The Effects of Supervision on Bank Performance: Evidence from Discontinuous Examination Frequencies

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Abstract

Previous research has found little evidence that banking supervision improves bank performance. This paper establishes a causal effect of supervision on performance using discontinuities in the minimum frequency of examinations imposed by regulation. We find that more frequent examinations increase profits, decrease loan losses and delinquencies, and increase capital, consistent with the hypothesis that regulators limit the risks that banks are exposed to and, consequently, limit their losses on risky assets.

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1 Introduction

Regulators supervise banks by employing major human and financial resources. In the United States, federal bank regulators allocate more than 10,000 people and more than $2 billion per year to supervision and related activities.[1] These resources have increased substantially in recent years in countries with developed banking industries, as regulators have complemented traditional micro-prudential supervision and regulation with a macro-prudential approach.[2]

Regulators employ such resources to supervise banks because policymakers support banking supervision, arguing that it helps banks to perform adequately. For instance, policymakers have maintained that supervision reduces the frequency and intensity of banking crises. U.S. President Barack Obama (2009) argued that one of the causes of the financial crisis of 2007-2008 was that "We were facing one of the largest financial crises in history and those responsible for oversight were caught off guard and without the authority to act." Federal Reserve Board Chairman Ben Bernanke (2010) affirmed one year after the Supervisory Capital Assessment Program (SCAP, also known as the bank stress tests) that "our experience during the stress assessments also contributed to the development of tools and approaches that will inform our supervisory process as we work to reduce the likelihood of future financial crises." International Monetary Fund (IMF) Managing Director Christine Lagarde (2012) argued during the recent sovereign debt crisis in the European Union that, to prevent negative feedback effects between sovereign debts and banks, a "monetary union needs to be supported by financial integration in the form of unified supervision, a single bank resolution authority with a common backstop, and a single deposit insurance fund."

[1] The federal commercial bank regulators are the Federal Deposit Insurance Corporation (FDIC), the Federal Reserve (Fed), and the Office of the Comptroller of the Currency (OCC). The number of employees and the funds allocated by these regulators to supervision stated above should be viewed as approximations, because they are often reported together with related activities, mainly banking regulation. The FDIC had 3,649 full-time equivalent employees in the Division of Supervision and Consumer Protection and actual expenditures of $787 million in its supervision and consumer protection program in 2010 (FDIC, 2011). The Fed is composed of the Federal Reserve Board (FRB) and the Federal Reserve Banks. The Federal Reserve Board had 627 employees and actual expenditures of $141.1 million on supervisory, regulatory, and legal services in 2010. The Federal Reserve Banks had a staff of 3,052 people and actual expenses of $802 million in supervision and regulation (FRB, 2011). The OCC had a total of 3,101 full-time equivalent employees and it spent $675 million exclusively in bank supervision in 2010 (OCC, 2010).

[2] In the United States, regulators have broadened the scope of supervision with new tools such as the Supervisory Capital Assessment Program in 2009, and new bodies, such as the Financial Stability Oversight Council in 2010. In the European Union, the scope and intensity of supervision have also increased, after it established the European Systemic Risk Board and the European System of Financial Supervisors in 2010.

Despite being widely accepted, the idea that supervision improves bank performance conflicts with the empirical evidence. Levine (2005) summarizes the conclusions of his research about the effects of supervision across countries as follows (Barth, Caprio and Levine, 2004, 2006; Beck, Demirguc-Kunt and Levine, 2003, 2006): "For most countries, the data indicate that strengthening official supervisory powers will make things worse, not better. Unless the country is 'top ten' in terms of the development of its political institutions, the evidence suggests that strengthening official supervisory powers hurts bank development and leads to greater corruption in bank lending without any compensating positive effects." Other papers investigate how regulators' supervisory actions and standards affect U.S. banks, but their results suggest mixed effects of supervision on performance(Peek and Rosengren, 1995; Peek, Rosengren and Tootell, 2003; Agarwal, Lucca, Seru and Trebbi, 2012).[3]

One possible reason why this literature has found little evidence that banking supervision improves bank performance is because supervision is endogenous to performance. Supervision is endogenous for three main reasons: First, regulators must supervise riskier banks more carefully. For example, U.S. regulation requires that regulators examine riskier banks more frequently and it prohibits that federal and state regulators accept each other's examinations of riskier banks as substitutes for their own examinations. Second, regulators rate and treat banks more stringently as economic and industry conditions worsen, even if regulation does not require it (Berger, Kyle and Scalise, 2001; Curry, Fissel and Hanweck, 2008; Krainer and Lopez, 2009). Third, regulation responds to the performance of the banking industry as a whole. For example, the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) was enacted in 2010 in response to the crisis of 2007 and 2008, and it increased the scope and the intensity of supervision. Such endogeneity can be observed not only at the national level, but also across states within a country. For example, differences in bank performance across states in the

[3]Peek and Rosengren (1995) and Peek, Rosengren and Tootell (2003) find that a bank lends less when it is subject to supervisory actions and when it is poorly rated by regulators, respectively. These results, therefore, suggest that when regulators supervise a bank more rigorously, they may improve its regulatory capital ratios, which is a positive effect on performance, but mainly suggest that they curb its loan supply, which can be interpreted as a negative effect. Agarwal, Lucca, Seru and Trebbi (2012) study a sample of state banks that were examined alternately by federal and state regulators. They argue that federal regulators are less lenient than state regulators and that, as a consequence, in the intervals after an examination by a federal regulator and before an examination by a state regulator, banks report higher regulatory capital ratios, which may indicate a positive effect on performance, but they also report higher nonperforming loans, more delinquent loans, and lower return on assets, which may suggest a negative effect. However, the changes in these variables do not necessarily reflect a shift in bank performance, because, according to the authors, they are largely driven by more rigorous regulatory reporting by banks after examinations by federal regulators.

U.S. have been found to determine the timing of branching deregulation, which had important consequences for supervision (Kroszner and Strahan, 1999).

In this paper, we establish a causal effect of banking supervision on bank performance using an empirical strategy that breaks the endogeneity between supervision and performance. We investigate how various performance measures of commercial banks are affected by the frequency of on-site examinations, which are the main tool of banking supervision. Regulators examine banks to ensure that they perform adequately, and thus the more frequently a bank is examined, the healthier it should be. However, in practice we observe a negative relation, that is, riskier banks are actually examined more frequently, because regulators must monitor them more carefully. Thus, we need a strategy that breaks the endogeneity between examinations and performance to identify a causal effect of examinations on performance.

For this purpose, we use the minimum frequency of examinations of commercial banks imposed by law. The law requires that banks be examined at least once every 12 months, but they may qualify for a lower frequency of at least once every 18 months if they are safe and sound and if their total assets are lower than a certain threshold. Because of the large difference between these two minimum frequencies and because these frequencies are determined not only by discrete characteristics of banks, but also by continuous characteristics, such as total assets, very similar banks can be examined at very different frequencies, if they fall on different sides of a continuous variable threshold. This generates an exogenous source of variation in examination frequencies, which we use to estimate the effect of examinations on bank performance in a similar fashion to other regression discontinuity studies (see Lee and Lemieux, 2010, for a survey). Moreover, the criteria for qualifying banks that we explore have varied over time. The asset threshold was established at $100 million in 1991 for banks rated either good or outstanding by regulators, it increased to $250 million in 1994 for banks rated outstanding and in 1997 for banks rated good, and it jumped again to $500 million in 2006 for banks rated either good or outstanding. These jumps over time in the criteria, which are rarely seen in regression discontinuity studies, help us to investigate if the assumptions of this empirical strategy are satisfied.

We find that more frequent examinations improve return on equity (ROE) and the ratio of net interest margin to total loans (NIM/TL). Over the sample period of 1997 to 2010, decreasing the interval between consecutive examinations by 100 days, which is roughly how much the average frequency of examinations jumps at the asset threshold, increases ROE by 0.92 percentage points and NIM/TL by 0.17 percentage points. The effects of more frequent examinations on these two profitability measures are significant: the mean ROE over the sample period is 11.3 percent and the mean of NIM/TL is 6.2 percent. These results suggest that when regulators examine a bank more often, they induce it to hold safer assets, which in

turn reduces its losses - including loan losses - and increases its profits.

We examine the effects of supervision on loan losses more directly by estimating the impact of the frequency of examinations on banks' ratios of non-performing loans to total loans (NPL/TL), ratios of charge-offs to total loans (CO/TL), and on provisions for loan and lease losses (PLLL/TL). We find that more frequent examinations reduce all three loan loss measures: over the sample period of 1997 to 2010, decreasing the interval between examinations by 100 days leads to a NPL/TL decrease of 0.31 percentage points, a CO/TL decrease of 0.05 percentage points, and a PLLL/TL decrease of 0.08 percentage points. These effects are again economically significant, particular that on NPL/TL, as the mean of NPL/TL over that sample period is 1.1 percent (the means for both CO/TL and PLLL/TL are around 0.4 percent).

