.479)	(0.261)	(0.263)	(0.232)	(0.440)
	[0.914]	[0.260]	[0.916]	[0.393]	[0.805]	[0.835]
1st lag-SPI	0.452	0.133	0.026	-0.457	0.042	0.369
	(0.562)	(0.745)	(0.487)	(1.303)	(0.364)	(1.880)
	[0.427]	[0.859]	[0.958]	[0.727]	[0.908]	[0.845]
2nd lag-SPI	0.666	1.167	0.570	4.984	0.341	0.748
	(0.540)	(0.734)	(0.476)	(2.352)	(0.333)	(0.651)
	[0.224]	[0.119]	[0.238]	[0.040]	[0.311]	[0.257]
AR(1) Test	0.005	0.006	0.000	0.023	0.001	0.130
AR(2) Test	0.490	0.353	0.751	0.162	0.401	0.456
Num. Obs	1290	1720	1290	1720	1290	1720
Short Term	**-0.811**	-0.746	-0.729	-0.508	**-0.374**	-0.396
	(0.262)	(0.712)	(0.621)	(0.537)	(0.177)	(0.358)
	[0.004]	[0.301]	[0.247]	[0.349]	[0.041]	[0.275]
Long Term	**-0.694**	-0.717	-0.620	0.868	**-0.412**	-0.384
	(0.212)	(0.714)	(0.533)	(0.706)	(0.189)	(0.344)
	[0.002]	[0.321]	[0.252]	[0.226]	[0.035]	[0.270]

This table reports aggregate loan growth regressions three loan categories: C&I (Commercial and Industrial loans); Consumer loans; and Real Estate loans over two distinct periods: 1985-1993 (first period) and 1994-2004 (second period). Explanatory variables included: (a) first and second lagged dependent variables (loan growth); (b) changes in CAMEL ratings (first and second lags); (c) changes in SCOR rating (first and second lags); (d) state output growth (first and second lags). "Short term" is defined as the sum of the CAMEL coefficients (first plus second lag). "Long term" is the implied long run coefficient for the dynamic equation. Coefficients are reported in the first line. The second line, with numbers in parenthesis, reports robust (Windmeijer, 2000-corrected) standard errors. The third line, with numbers in brackets, reports the p-values. Coefficients in bold are significant at the 5 percent level or better. Coefficients with an asterisk are statistically different from the composite estimate at the 5 percent level or better. All regressions are done using the Blundell-Bond (1998) system GMM procedure. The AR(1) and AR(2) test report the p-values of the test of autocovariance in residuals of order 1 and 2 respectively. The last line reports the number of observations.