Regulators examine banks also to ensure that these firms are well capitalized and that they are not too leveraged. In fact, we find that more frequent examinations improve banks' risk-based capital ratios (CAP), Tier 1 capital ratios (T1CAP), and the ratios of equity capital to total assets (EC/TA). From 1997 to 2010, decreasing the interval between examinations by 100 days increases CAP, T1CAP and EC/TA by to a 0.56, 0.59 and 0.09 percentage points, respectively. The effects on the risk-based ratio are particularly economically significant, as banks with CAP above 10% and T1CAP above 6% are considered well capitalized.[4]

Besides the empirical literature on banking supervision and regulation, these results contribute to the theoretical literature on the topic. In these models, a principal, most often a government regulator, monitors banks to ensure that they perform adequately, and regulators can reduce bank risk by supervising banks more intensively, for instance, by examining these firms more frequently (Merton, 1978; Pyle, 1986; Campbell, Chan and Marino, 1992; Boot and Thakor, 1993; Giammarino, Lewis and Sappington, 1993; Bhattacharya, Plank, Strobl and Zechner, 2002; Weinberg, 2002; Pages and Santos, 2004; Kahn and Santos, 2005; Morrison and White, 2005, 2009). Our results support the assumption of these models that supervision reduces bank risk. Moreover, our results help to understand how regulators reduce risk, and thus they also help to evaluate other assumptions of these models. Some models assume that regulators reduce bank risk only by preventing risky banks to open or by closing risky or insolvent banks, instead of also lowering the risk of banks that remain open. Our results show that supervision reduces the risk of existing banks too.

The paper is organized as follows. Section 2 presents some background on bank examinations, including the rules that determine the frequency of examinations. Section 3 describes the data, Section 4 describes our empirical strategy, Section 5

[4] According Section 325.103 of the FDIC Rules and Regulations.

presents the results and Section 6 concludes.

2 Background on Bank Examinations

2.1 Bank Examinations and Performance

Commercial banks fall into one of three possible combinations of regulators: state banks that are not members of the Federal Reserve (Fed); state chartered banks that are also members of the Fed; and national banks, which are chartered by the Office of the Comptroller of Currency (OCC) and must all be members of the Fed. Banks in all these categories are necessarily insured by the Federal Deposit Insurance Corporation (FDIC).[5] The chartering authority – either the respective state banking department or the OCC – is the primary regulator. The primary federal regulator is the OCC for national banks, the Fed for state member banks and the FDIC for state nonmember banks. National banks are supervised by the OCC and state banks are supervised both by their respective primary federal regulator and by their respective state.

Regulators supervise banks mainly by examining them on-site.[6] Regulators send teams of examiners to banks to investigate if these firms are safe and sound. When examiners visit a bank for a full scope safety and soundness examination, they evaluate six main areas: capital adequacy, asset quality, management, earnings, liquidity, and sensitivity to market risk, whose initials together form the CAMELS acronym.[7] Then, examiners prepare a report where they discuss each of these areas individually and whose access is restricted to regulators.

Once examiners finish the examination, they discuss their findings with the bank's senior management and, when appropriate, with the board of directors too. Examiners also discuss with the bank how it can solve any problems that they identify. Next, based on examiners' report, regulators assign a rating to each of the six individual areas, the component CAMELS ratings, and assign a rating to the bank as a whole too, the composite CAMELS rating. These ratings range from 1 to 5,

[5] A fourth category, corresponding to state nonmember banks not insured by the FDIC, existed in the past but was eliminated as all states started requiring FDIC insurance from their chartered depository institutions and the FDICIA established extremely costly requirements for uninsured banks. However, even before these regulatory changes, FDIC insurance was considered very advantageous competitively, with only a few commercial banks choosing not to be insured. For this reason, this fourth category is ignored in our analysis.

[6] See for instance FDIC (1997), which contains the following statement: "The best way for supervisors to track the condition of banks is to conduct frequent, periodic on-site examinations of banks."

[7] The sixth component of CAMELS, sensitivity to market risk, was added in 1997.

where 1 is assigned to banks that raise no supervisory concern and 5 is assigned to institutions that warrant immediate attention from regulators.

Regulators then meet with the bank to deliver a letter communicating the examination findings. In this meeting, regulators are typically represented by their senior staff and the bank is represented by its senior management, board of directors, and often by its chief executive officer or president too. In the letter, regulators describe the bank's overall condition, they disclose and justify the ratings that they assigned, they analyze problems that require more attention from the bank, and they explain to the bank what it can do to solve or attenuate these problems. Depending on the bank's condition, regulators also discuss with the bank any informal or formal supervisory actions that they plan to take to correct problems at it.

Bank examinations, therefore, can affect bank performance through different channels. First, when regulators disclose and explain to the bank its CAMELS ratings, the bank obtains useful information about how to manage its risks. In particular, regulators help the bank to address its weaknesses objectively, as they describe the areas that they evaluate in a safety and soundness review and explain how they assign the component and the composite ratings. Second, staff from the regulators and from the bank meet and communicate with each other frequently during an examination. Examiners ask for information and explanations from the bank and, at the end of their visit, they communicate their preliminary findings to it. This also helps the bank to understand what regulators expect from it and how they evaluate it. Third, regulators can take supervisory actions against a bank, or an individual from its staff, which can have a strong impact on its performance. Supervisory actions range from informal actions, the least severe, to formal cease and desist orders, the most severe. The impact of these actions varies, but some of them, such as charging a money penalty, prohibiting a bank to distribute dividends, or requesting it to raise more capital, typically have a noticeable impact.

2.2 Frequency of Examinations

Regulators are required to perform on-site examinations frequently. Since the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA), federal regulators must examine banks every 12 to 18 months, depending on banks' characteristics. States also impose minimum frequencies of examinations by their banking departments on their state banks, but they are at most as strict as those imposed on federal regulators.[8] Thus, the rules on the minimum frequency of examinations by

[8]Examinations by state and federal regulators can substitute each other for the purposes of meeting these minimum frequency requirements if the two parties participate in alternate examination agreements or if they can accept each other's examination reports as substitutes for their own.

federal regulators impose a minimum on the frequency of examinations that a bank is subject to by any regulator.

The minimum frequency of examinations of banks are determined by six criteria: assets, capitalization, management, composite condition, acquisitions, and formal enforcement actions. Table 1 shows how these criteria evolved over time. These rules were first implemented in 1992, one year after the FDICIA was enacted. They determined that banks be examined every 12 months, but banks that satisfied these six criteria qualified for an interval of up to 18 months. More specifically, in 1992, a bank qualified if it had total assets of up to $100 million, it was considered well capitalized (as defined in Table 1), it was found to be well managed in its most recent examination (although the Act did not define what is a well managed bank), it was assigned a composite CAMELS rating of 1 in its most recent examination, and it had not been acquired in the last 12 months.

[*INSERT TABLE 1 HERE*]

The Riegle Community Development and Regulatory Improvement Act of 1994 added a requirement that banks not be subject to a formal enforcement action from its Federal banking agency, but also extended the set of qualifying banks to those that were either assigned a rating of 1 and had at most $250 million in assets or were assigned a rating of 1 or 2 and had at most $100 million in assets. In 1997, this set was extended to banks rated 1 or 2 with up to $250 million in assets, and regulation defined a well managed bank as one that received a rating of 1 or 2 for the management component and for the composite CAMELS rating in its most recent examination. Finally, the Financial Services Regulatory Relief Act of 2006, which became effective in 2007, increased the asset threshold to $500 million.

The asset threshold in particular provides the discontinuity in the frequency of examination that we exploit: two banks that satisfy the capitalization, management, composite condition, acquisitions, and formal enforcement actions criteria, but lie on different sides of the asset threshold, should be subject to quite different examination frequencies.

3 Data

The unit of observation in our data set is a commercial bank and year pair. Each bank-year pair includes variables that either come directly from year-end Call Reports, or are calculated using other variables from Call Reports. We use these variables as measures of performance, which are our dependent variables, and as variables that determine banks' minimum frequencies of examinations, which are

termed as assignment variables in the regression discontinuity literature. ROE, NIM/TL, CO/TL, PLLL/TL, and NPL/TL measure bank performance.[9] Total assets is the first criterion in Table 1 that assigns banks to different minimum examination frequencies, and CAP, T1CAP, and leverage ratio (LEV) are part of the second criterion. We also use CAP, T1CAP, and EC/TA as dependent variables when we investigate the impact of the frequency of examinations on banks that are very well-capitalized.