Table 5

CAMEL CAPITAL COMPONENT EFFECT

	C&I		***Consumer***		***Real Estate***	
	First Period	Second Period	First Period	Second Period	First Period	Second Period
Dep Var-1st lag	**-0.223**	0.006	-0.079	0.119	0.097	-0.011
	(0.108)	(0.054)	(0.081)	(0.062)	(0.074)	(0.013)
	[0.045]	[0.913]	[0.335]	[0.063]	[0.196]	[0.417]
Dep Var-2nd lag	-0.004	0.004	-0.026	0.052	0.073	-0.023
	(0.074)	(0.047)	(0.100)	(0.034)	(0.071)	(0.028)
	[0.959]	[0.746]	[0.793]	[0.132]	[0.311]	[0.410]
1st lag-CAMEL	**-0.454**	-0.653	0.017	-0.835	0.215	-0.249
	(0.140)	(0.618)	(0.223)	(0.586)	(0.156)	(0.193)
	[0.002]	[0.297]	[0.941]	[0.161]	[0.175]	[0.204]
2nd lag-CAMEL	**-0.355**	-0.094	-0.725	**0.579**	-0.195	0.087
	(0.178)	(0.214)	(0.391)	(0.254)	(0.138)	(0.108)
	[0.053]	[0.662]	[0.070]	[0.027]	[0.163]	[0.425]
1st lag-SCOR	**0.968**	0.261	0.051	-0.379	-0.011	0.041
	(0.264)	(0.455)	(0.338)	(0.315)	(0.149)	(0.131)
	[0.001]	[0.570]	[0.881]	[0.234]	[0.938]	[0.755]
2nd lag-SCOR	-0.304	-0.297	-0.531	-0.022	-0.109	0.259
	(0.298)	(0.263)	(0.220)	(0.247)	(0.181)	(0.314)
	[0.314]	[0.267]	[0.021]	[0.928]	[0.550]	[0.413]
1st lag-SPI	0.486	0.672	0.569	-1.410	0.069	0.393
	(0.738)	(0.509)	(0.780)	(1.735)	(0.399)	(1.619)
	[0.513]	[0.194]	[0.470]	[0.421]	[0.863]	[0.809]
2nd lag-SPI	0.649	1.561	0.639	6.128	0.334	0.806
	(0.756)	(0.480)	(0.654)	(2.112)	(0.208)	(0.529)
	[0.396]	[0.002]	[0.334]	[0.006]	[0.116]	[0.135]
AR(1) Test	0.005	0.005	0.004	0.000	0.001	0.133
AR(2) Test	0.491	0.345	0.734	0.450	0.450	0.502
Num. Obs	1290	1720	1290	1720	1290	1720
Short Term	**-0.809**	-0.746	**-0.708**	-0.256	0.018	-0.162
	(0.167)	(0.605)	(0.355)	(0.736)	(0.148)	(0.135)
	[0.000]	[0.224]	[0.053]	[0.730]	[0.900]	[0.235]
Long Term	**-0.660**	-0.754	-0.641	-0.309	0.023	-0.157
	(0.164)	(0.651)	(0.344)	(0.903)	(0.180)	(0.129)
	[0.000]	[0.253]	[0.070]	[0.734]	[0.901]	[0.232]

This table reports aggregate loan growth regressions three loan categories: C&I (Commercial and Industrial loans); Consumer loans; and Real Estate loans over two distinct periods: 1985-1993 (first period) and 1994-2004 (second period). Explanatory variables included: (a) first and second lagged dependent variables (loan growth); (b) changes in CAMEL ratings (first and second lags); (c) changes in SCOR rating (first and second lags); (d) state output growth (first and second lags). "Short term" is defined as the sum of the CAMEL coefficients (first plus second lag). "Long term" is the implied long run coefficient for the dynamic equation. Coefficients are reported in the first line. The second line, with numbers in parenthesis, reports robust (Windmeijer, 2000-corrected) standard errors. The third line, with numbers in brackets, reports the p-values. Coefficients in bold are significant at the 5 percent level or better. Coefficients with an asterisk are statistically different from the composite estimate at the 5 percent level or better. All regressions are done using the Blundell-Bond (1998) system GMM procedure. The AR(1) and AR(2) test report the p-values of the test of autocovariance in residuals of order 1 and 2 respectively. The last line reports the number of observations.

Table 6

CAMEL ASSET QUALITY COMPONENT EFFECT

	C&I		*Consumer*		*Real Estate*	
	First Period	Second Period	First Period	Second Period	First Period	Second Period
Dep Var-1st lag	**-0.183**	-0.018	-0.041	0.086	0.096	-0.003
	(0.066)	(0.037)	(0.056)	(0.050)	(0.053)	(0.021)
	[0.009]	[0.629]	[0.470]	[0.094]	[0.079]	[0.884]
Dep Var-2nd lag	0.050	-0.018	-0.127	**0.118**	0.058	-0.024
	(0.060)	(0.030)	(0.075)	(0.056)	(0.052)	(0.029)
	[0.404]	[0.540]	[0.098]	[0.042]	[0.263]	[0.426]
1st lag-CAMEL	-0.173	-1.233	-0.083	**-1.330**	**0.176**	-0.695
	(0.147)	(0.453)	(0.137)	(0.459)	(0.083)	(0.575)
	[0.247]	[0.009]	[0.548]	[0.006]	[0.040]	[0.234]
2nd lag-CAMEL	-0.283	0.014	-0.445	0.270	-0.185	0.916
	(0.153)	(0.444)	(0.272)	(0.561)	(0.119)	(0.602)
	[0.070]	[0.976]	[0.109]	[0.633]	[0.127]	[0.136]
1st lag-SCOR	**0.586**	0.599	-0.465	0.047	0.041	-0.045
	(0.248)	(0.484)	(0.304)	(0.322)	(0.146)	(0.174)
	[0.023]	[0.222]	[0.133]	[0.885]	[0.778]	[0.797]
2nd lag-SCOR	-0.380	-0.130	-0.070	**-0.968**	-0.086	-0.210
	(0.242)	(0.223)	(0.189)	(0.458)	(0.166)	(0.246)
	[0.123]	[0.563]	[0.716]	[0.041]	[0.607]	[0.398]
1st lag-SPI	0.562	0.620	0.276	**-3.256**	-0.072	0.949
	(0.496)	(0.700)	(0.621)	(1.039)	(0.437)	(2.204)
	[0.263]	[0.381]	[0.659]	[0.003]	[0.869]	[0.669]
2nd lag-SPI	0.394	0.609	0.982	**4.512**	0.529	0.414
	(0.366)	(0.567)	(0.601)	(2.242)	(0.329)	(0.557)
	[0.288]	[0.289]	[0.110]	[0.051]	[0.115]	[0.461]
AR(1) Test	0.000	0.009	0.000	0.001	0.001	0.056
AR(2) Test	0.919	0.965	0.613	0.030	0.772	0.457
Num. Obs	1290	1720	1290	1720	1290	1720
Short Term	**-0.456**	**-1.220**	**-0.528**	**-1.059**	-0.008	0.221
	(0.111)	(0.377)	(0.252)	(0.510)	(0.149)	(0.347)
	[0.000]	[0.002]	[0.042]	[0.044]	[0.954]	[0.529]
Long Term	**-0.403**	**-1.177**	-0.452	-1.333	-0.168	0.215
	(0.112)	(0.387)	(0.246)	(0.689)	(0.119)	(0.332)
	[0.001]	[0.004]	[0.074]	[0.060]	[0.168]	[0.520]

This table reports aggregate loan growth regressions three loan categories: C&I (Commercial and Industrial loans); Consumer loans; and Real Estate loans over two distinct periods: 1985-1993 (first period) and 1994-2004 (second period). Explanatory variables included: (a) first and second lagged dependent variables (loan growth); (b) changes in CAMEL ratings (first and second lags); (c) changes in SCOR rating (first and second lags); (d) state output growth (first and second lags). "Short term" is defined as the sum of the CAMEL coefficients (first plus second lag). "Long term" is the implied long run coefficient for the dynamic equation. Coefficients are reported in the first line. The second line, with numbers in parenthesis, reports robust (Windmeijer, 2000-corrected) standard errors. The third line, with numbers in brackets, reports the p-values. Coefficients in bold are significant at the 5 percent level or better. Coefficients with an asterisk are statistically different from the composite estimate at the 5 percent level or better. All regressions are done using the Blundell-Bond (1998) system GMM procedure. The AR(1) and AR(2) test report the p-values of the test of autocovariance in residuals of order 1 and 2 respectively. The last line reports the number of observations.