We add to the bank-year observations data on previous examinations at the respective bank. These data come from the Safety and Soundness Examinations table from the National Information Center (NIC) of the Federal Reserve System, and they contain every safety and soundness examination of banks in the United States since 1989. We restrict the sample to on-site exams of commercial banks from 1993 to 2010 with a valid CAMELS rating.[10] We use these data as measures of frequency of examinations (the endogenous treatment whose effect on performance we are interested in) and as assignment variables. The number of days between the exit meeting dates of consecutive examinations at banks measures the time between examinations. The management component and the composite CAMELS ratings are the third and the fourth criteria for minimum examination frequency in Table 1.

We also add to these data information on control relationships between the bank and other entities, and information on supervisory actions. We use information on relationships to create the variable that the fifth assignment criterion evaluates. This dummy variable is equal to one if there was a change in the control of the bank in the last two years and is equal to zero otherwise.[11] We use data on supervisory actions for the sixth (and last) criterion in Table 1, which requires that the bank not be subject to formal enforcement actions to qualify for an 18-month interval. Data on bank relationships and on supervisory actions come from the Relationships and the Events tables from NIC, respectively.

The data, however, have two important limitations. First, data on the three capital ratios are not available for years before 1997. Second, the definition of a well managed bank was introduced in 1997 only, and we do not have data on which banks were considered well managed before then. Thus, we mainly estimate our models restricting the data to observations from 1997 on only.

Our empirical strategy recognizes that assignment variables determine the fre-

[9] We eliminate observations with NPL/TL, CO/TL and PLLL/TL above 100 percent.

[10] We restrict the data to examinations from 1993 or after to ensure that all examinations in the sample were subject to the changes introduced by the FDICIA, which became effective in December 1992.

[11] Although the acquisition criterion refers to the 12-month period in which a full-scope, on-site examination would be required, the dummy covers a 24-month period because the first 12 months should be used to define the examination frequency for the remaining 12 months.

quency of future examinations, and it allows the frequency of examinations to affect bank performance over time. More specifically, we estimate the effects of examinations on bank performance measure in year t as follows. We use each bank's assignment variables in the end of year $t-2$ to determine whether it is subject to the minimum frequency of 12 or 18 months during year $t-1$. We then measure at the end of year $t-1$ the number of days between the two most recent examinations at the bank. We then estimate the effect of this interval between examinations on bank performance in year t.

In our estimations, we use the following subsample of banks. We keep in our sample only banks that satisfy the capitalization, management, composite condition, acquisitions, and formal enforcement actions criteria on Table 1 to qualify for an 18-month interval between examinations. We keep in our sample bank-year pairs that are both fail and satisfy the total assets criterion in the respective year. Thus, total assets remains as the only active assignment variable in this subsample. Table 2 presents the summary statistics of these data divided by year and by whether the respective bank is below or above the asset threshold: for each year, we segment the set of banks into a group that is above the asset threshold (and thus must be subjected to the minimum frequency of 12 months) and one that is below (and thus qualifies for 18-month intervals). For each group, we present the cross-section mean and standard deviation of days between examinations one year ahead, and asset size, capital ratios, and other performance measures of interest two years ahead. Larger banks in general are examined more frequently and have higher ROE but lower NIM/TL. Interestingly, but perhaps not surprisingly, after the crisis in 2007, larger banks have higher NPL/TL and PLLL/TL relative to small banks. We also observe that smaller banks are overall better capitalized.

[*INSERT TABLE 2 HERE*]

4 Empirical Strategy

In this section, we describe the strategy that we use to estimate the effects of bank examinations on various measures of bank performance. We first explain why estimates of these effects based on Ordinary Least Squares (OLS) would most likely be biased. Then, we present an alternative strategy that establishes a causal effect of examinations on performance using regulation on the minimum frequency of examinations. We conclude the section showing evidence that the assumptions of this strategy are valid.

4.1 Estimator

Consider the following relationship between the frequency of examinations and bank performance:

$$Y_{it} = \beta D_{it} + \theta A_{it} + \gamma_i + \tau_t + \varepsilon_{it} \tag{1}$$

where Y_{it} is a measure of performance for bank i in year t, and D_{it} is the number of days between the exit meetings of the two most recent examinations at bank i as of December 31^{st} of year t. Thus, D_{it} is an inverse measure of frequency of examinations. A_{it} as bank i's total assets in year t, γ_i a bank fixed effect, τ_t a time fixed effect, ε_{it} an unobservable shock on bank performance, and θ a parameter. We are mainly interested in estimating β, the causal effect of D_{it} on the bank performance.

If $Cov(D_{it}, \varepsilon_{it}) = 0$, then β will be identified and an OLS estimate of it will be consistent. However, D_{it} and ε_{it} are most likely correlated because of simultaneity between Y_{it} and D_{it} and because of omitted variables in equation (1). Y_{it} and D_{it} are simultaneous because examinations may improve bank performance, but poor performance makes regulators examine banks more frequently, as we discussed in Section 2. Also, ε_{it} may include variables that we omitted from equation (1) and that also determine D_{it}, such as the quality of bank management. For these reasons, we need an alternative identification strategy.

For this purpose, we use exogenous discontinuities in the frequency of examinations determined by federal regulation on minimum examination frequencies. As discussed in Section 2, regulators must examine each bank at least once every 12 or 18 months, depending on its characteristics. If the frequency of examinations at banks that qualify for the 18-month interval changes discontinuously when these banks' characteristics cross the cutoffs in Table 1 and if some additional assumptions (which we discuss in the next subsection) hold, then we can estimate the effects of examinations on performance using these jumps in minimum examination frequencies.

Based on this reasoning, a function that indicates when a bank crosses these thresholds could be used as an excluded instrument for D_{it}. Define Z_{it} as the vector of *assignment variables* for 12- and 18-month intervals. As shown in Table 1, these variables are total assets, the three capital ratios (total risk-based capital ratio, Tier 1 capital ratio, and leverage ratio), the management component and the composite CAMELS ratings, a dummy variable indicating if the bank was acquired in the last two years, and a dummy variable indicating if the bank is subject to a formal enforcement action. Define Ω_t as the set of values of Z_{it} that qualify bank i in year t for an 18-month interval between examinations. The criteria that define Ω_t for every year t since 1993 are described in Table 1. The indicator function $1(Z_{it} \in \Omega_t)$,

which is equal to 1 if $Z_{it} \in \Omega_t$, and equal to zero otherwise, can thus be used as an excluded instrument for D_{it}.

We estimate the following Two-Stage Least Squares (TSLS) model:

$$Y_{it} = \beta D_{it} + g(W_{it}) + \gamma_i + \tau_t + \varepsilon_{it} \tag{2}$$

$$D_{it} = \delta 1(Z_{it} \in \Omega_t) + h(W_{it}) + \varphi_i + \upsilon_t + \xi_{it} \tag{3}$$

where $g(\cdot)$ and $h(\cdot)$ are flexible functions of W_{it}, the subset of continuous variables in Z_{it}: total assets, CAP, T1CAP, and LEV. φ_i is a bank fixed effect, υ_t a time fixed effect, ξ_{it} an unobservable shock on bank performance. The parameter δ represents the causal effect of minimum examination frequencies on the frequencies actually observed. Other variables and parameters are the same as in equation (1).

This fuzzy regression discontinuity estimator shares two characteristics with those in Angrist and Lavy (1999), van der Klaauw (2002), and Ferraz and Finan (2009), for example, which distinguish their research designs from most regression discontinuity designs. First, our causal variable of interest, D_{it}, takes many different values. So equations (2) and (3) use this variable directly, instead of an indicator of whether a bank was treated with a shorter examination frequency, which would be analogous to most regression discontinuity research designs. Second, we use multiple discontinuities in the assignment function to identify the causal effect that we are interested in, instead of a single one, as in most regression discontinuity studies. However, unlike those three papers, which explore multiple discontinuities that exist simultaneously, in our case the multiple discontinuities exist because regulation on the frequency of examinations changed over time (see Table 1).

Our assignment function $1(Z_{it} \in \Omega_t)$ takes only two values, but it has multiple discontinuities, because of the many thresholds in the assignment variables, which are caused by two reasons. First, because a bank must meet requirements in many characteristics to qualify for an 18-month interval. These characteristics include the four continuous variables in W_{it}, and each of these four variables had one threshold value at every period in our sample. Second, because the threshold value for total assets increased over time, taking two different values throughout our sample period. These multiple discontinuities help us to estimate the parameters in (2) and (3).

Still, parameter estimates based on (2) and (3) may not be precise, and we may need to simplify our estimator to improve them. These estimates are possibly unprecise both because of multi-collinearity and because of the large number of parameters that we must estimate. The four variables in W_{it} are possibly collinear because they are calculated using various underlying variables, some of which are included in more than one of the variables in W_{it}. Moreover, the functions $g(\cdot)$ and

$h(\cdot)$ must be flexible to account for the discontinuities in $1(Z_{it} \in \Omega_t)$, which aggravates this potential multi-collinearity. However, even if the W_{it} variables are not collinear, the estimates may still be unprecise, because $g(\cdot)$ and $h(\cdot)$ must include a large number of parameters. For example, if they include a third-order polynomial for each of the four variables in W_{it} and a quadratic spline on each of the seven cutoff values of these variables, then we must estimate at least 60 parameters for these functions alone. Thus, we may need to simplify our estimator to avoid these problems.