Table 7

CAMEL MANAGEMENT COMPONENT EFFECT

	C&I		*Consumer*		*Real Estate*	
	First Period	Second Period	First Period	Second Period	First Period	Second Period
Dep Var-1st lag	**-0.145**	-0.031	0.026	0.055	**0.098**	-0.019
	(0.063)	(0.027)	(0.086)	(0.061)	(0.038)	(0.024)
	[0.027]	[0.258]	[0.760]	[0.372]	[0.015]	[0.434]
Dep Var-2nd lag	0.051	-0.035	-0.052	**0.107**	0.056	-0.006
	(0.051)	(0.018)	(0.078)	(0.043)	(0.061)	(0.020)
	[0.318]	[0.058]	[0.505]	[0.016]	[0.355]	[0.750]
1st lag-CAMEL	**-0.344**	-0.130	-0.081	-0.763	0.139	0.107
	(0.126)	(0.252)	(0.282)	(0.555)	(0.107)	(0.247)
	[0.009]	[0.608]	[0.775]	[0.177]	[0.197]	[0.668]
2nd lag-CAMEL	-0.275	0.468	**-0.963**	0.729	-0.170	0.061
	(0.147)	(0.295)	(0.411)	(0.586)	(0.174)	(0.066)
	[0.067]	[0.121]	[0.024]	[0.220]	[0.334]	[0.361]
1st lag-SCOR	0.300	-0.345	-0.227	0.155	-0.170	-0.209
	(0.210)	(0.434)	(0.202)	(0.262)	(0.154)	(0.217)
	[0.161]	[0.432]	[0.266]	[0.558]	[0.276]	[0.340]
2nd lag-SCOR	0.038	-0.360	-0.196	-0.404	-0.019	-0.235
	(0.197)	(0.282)	(0.167)	(0.287)	(0.297)	(0.259)
	[0.849]	[0.210]	[0.249]	[0.168]	[0.949]	[0.368]
1st lag-SPI	0.191	1.362	0.469	0.156	0.205	0.591
	(0.601)	(0.788)	(1.155)	(1.113)	(0.425)	(1.935)
	[0.753]	[0.091]	[0.687]	[0.889]	[0.632]	[0.762]
2nd lag-SPI	0.261	2.611	0.395	5.565	0.323	0.973
	(0.515)	(1.012)	(0.848)	(1.876)	(0.241)	(0.597)
	[0.615]	[0.013]	[0.644]	[0.005]	[0.187]	[0.111]
AR(1) Test	0.002	0.004	0.002	0.010	0.001	0.142
AR(2) Test	0.216	0.467	0.096	0.247	0.896	0.335
Num. Obs	1290	1720	1290	1720	1290	1720
Short Term	**-0.620**	0.338	**-1.043**	-0.034	-0.030	0.168
	(0.194)	(0.293)	(0.494)	(0.333)	(0.232)	(0.287)
	[0.003]	[0.256]	[0.041]	[0.918]	[0.898]	[0.562]
Long Term	**-0.567**	0.316	-1.016	-0.041	-0.035	0.164
	(0.196)	(0.274)	(0.577)	(0.397)	(0.272)	(0.274)
	[0.006]	[0.254]	[0.085]	[0.918]	[0.897]	[0.553]

This table reports aggregate loan growth regressions three loan categories: C&I (Commercial and Industrial loans); Consumer loans; and Real Estate loans over two distinct periods: 1985-1993 (first period) and 1994-2004 (second period). Explanatory variables included: (a) first and second lagged dependent variables (loan growth); (b) changes in CAMEL ratings (first and second lags); (c) changes in SCOR rating (first and second lags); (d) state output growth (first and second lags). "Short term" is defined as the sum of the CAMEL coefficients (first plus second lag). "Long term" is the implied long run coefficient for the dynamic equation. Coefficients are reported in the first line. The second line, with numbers in parenthesis, reports robust (Windmeijer, 2000-corrected) standard errors. The third line, with numbers in brackets, reports the p-values. Coefficients in bold are significant at the 5 percent level or better. Coefficients with an asterisk are statistically different from the composite estimate at the 5 percent level or better. All regressions are done using the Blundell-Bond (1998) system GMM procedure. The AR(1) and AR(2) test report the p-values of the test of autocovariance in residuals of order 1 and 2 respectively. The last line reports the number of observations.