To simplify our estimator, we drop from the sample banks that fail any requirements for the 18-month interval, except for maximum total assets. Thus, total assets will be left as the only assignment variable in this sub-sample. Define c_t as the time-varying asset threshold. Banks with $A_{it} \geq c_t$ must be examined at least once every 12 months, and banks with $A_{it} < c_t$ can be examined only once every 18 months. Then, $g(W_{it})$, $h(W_{it})$, and $1(Z_{it} \in \Omega_t)$ become simply $g(A_{it})$, $h(A_{it})$, and $1(A_{it} < c_t)$. Because we have one endogenous variable (D_{it}) and one instrument ($1(A_{it} < c_t)$), TSLS estimation is identical to Instrumental Variables (IV) estimation. Our preferred specification for $g(A_{it})$ and $h(A_{it})$ is a third-order polynomial with two quadratic splines on the two applicable asset thresholds of \$250 and \$500 million, which allows the dependent variables to respond to total assets flexibly.

As described in section 2, we implement the estimation in a way that allows the minimum examination frequency rule to take effect over time. We determine the indicator of minimum examination frequency at time $t-2$, and we evaluate the causal effect of days between exams at $t-1$ on the realization of the performance variables at t.

4.2 Evidence on Assumptions of the Empirical Strategy

This identification strategy imposes three assumptions: First, the probability that a bank is treated with more frequent examinations jumps whenever it crosses a threshold in the assignment variables. Second, the distribution of bank characteristics is continuous at the thresholds of the assignment variables. Third, banks either cannot precisely control or do not intentionally manipulate their assignment variables at the thresholds. In this subsection, we examine in detail if these three assumptions hold in our setting.

Figure 1 provides evidence that the frequencies of examination are discontinuous at the thresholds. Banks are placed into fifty equally spaced bins by current year assets (horizontal axis, measured in natural logarithms of thousands of dollars). The vertical axis is the average number of days between a pair of exams in the following year for banks in the bin, the solid red line is the current asset threshold, and the dashed red lines are other asset thresholds documented in Table 1, included in

the figures as placebo tests.[12] Across different years, the average frequency of examinations is clearly discontinuous at the asset thresholds. While the small banks (those to the left of the threshold) are generally examined every 500 to 550 days, larger banks (those to the right of the threshold) are generally examined every 350 to 400 days, which confirms the first assumption.

[*INSERT FIGURE 1 HERE*]

Figure 2 shows the cross-section density of bank asset sizes for four selected years. The densities are arguably continuous, supporting our requirement that banks either cannot precisely control or do not intentionally manipulate their asset size. The continuous distributions in Figure 2 support the second and the third assumptions of our empirical strategy.

[*INSERT FIGURE 2 HERE*]

5 Results

We are interested in three groups of variables that measure bank performance:

1. Profitability measures: ROE and NIM/TL.

2. Loan loss and delinquency measures: NPL/TL, CO/TL, and PLLL/TL.

3. Capitalization measures: CAP, T1CAP, and EC/TA.

To the extent possible, we avoid dependent variables that are functions of total assets, such as return on assets, because total assets are an assignment variable, and because they enter extensively on the right hand side of our regressions in the form of polynomials and splines. The only exception is our measure of bank leverage, EC/TA, for which there is no close substitute.

The capitalization measures (CAP, T1CAP, EC/TA) are actually also part of the assignment variables Z_{it}. Recall that, in order to simplify the estimation under multiple assignment variables, we focus on the sub-sample of banks that satisfy all the requirements listed in Table 1, leaving total assets as the sole determinant of minimum examination frequency. Within that sub-sample, there is still substantial variation in CAP, T1CAP, and EC/TA. Even among well-capitalized banks (as defined by Table 1), one would expect that more frequent examinations would encourage banks to increase CAP (higher capital) and EC/TA (lower leverage). For

[12] For instance, if the solid red line is in between two dashed red lines, then \$250 million is the prevailing threshold, with \$100 million to the left and \$500 million to the right.

this reason, we also studying how the frequency of examinations affect capitalization among well-capitalized banks.

As described previously, we exclude data prior to 1997 since data on capital ratios are not available for those years. We include bank and time fixed effects in our regressions. We do not include other covariates studied in the banking literature for two reasons. First, these covariates are quite likely to be endogenous to the variables of interest. Second, in the process of restricting the sample of banks to those that satisfy the requirement in Table 1 (except for asset size), we have already constrained the banks in our study to a reasonably homogeneous group: they all have good or outstanding CAMELS ratings and are all adequately capitalized. Given these constraints, we believe that there are not any other exogenous variables that we omitted and that would further explain the variation in bank performance.

5.1 Main Results

Tables 3 to 5 contain the results for each of the three groups of dependent variables. In each of these tables, Panel A presents the results from panel fixed effects OLS estimation of equation (1), while Panel B presents the results from the IV estimation of equations (2) and (3), using the indicator on whether the bank crosses the asset threshold, $I(A_{it} < c_t)$, as the excluded instrument.

[*INSERT TABLES 3-5 HERE*]

Profitability measures. Table 3 presents results on ROE and NIM/TL. We find that a longer interval between examinations D_{it} lowers ROE and NIM/TL or, in other words, that more frequent examinations increase ROE and NIM/TL. Under OLS estimation, however, the estimates are not statistically significant at the 10 percent level, and the economic significance of the impact of examination frequency is very small for both ROE and NIM/TL.[13] Under IV estimation, however, more frequent examinations improve both ROE and NIM/TL, and the effects are both economically and statistically significant. Reducing the days between examinations by 100 days, which is roughly the average difference between banks on close to but are on different sides of the threshold (see Figure 1), increases ROE by 0.92 percentage points and increases NIM/TL by 0.17 percentage points. For the average bank in our sample, which has an ROE of 11.3 percent and NIM/TL of 6.2 percent, these changes represent an 8 percent increase in ROE and a 3 percent increase in NIM/TL. Our interpretation of this result is that by examination banks

[13]Note that when regressors are endogenous, OLS inference tests whether the linear projection of the dependent variable on the regressor is statistically different from zero. The linear projections do not usually coincide with the causal effects or structural parameters.

more often, regulators encourage banks to reduce risk exposures by holding higher quality assets, which in turn reduces losses and improves profitability. The results on ROE and NIM/TL show that supervision improves bank performance both at the firm-wide level and at the lending business level.

Loan loss and delinquency measures. More direct tests on whether more examinations reduces risk taking are carried out in Table 4. Overall, we find that more frequent examinations - that is, a lower D_{it} - reduces NPL/TL, CO/TL, and PLLL/TL. The IV estimates are much larger in magnitude compared to the OLS estimates, and are all highly statistically significant. For NPL/TL, which measures the amount of non-accrual and past due loans, a decrease in the interval between examination of 100 days reduces NPL/TL by 0.31 percentage points. For the average bank in our sample, which has an NPL/TL 1.1 percent, this represents a 28 percent decrease in NPL/TL. For CO/TL, which measures the amount of loans that have been written off by the bank, the effect is 0.05 percentage points, which represents a 13 percent reduction in CO/TL for the average bank. Finally, for PLLL/TL, which measures the amount of expected losses, the effect is 0.08 percentage points, or a 20 percent reduction in PLLL/TL for the average bank. These results are consistent with the hypothesis that regulators induce banks to hold safer assets by examining these firms more often.

Capitalization measures. In Table 5, we study the effects of more frequent examinations on capitalization ratios. The results suggest that more frequent examinations increase CAP and T1CAP, with IV estimates dwarfing OLS estimates, and that IV estimates are highly statistically significant. The estimates suggest that a decrease in the days between examination of 100 days increases CAP by 0.56 percentage points, and increases T1CAP by 0.59 percentage points, where both represent approximately a 4 percent increase relative to the average bank. The results also suggest that more frequent examinations increase EC/TA. However, the respective IV estimates are not statistically significant, while the respective OLS estimates are.

5.2 National Banks

Our results so far were based on samples that included both national and state banks. However, national and state banks are subject to different supervisory frameworks. As described in the previous section, national banks are examined by the OCC only, while state banks are often subject to joint, concurrent, or alternate examinations by their respective federal and state regulators. Thus, the results that we have shown in this section might be driven by examination policies of state banks that vary with

bank characteristics too. Thus, to investigate this hypothesis, in this subsection we limit our sample to national banks, which cannot be subject to such variation in examination policies, and whose estimates, therefore, would not suffer from these confounding factors. Tables 6 to 8 match Tables 3 to 5, but they constrain the sample to national banks only.

[*INSERT TABLES 6-8 HERE*]

We observe that the effects on loan loss and delinquency measures and capitalization measures for national banks are quite similar to those for all banks: more frequent examinations reduces NPL/TL, CO/TL, and PLLL/TL, and increases CAP, T1CAP, and EC/TA, although the effects on CO/TL and CAP are not statistically significant at the 10 percent level. For the profitability measures, the effects are much weaker for the national banks: the coefficients on D_{it} are negative for ROE and NIM/TL, as in the sample with all banks, but they are much smaller and not statistically significant, indicating that more frequent examinations may not substantially improve bank profitability. We believe that because national banks generally have broader business activities, both in terms of types as well as geographic locations, it is more difficult for supervision to directly influence bank profitability. In summary, these results indicate that our previous results, which used the whole sample of banks, are not driven by examination policies of state banks.

5.3 Excluding the Financial Crisis Years

Our main results are estimated using the years of 1997 to 2010. This includes the financial crisis years of 2007 and 2008. By including these years, we incorporate in our analysis the change in the asset threshold from $250 million to $500 million due to the Financial Services Regulatory Relief Act of 2006 (see Table 1), which help us to investigate if our results are robust.

However, given the regulatory emphasis on the adequacy of capital and liquidity at banks during the crisis, one might be interested in whether our findings, particularly those on the capital and leverage variables CAP, T1CAP, and EC/TA, were influence by the extraordinary regulatory measures introduced at that time. These measures were predominantly emergency capital and liquidity programs such as the Troubled Asset Relief Program (TARP). Furthermore, many banks started to migrate to lower CAMELS ratings buckets during the financial crisis. Because CAMELS ratings are assignment variables, and must be satisfied prior to our application of the asset size threshold rules, many banks exited our sample during the financial crisis. Indeed, we observe from Table 2 that the total number of banks reduced from around 5,000 in 2006 to 306 in 2008, which may affect the analysis on CAP, T1CAP, and EC/TA variables.

As a robustness check, we re-estimate the regressions in Table 5, using only the pre-crisis years of 1997-2006. The results are presented in Table 9. We observe that more frequent examinations continue to improve CAP and T1CAP, and the magnitudes are larger – a 100 days decrease in the days between examinations increases CAP and T1CAP by 1.52 and 1.57 percentage points, respectively. The effects of examination frequency on EC/TA is statistically insignificant, however.

[*INSERT TABLES 9 HERE*]

Therefore, it appears that the various emergency programs introduced by regulators during the crisis may have obscured or attenuated the effects of more frequent examinations on capital ratios.

5.4 Very Well Capitalized Banks

Two of our capitalization measures, CAP and T1CAP, are assignment variables, while the third, EC/TA, is closely related to LEV, an assignment variable. Although in our estimation we have already constrained the set of banks to those that satisfy the requirements on these assignment variables, we need to test if our results are robust to the inclusion of those banks that barely qualify. We do this by putting a 1 percent buffer to each of the requirements on capital ratio, tier 1 capital ratio, and leverage. From table 1, the requirements are that CAP must be 10 percent or more; T1CAP must be 6 percent or more; and LEV must be 5 percent or more. Together, these are requirements for a bank to be considered "well capitalized" by regulators. The requirements with the buffer are therefore 11 percent for CAP, 7 percent for T1CAP, and 6 percent for LEV. We define banks that satisfy these requirements as "very well capitalized" banks and re-estimate the regressions in Table 5 with this more restricted set of banks in Table 10.

[*INSERT TABLE 10 HERE*]

The first observation is that many banks drop out of the sample once we impose these buffers – the number of banks decrease from 8,306 (Table 5) to 7,516 (Table 10), while the number of observations drop from 59,209 to 47,703. We also observe that for the most part, the results on capitalization measures do not change, as more frequent examinations improve all three ratios. The effects on CAP and T1CAP continue to be highly statistically significant. The coefficient estimates suggest that the economic effects are larger than those in Table 5.

5.5 Alternative Polynomial Specifications

Our preferred specification for $g(A_{it})$ is a third order polynomial, with quadratic splines at \$250 and \$500 million. In Tables 11 and 12, we test the sensitivity of our results to this particular specification. In Table 11, we add a higher order term to the polynomial as well as the splines in the IV regressions of Tables 3 to 5, rendering $g(A_{it})$ a quartic polynomial with cubic splines at \$250 and \$500 million. Since our identification strategy primarily focuses on the discontinuity at the asset thresholds, in Table 12 we constrain the banks to those that are within 10 percentile of the threshold, both to the left as well as to the right, and re-estimate the IV regressions in Tables 3-5.

[*INSERT TABLES 11 and 12 HERE*]

The results in Tables 11 and 12 confirm that our main results are quite robust to alternative model specifications. Introducing higher order terms in $g(A_{it})$ (Table 11) does not qualitative affect the results on the profitability and the loan loss and delinquency measures (Panels A and B), but it does reduce the effects on the capitalization measures (Panel C), both economically and statistically. Focusing on the banks close to the asset cutoffs (Table 12) does not qualitatively change any of the results in Tables 3-5, and the effects of examination frequency on the profitability and balance sheet risk measures are larger in magnitude (Panels A and B). The effects on the safety and soundness measures (Panel C) are slightly smaller that those presented in Table 5.

6 Conclusions

In this paper, we established a causal effect of banking supervision on bank performance using an empirical strategy that breaks the endogeneity between supervision and performance. We showed that on-site examinations improve bank performance, as more frequent examinations increase bank profitability, lower loan losses and delinquencies, and increase bank capital. These results have important policy implications, as the empirical support for the positive effects of banking supervision has been scarce so far.

Our results still leave some important questions unanswered. For example, we studied the effects of examinations on the performance of the bank examined only. However, banking supervision in recent years has increasingly devoted attention to the systemic effects of banks' safety and soundness. Thus, we must investigate if supervision affects other institutions besides those that are the object of an examination or any other supervisory tool. We plan to address this important topic in future research.

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Figure 1: Average examination frequency as a function of previous year asset size.

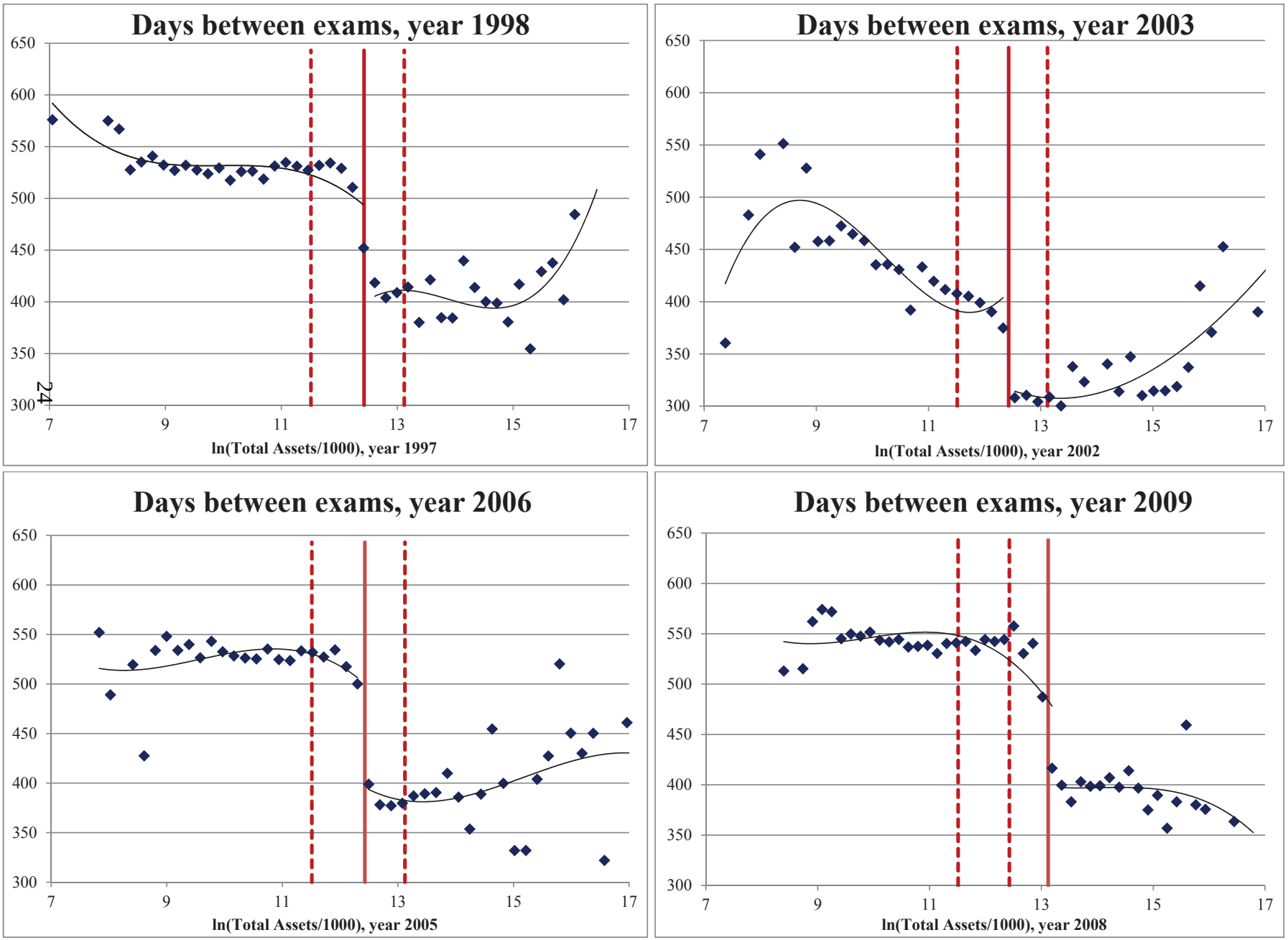

Figure 2: Cross-section densities of bank asset size.