Table 8

CAMEL EARNINGS QUALITY COMPONENT EFFECT

	C&I		*Consumer*		*Real Estate*	
	First Period	Second Period	First Period	Second Period	First Period	Second Period
Dep Var-1st lag	**-0.187**	-0.023	-0.014	0.051	0.113	-0.034
	(0.085)	(0.013)	(0.063)	(0.055)	(0.084)	(0.025)
	[0.034]	[0.086]	[0.825]	[0.362]	[0.185]	[0.190]
Dep Var-2nd lag	0.001	-0.012	-0.094	0.073	0.077	0.019
	(0.044)	(0.026)	(0.070)	(0.031)	(0.061)	(0.019)
	[0.972]	[0.644]	[0.183]	[0.025]	[0.217]	[0.316]
1st lag-CAMEL	-0.255	-0.207	-0.115	-0.158	0.112	0.408
	(0.164)	(0.346)	(0.114)	(0.208)	(0.102)	(0.365)
	[0.129]	[0.552]	[0.318]	[0.452]	[0.280]	[0.271]
2nd lag-CAMEL	**-0.319**	0.399	**-0.498**	0.187	0.019	-0.143
	(0.159)	(0.214)	(0.255)	(0.269)	(0.101)	(0.314)
	[0.051]	[0.069]	[0.058]	[0.489]	[0.848]	[0.650]
1st lag-SCOR	**0.933**	-0.229	-0.051	0.307	-0.018	0.316
	(0.323)	(0.274)	(0.176)	(0.112)	(0.143)	(0.200)
	[0.006]	[0.407]	[0.774]	[0.009]	[0.899]	[0.123]
2nd lag-SCOR	-0.536	-0.256	-0.269	0.425	-0.136	-0.453
	(0.420)	(0.103)	(0.223)	(0.312)	(0.166)	(0.333)
	[0.209]	[0.017]	[0.234]	[0.180]	[0.417]	[0.182]
1st lag-SPI	0.489	0.625	0.127	-0.936	-0.141	0.322
	(0.820)	(0.895)	(0.600)	(1.201)	(0.455)	(1.488)
	[0.553]	[0.489]	[0.785]	[0.440]	[0.759]	[0.830]
2nd lag-SPI	0.630	2.054	0.164	5.029	0.347	0.575
	(0.530)	(0.752)	(0.600)	(1.992)	(0.295)	(0.570)
	[0.241]	[0.009]	[0.785]	[0.015]	[0.246]	[0.319]
AR(1) Test	0.007	0.006	0.000	0.001	0.001	0.110
AR(2) Test	0.685	0.514	0.225	0.490	0.769	0.747
Num. Obs	1290	1720	1290	1720	1290	1720
Short Term	**-0.574**	0.191	**-0.613**	0.029	0.132	0.264
	(0.194)	(0.384)	(0.302)	(0.386)	(0.092)	(0.198)
	[0.005]	[0.621]	[0.049]	[0.939]	[0.160]	[0.190]
Long Term	**-0.484**	0.184	-0.553	0.034	0.163	0.260
	(0.181)	(0.370)	(0.398)	(0.442)	(0.121)	(0.194)
	[0.011]	[0.620]	[0.071]	[0.939]	[0.186]	[0.186]

This table reports aggregate loan growth regressions three loan categories: C&I (Commercial and Industrial loans); Consumer loans; and Real Estate loans over two distinct periods: 1985-1993 (first period) and 1994-2004 (second period). Explanatory variables included: (a) first and second lagged dependent variables (loan growth); (b) changes in CAMEL ratings (first and second lags); (c) changes in SCOR rating (first and second lags); (d) state output growth (first and second lags). "Short term" is defined as the sum of the CAMEL coefficients (first plus second lag). "Long term" is the implied long run coefficient for the dynamic equation. Coefficients are reported in the first line. The second line, with numbers in parenthesis, reports robust (Windmeijer, 2000-corrected) standard errors. The third line, with numbers in brackets, reports the p-values. Coefficients in bold are significant at the 5 percent level or better. Coefficients with an asterisk are statistically different from the composite estimate at the 5 percent level or better. All regressions are done using the Blundell-Bond (1998) system GMM procedure. The AR(1) and AR(2) test report the p-values of the test of autocovariance in residuals of order 1 and 2 respectively. The last line reports the number of observations.