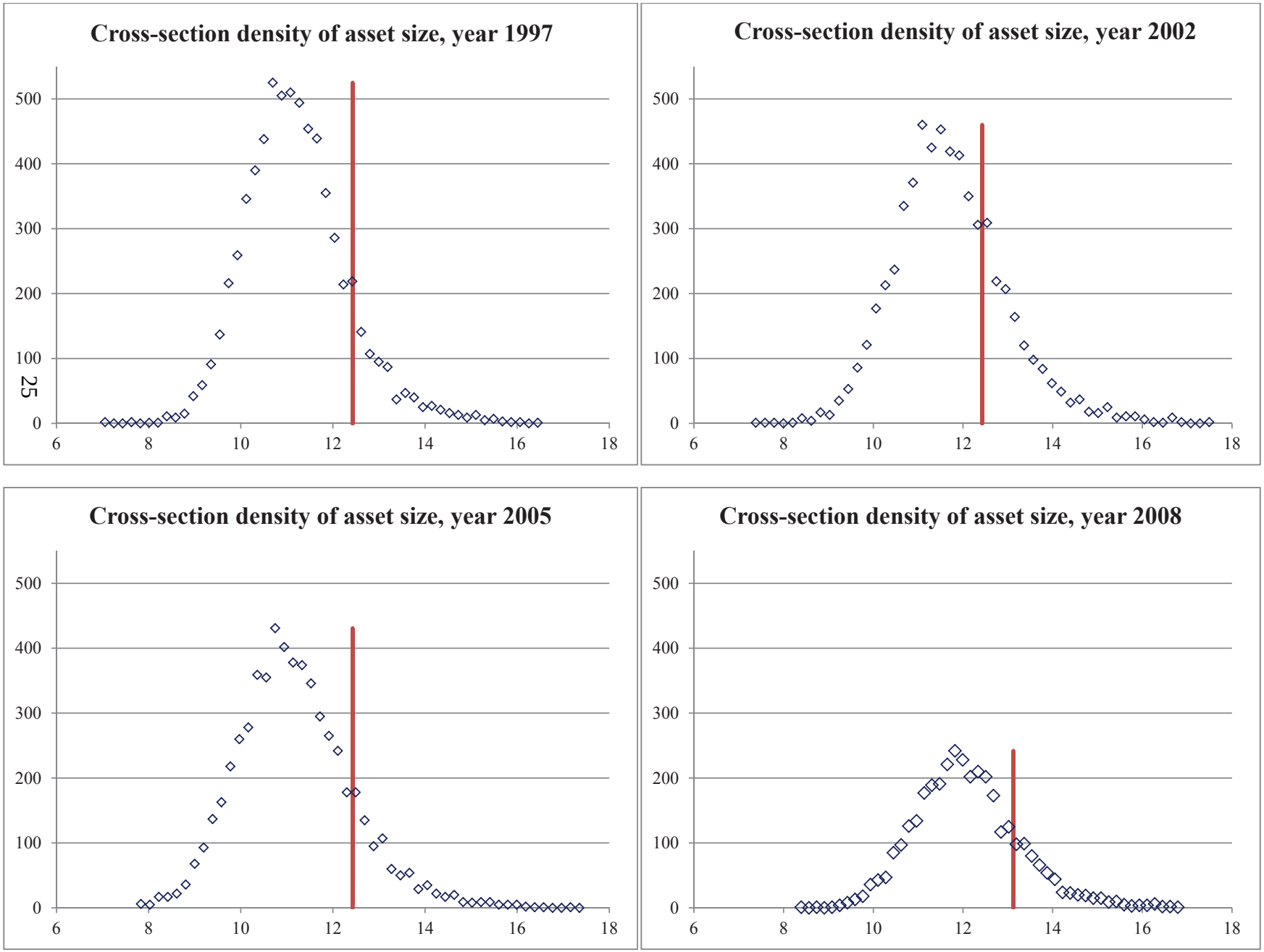

Table 1: Rules that govern the frequency of bank examinations

Regulation	Date of Enactment or Publication	Effective Date	Total Assets	Capitalization	Management	Composite Condition	Acquisition	Formal Enforcement Actions	Observations
Federal Deposit Insurance Corporation Improvement Act of 1991	12/19/1991	12/19/1992	**Less than $100 million**	**Well Capitalized (see observations 1 and 2)**	**Found to be well managed in the most recent examination**	**Found to be outstanding (Composite CAMEL rating of 1) in the most recent examination**	**No person acquired control of the institution during the 12-month period in which a full-schope, on-site examination would be required**		1. Section 38(b) of the Federal Deposit Insurance Act defined that an insured depository institution is Well Capitalized if it significantly exceeds the required minimum level for each relevant capital measure. 2. Section 325.103 was added to the FDIC Rules and Regulations on September 29, 1992, and became effective on December 19, 1992. It defined that an institution is Well Capitalized if it: (i) Has a total risk-based capital ratio of 10.0 percent or greater; and (ii) Has a Tier 1 risk-based capital ratio of 6.0 percent or greater; and (iii) Has a leverage ratio of 5.0 percent or greater; and (iv) Is not subject to any written agreement, order, capital directive, or prompt corrective action to meet and maintain a specific capital level for any capital measure.
Riegle Community Development and Regulatory Improvement Act of 1994	9/23/1994	9/23/1994	**Less than $250 million**	Well Capitalized (see observations 1 and 2)	Found to be well managed in the most recent examination	Found to be outstanding (Composite CAMEL rating of 1) in the most recent examination	No person acquired control of the institution during the 12-month period in which a full-schope, on-site examination would be required	Not currently subject to a formal enforcement action from its Federal banking agency	
			Less than $100 million		Found to be well managed in the most recent examination	**Found to be outstanding or good (Composite CAMEL rating of 1 or 2) in the most recent examination**	No person acquired control of the institution during the 12-month period in which a full-schope, on-site examination would be required	Not currently subject to a formal enforcement action from its Federal banking agency	
Interagency Interim Rule "Expanded Examination Cycle for Certain Small Insured Institutions"	1/24/1997	2/12/1997	**Less than $250 million**	Well Capitalized (see observations 1 and 2)	Received a rating of 1 or 2 for the management component and for the composite CAMELS rating at its most recent examination	**Found to be outstanding or good (Composite CAMELS rating of 1 or 2) in the most recent examination**	No person acquired control of the institution during the 12-month period in which a full-schope, on-site examination would be required	Not currently subject to a formal enforcement action from its Federal banking agency	3. Interim Rule was based on the Riegle Community Development and Regulatory Improvement Act of 1994 and the Economic Growth and Regulatory Paperwork Reduction Act of 1996. 4. The change in the management criterion was introduced by 12 CFR Part 225, Bank Holding Companies and Change in Bank Control (Regulation Y), published in Federal Register, Vol. 62, No. 40, Friday, February 28, 1997, which became affective on April 21, 1997. 5. The sixth component of the CAMELS rating, Sensitivity to Market Risk, was added in 1997. The change was puslished in the Federal Register on December 19, 1996, and became effective on January 1st, 1997.
Financial Services Regulatory Relief Act of 2006	10/13/2006	4/10/2007	**Less than $500 million**	Well Capitalized (see observations 1 and 2)	Received a rating of 1 or 2 for the management component and for the composite CAMELS rating at its most recent examination	Found to be outstanding or good (Composite CAMELS rating of 1 or 2) in the most recent examination	No person acquired control of the institution during the 12-month period in which a full-schope, on-site examination would be required	Not currently subject to a formal enforcement action from its Federal banking agency	6. Changes were implemented through jointly issued interim rules published on April 3, 2007 and effective on April 10, 2007 issued by the Federal Reserve Board (Board), the Federal Deposit Insurance Corporation (FDIC), the Office of the Comptroller of the Currency (OCC), and the Office of Thrift Supervision (OTS). The interim rule was adopted as final, without change, on September 11, 2007. (See 72 Fed. Reg. 54347, September 25, 2007.) The interim rules implemented section 605 of the Financial Services Regulatory Relief Act of 2006 (FSRRA) and Public Law 109-473.

Note: Bold text identifies changes in the criteria over time.

Table 2: Summary Statistics

	1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008	
	Above threshold	Below threshold	Above threshold	Below threshold	Above threshold	Below threshold	Above threshold	Below threshold	Above threshold	Below threshold	Above threshold	Below threshold	Above threshold	Below threshold	Above threshold	Below threshold	Above threshold	Below threshold	Above threshold	Below threshold	Above threshold	Below threshold	Above threshold	Below threshold
Number of banks	700	5,546	763	5,276	812	5,092	906	4,952	971	4,812	1,078	4,555	1,151	4,437	1,245	4,306	1,321	4,093	538	4,462	394	2,964	36	270
Days between exams (mean)	410	527	382	496	327	423	299	398	311	417	368	488	385	520	387	526	442	529	401	540	395	545	391	540
Days between exams (s.d.)	95	106	92	113	136	177	135	183	123	177	107	102	101	86	111	83	130	80	83	84	79	84	80	90
Assets ($millions, mean)	1,099	91	1,150	94	1,212	99	1,135	102	1,132	105	1,124	108	1,172	112	1,165	115	1,116	114	1,870	162	1,894	168	2,137	173
Assets ($millions, s.d.)	1,648	77	1,828	78	2,081	82	2,041	82	2,056	80	2,125	82	2,174	87	2,437	94	2,249	86	2,427	142	2,338	158	2,505	139
ROE (mean)	16.1%	12.2%	14.5%	12.0%	14.1%	10.9%	14.2%	11.3%	13.8%	11.1%	13.3%	11.2%	13.9%	11.7%	13.5%	11.2%	11.7%	10.1%	5.8%	7.6%	5.9%	6.4%	10.1%	8.5%
ROE (s.d.)	13.8%	7.0%	6.5%	19.3%	8.1%	6.3%	5.9%	6.5%	6.0%	6.3%	5.6%	6.1%	6.1%	6.7%	6.0%	6.8%	5.9%	7.0%	15.1%	10.5%	12.5%	9.8%	4.7%	6.8%
NIM/TL (mean)	7.0%	7.2%	6.5%	7.1%	6.5%	6.8%	6.5%	6.9%	6.1%	6.7%	5.8%	6.6%	5.7%	6.6%	5.6%	6.5%	5.1%	6.3%	4.8%	6.0%	5.5%	6.2%	5.5%	6.3%
NIM/TL (s.d.)	7.8%	4.9%	5.7%	5.1%	6.2%	4.9%	6.6%	4.4%	5.6%	4.6%	4.6%	4.4%	4.3%	4.5%	4.1%	4.6%	4.1%	4.8%	1.9%	4.7%	5.3%	3.9%	0.9%	1.8%
NPL/TL (mean)	0.6%	0.8%	0.7%	0.8%	0.9%	1.0%	0.8%	1.0%	0.8%	0.9%	0.6%	0.8%	0.6%	0.8%	0.7%	0.8%	1.1%	1.0%	1.9%	1.5%	2.2%	1.7%	2.0%	1.6%
NPL/TL (s.d.)	0.6%	1.1%	0.6%	1.0%	0.8%	1.1%	0.8%	1.2%	0.8%	1.2%	0.6%	1.0%	0.7%	1.0%	0.8%	1.1%	1.4%	1.3%	2.4%	1.8%	1.7%	1.9%	1.9%	2.0%
CO/TL (mean)	0.5%	0.3%	0.4%	0.3%	0.5%	0.3%	0.4%	0.3%	0.4%	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	0.3%	0.3%	0.6%	0.4%	1.0%	0.6%	0.7%	0.6%
CO/TL (s.d.)	3.8%	0.5%	0.7%	1.5%	1.3%	0.5%	0.6%	0.5%	0.5%	0.5%	0.5%	0.4%	0.5%	0.4%	0.4%	0.3%	0.6%	0.4%	0.9%	0.7%	1.2%	0.9%	0.5%	0.7%
PLLL/TL (mean)	0.3%	0.3%	0.4%	0.3%	0.5%	0.3%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	0.4%	0.3%	0.9%	0.5%	1.3%	0.8%	0.8%	0.6%
PLLL/TL (s.d.)	0.5%	0.5%	0.6%	0.6%	1.8%	0.5%	0.5%	0.5%	0.5%	0.5%	0.4%	0.3%	0.4%	0.3%	0.4%	0.3%	0.7%	0.4%	1.1%	0.8%	1.3%	1.0%	0.5%	0.7%
CAP (mean)	14.7%	18.7%	14.0%	18.3%	13.9%	17.9%	14.1%	18.0%	13.9%	18.2%	13.8%	18.0%	13.4%	17.8%	13.4%	17.8%	13.2%	17.8%	12.6%	17.1%	13.7%	17.4%	14.0%	18.1%
CAP (s.d.)	13.3%	16.8%	5.3%	17.8%	4.7%	15.5%	9.3%	14.5%	5.5%	17.2%	7.5%	13.7%	4.4%	12.9%	4.3%	12.5%	4.5%	14.3%	3.1%	12.8%	4.7%	9.9%	2.4%	7.3%
T1CAP (mean)	13.4%	17.5%	12.8%	17.2%	12.7%	16.8%	12.8%	16.9%	12.6%	17.1%	12.6%	16.8%	12.2%	16.7%	12.2%	16.7%	12.0%	16.7%	11.3%	16.0%	12.4%	16.3%	12.6%	16.9%
T1CAP (s.d.)	13.4%	16.8%	5.3%	17.8%	4.8%	15.5%	9.4%	14.6%	5.6%	17.3%	7.6%	13.7%	4.4%	12.9%	4.3%	12.5%	4.5%	14.3%	3.1%	12.8%	4.8%	10.0%	2.5%	7.3%
EC/TA (mean)	8.9%	10.2%	9.1%	10.6%	9.2%	10.6%	9.5%	10.8%	9.5%	10.8%	9.7%	10.8%	9.5%	10.7%	9.7%	11.0%	9.9%	11.3%	9.8%	11.0%	10.2%	10.9%	10.2%	11.0%
EC/TA (s.d.)	4.3%	4.2%	2.8%	4.4%	2.9%	4.2%	3.6%	4.2%	3.4%	4.4%	3.6%	4.3%	2.6%	4.2%	2.6%	4.4%	2.8%	4.6%	2.8%	4.3%	4.5%	3.7%	2.1%	3.5%
Relevant asset threshold in $	250,000,000		250,000,000		250,000,000		250,000,000		250,000,000		250,000,000		250,000,000		250,000,000		250,000,000		500,000,000		500,000,000		500,000,000	

Note: Table shows the mean and standard deviations of variables of interest. Banks are assigned to "above threshold" or "below threshold" groups based on current year characteristics, "Days between exams" is recorded in the following year, all other statistics are two year ahead performance measures. For instance, as determined in 1997, there are 700 banks above the $250MM asset threshold and 5,546 below. For the "above" group, the average number of days between exams is 410 in 1998, while the average "ROE" is 16.1% in 1999. For the "below" group, the average number of days between exams is 527, while the average "ROE" is 12.2%. "ROE" is Returns on Equity; "NIM/TL" is Net Interest Margin as a percentage of Total Loans; "NPL/TL" is Non-Performing Loans as a percentage of Total Loans; "CO/TL" is Charge-Offs as a percentage of Total Loans; "PLLL/TL" is Provisions for Loan and Lease Losses as a percentage of Total Loans; "CAP" is the risk-based Capital ratio; "T1CAP" is the Tier 1 risk-based Capital ratio; and "EC/TA" is Equity Capital as a percentage of Total Assets.

Table 3: Profitability measures, all banks, years 1997-2010

	Panel A: OLS		Panel B: IV	
Dependent Variable	ROE	NIM/TL	ROE	NIM/TL
Days between examinations	-0.01%	-0.01%	-0.92%	-0.17%
	-0.37	-1.16	-4.60	-2.42
Assets	63.70%	-3.57%	-2.10%	-17.63%
	1.41	-0.61	-0.03	-1.67
Assets²	-4.39%	0.23%	1.93%	1.52%
	-1.26	0.53	0.28	1.60
Assets³	0.09%	-0.01%	-0.11%	-0.04%
	1.05	-0.47	-0.54	-1.54
(Assets - threshold) × 1(Assets ≥ $250MM)			0.87%	-1.01%
			0.47	-2.27
(Assets - threshold)² × 1(Assets ≥ $250MM)			2.29%	1.59%
			1.03	2.11
(Assets - threshold) × 1(Assets ≥ $500MM)			-1.46%	-1.42%
			-0.69	-2.02
(Assets - threshold)² × 1(Assets ≥ $500MM)			0.03%	-1.02%
			0.01	-1.56
R-squared	4.65%	2.47%	2.86%	1.62%
Bank fixed effects?	Yes	Yes	Yes	Yes
Time fixed effects?	Yes	Yes	Yes	Yes
Number of banks	8,306	8,306	8,306	8,306
Number of observations	59,209	59,209	59,209	59,209

Note: Panel OLS regression based on (1), and IV estimates are based on the panel instrumental variables regression in (2) and (3). "ROE" is Returns on Equity and "NIM/TL" is Net Interest Margin as a percentage of Total Loans. Bank-level clustered T-statistics are shaded in grey.