Table 9

CAMEL LIQUIDITY COMPONENT EFFECT

	C&I		*Consumer*		*Real Estate*	
	First Period	Second Period	First Period	Second Period	First Period	Second Period
Dep Var-1st lag	-0.119	-0.048	0.040	-0.053	0.021	-0.033
	(0.082)	(0.023)	(0.070)	(0.048)	(0.072)	(0.030)
	[0.154]	[0.042]	[0.571]	[0.278]	[0.773]	[0.283]
Dep Var-2nd lag	0.028	-0.043	-0.126	-0.008	0.038	-0.006
	(0.057)	(0.030)	(0.085)	(0.063)	(0.071)	(0.016)
	[0.628]	[0.158]	[0.146]	[0.892]	[0.593]	[0.711]
1st lag-CAMEL	**-0.405**	-0.345	**-0.439**	-0.149	-0.055	-0.253
	(0.180)	(0.390)	(0.205)	(0.668)	(0.129)	(0.362)
	[0.029]	[0.382]	[0.038]	[0.825]	[0.674]	[0.488]
2nd lag-CAMEL	-0.053	-0.364	-0.213	0.558	-0.152	-0.125
	(0.160)	(0.401)	(0.191)	(0.618)	(0.118)	(0.166)
	[0.742]	[0.369]	[0.271]	[0.372]	[0.206]	[0.454]
1st lag-SCOR	0.296	0.361	-1.116	0.769	0.302	-0.013
	(0.353)	(0.407)	(0.330)	(0.556)	(0.237)	(0.176)
	[0.407]	[0.381]	[0.002]	[0.173]	[0.211]	[0.941]
2nd lag-SCOR	0.466	0.549	-0.026	0.663	0.165	0.157
	(0.266)	(0.402)	(0.418)	(0.405)	(0.232)	(0.271)
	[0.087]	[0.180]	[0.951]	[0.109]	[0.480]	[0.564]
1st lag-SPI	0.036	0.548	0.311	-1.043	0.336	0.203
	(0.674)	(0.743)	(0.801)	(1.172)	(0.384)	(1.662)
	[0.958]	[0.465]	[0.700]	[0.379]	[0.387]	[0.903]
2nd lag-SPI	0.812	1.397	**1.621**	5.201	0.519	0.521
	(0.673)	(0.613)	(0.809)	(1.623)	(0.346)	(0.315)
	[0.235]	[0.028]	[0.052]	[0.003]	[0.141]	[0.106]
AR(1) Test	0.001	0.006	0.005	0.001	0.001	0.144
AR(2) Test	0.214	0.353	0.370	0.514	0.282	0.221
Num. Obs	1290	1720	1290	1720	1290	1720
Short Term	-0.458	-0.709	**-0.652**	0.410	-0.206	-0.379
	(0.292)	(0.570)	(0.318)	(0.447)	(0.145)	(0.509)
	[0.125]	[0.220]	[0.047]	[0.364]	[0.162]	[0.461]
Long Term	-0.420	-0.650	**-0.600**	0.386	-0.219	-0.365
	(0.292)	(0.528)	(0.292)	(0.428)	(0.148)	(0.477)
	[0.157]	[0.226]	[0.046]	[0.372]	[0.147]	[0.449]

This table reports aggregate loan growth regressions three loan categories: C&I (Commercial and Industrial loans); Consumer loans; and Real Estate loans over two distinct periods: 1985-1993 (first period) and 1994-2004 (second period). Explanatory variables included: (a) first and second lagged dependent variables (loan growth); (b) changes in CAMEL ratings (first and second lags); (c) changes in SCOR rating (first and second lags); (d) state output growth (first and second lags). "Short term" is defined as the sum of the CAMEL coefficients (first plus second lag). "Long term" is the implied long run coefficient for the dynamic equation. Coefficients are reported in the first line. The second line, with numbers in parenthesis, reports robust (Windmeijer, 2000-corrected) standard errors. The third line, with numbers in brackets, reports the p-values. Coefficients in bold are significant at the 5 percent level or better. Coefficients with an asterisk are statistically different from the composite estimate at the 5 percent level or better. All regressions are done using the Blundell-Bond (1998) system GMM procedure. The AR(1) and AR(2) test report the p-values of the test of autocovariance in residuals of order 1 and 2 respectively. The last line reports the number of observations.