Table 4: Loan loss and deliquency measures, all banks, years 1997-2010

	Panel A: OLS			Panel B: IV		
Dependent Variable	NPL/TL	CO/TL	PLLL/TL	NPL/TL	CO/TL	PLLL/TL
Days between examinations	0.02%	0.00%	0.01%	0.31%	0.05%	0.08%
	3.91	0.63	3.12	7.71	2.79	4.80
Assets	-5.72%	0.04%	0.37%	4.40%	6.38%	8.39%
	-4.07	0.04	0.38	0.90	1.36	2.40
$Assets^2$	0.48%	-0.01%	-0.05%	-0.50%	-0.61%	-0.81%
	4.19	-0.12	-0.63	-1.11	-1.44	-2.54
$Assets^3$	-0.01%	0.00%	0.00%	0.02%	0.02%	0.03%
	-3.90	0.38	1.08	1.38	1.54	2.70
(Assets - threshold) × 1(Assets ≥ $250MM)				0.13%	-0.17%	-0.15%
				0.51	-1.37	-1.14
$(Assets - threshold)^2 \times 1(Assets \geq \$250MM)$				-0.60%	-0.08%	-0.13%
				-1.73	-0.54	-0.81
(Assets - threshold) × 1(Assets ≥ $500MM)				0.39%	0.04%	0.11%
				1.12	0.27	0.58
$(Assets - threshold)^2 \times 1(Assets \geq \$500MM)$				0.24%	-0.14%	-0.15%
				0.70	-0.94	-1.03
R-squared	9.16%	4.11%	8.36%		3.29%	5.55%
Bank fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Number of banks	8,294	8,295	8,294	8,294	8,295	8,294
Number of observations	59,144	59,146	59,145	59,144	59,146	59,145

Note: Panel OLS regression based on (1), and IV estimates are based on the panel instrumental variables regression in (2) and (3). "NPL/TL" is Non-performing Loans as a percentage of Total Loans, "CO/TL" is Charge-offs as a percentage of Total Loans, and "PLLL/TL" is Provision for Loan and Lease Losses as a percentage of Total Loans. Bank-level clustered T-statistics are shaded in grey.

Table 5: Capitalization measures, all banks, years 1997-2010

	Panel A: OLS			Panel B: IV		
Dependent Variable	CAP	T1CAP	EC/TA	CAP	T1CAP	EC/TA
Days between examinations	-0.03%	-0.03%	-0.03%	-0.56%	-0.59%	-0.09%
	-0.93	-0.94	-3.22	-2.71	-2.82	-1.31
Assets	-140.14%	-139.55%	-31.27%	-557.18%	-558.10%	-69.44%
	-2.01	-2.00	-4.40	-2.72	-2.73	-2.68
Assets^2	10.98%	10.94%	2.35%	49.81%	49.91%	5.91%
	1.97	1.96	4.10	2.69	2.70	2.50
Assets^3	-0.28%	-0.28%	-0.06%	-1.48%	-1.48%	-0.17%
	-1.93	-1.92	-3.74	-2.67	-2.68	-2.34
(Assets - threshold) × 1(Assets ≥ $250MM)				7.01%	6.92%	0.64%
				2.34	2.31	1.02
(Assets - threshold)^2 × 1(Assets ≥ $250MM)				6.10%	6.21%	0.69%
				2.53	2.58	1.10
(Assets - threshold) × 1(Assets ≥ $500MM)				-6.51%	-6.59%	-1.02%
				-2.82	-2.84	-1.65
(Assets - threshold)^2 × 1(Assets ≥ $500MM)				8.85%	8.79%	0.75%
				2.55	2.54	1.04
R-squared	3.31%	3.27%	3.01%	4.11%	3.98%	3.04%
Bank fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Number of banks	8,306	8,306	8,306	8,306	8,306	8,306
Number of observations	59,209	59,209	59,209	59,209	59,209	59,209

Note: Panel OLS regression based on (1), and IV estimates are based on the panel instrumental variables regression in (2) and (3). "CAP" is the risk-based Captial ratio, "T1CAP" is the Tier 1 risk-based Capital ratio and "EC/TA" is Equity Capital as a percentage of Total Assets. Bank-level clustered T-statistics are shaded in grey.

Table 6: Profitability measures, National banks, years 1997-2010

	Panel A: OLS		Panel B: IV	
Dependent Variable	ROE	NIM/TL	ROE	NIM/TL
Days between examinations	-0.03%	0.01%	-0.22%	-0.01%
	-0.71	0.35	-0.41	-0.09
Assets	289.88%	-7.89%	847.71%	-2.76%
	1.27	-0.23	1.28	-0.43
Assets²	-21.92%	0.40%	-72.06%	-2.34%
	-1.25	0.16	-1.27	0.40
Assets³	0.55%	-0.01%	2.04%	6.52%
	1.23	-0.09	1.26	-0.38
(Assets - threshold) × 1(Assets ≥ $250MM)			1.23%	-0.93%
			0.35	-0.76
(Assets - threshold)² × 1(Assets ≥ $250MM)			-12.56%	0.06%
			-1.26	0.04
(Assets - threshold) × 1(Assets ≥ $500MM)			12.57%	-0.63%
			1.23	-0.39
(Assets - threshold)² × 1(Assets ≥ $500MM)			-4.48%	-0.17%
			-0.83	-0.11
R-squared	3.40%	1.88%	3.82%	1.93%
Bank fixed effects?	Yes	Yes	Yes	Yes
Time fixed effects?	Yes	Yes	Yes	Yes
Number of banks	2,158	2,158	2,158	2,158
Number of observations	15,189	15,189	15,189	15,189

Note: Panel OLS regression based on (1), and IV estimates are based on the panel instrumental variables regression in (2) and (3). "ROE" is Returns on Equity and "NIM/TL" is Net Interest Margin as a percentage of Total Loans. Bank-level clustered T-statistics are shaded in grey.

Table 7: Loan loss and delinquecy measures, National banks, years 1997-2010

	Panel A: OLS			Panel B: IV		
Dependent Variable	NPL/TL	CO/TL	PLLL/TL	NPL/TL	CO/TL	PLLL/TL
Days between examinations	0.01%	0.00%	0.01%	0.27%	0.07%	0.13%
	2.14	0.05	3.11	3.29	1.33	3.20
Assets	-1.47%	-1.75%	-1.21%	24.87%	6.38%	3.61%
	-0.32	-0.71	-0.68	1.20	0.63	0.56
Assets^2	0.14%	0.13%	0.08%	-2.33%	-0.64%	-0.39%
	0.38	0.67	0.55	-1.26	-0.71	-0.67
Assets^3	0.00%	0.00%	0.00%	0.07%	0.02%	0.01%
	-0.32	-0.56	-0.32	1.34	0.80	0.79
(Assets - threshold) × 1(Assets ≥ $250MM)				-0.41%	-0.19%	-0.07%
				-0.84	-0.74	-0.28
(Assets - threshold)^2 × 1(Assets ≥ $250MM)				-0.63%	-0.16%	-0.07%
				-1.00	-0.43	-0.23
(Assets - threshold) × 1(Assets ≥ $500MM)				0.81%	0.04%	-0.04%
				1.40	0.10	-0.14
(Assets - threshold)^2 × 1(Assets ≥ $500MM)				-0.27%	-0.09%	-0.08%
				-0.46	-0.31	-0.27
R-squared	9.08%	2.11%	9.13%		0.80%	
Bank fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Number of banks	2,156	2,156	2,156	2,156	2,156	2,156
Number of observations	15,173	15,174	15,174	15,173	15,174	15,174

Note: Panel OLS regression based on (1), and IV estimates are based on the panel instrumental variables regression in (2) and (3). "NPL/TL" is Non-performing Loans as a percentage of Total Loans, "CO/TL" is Charge-offs as a percentage of Total Loans, and "PLLL/TL" is Provision for Loan and Lease Losses as a percentage of Total Loans. Bank-level clustered T-statistics are shaded in grey.

Table 8: Capitalization measures, National banks, years 1997-2010

	Panel A: OLS			Panel B: IV		
Dependent Variable	CAP	T1CAP	EC/TA	CAP	T1CAP	EC/TA
Days between examinations	-0.02%	-0.02%	-0.03%	-0.36%	-0.41%	-0.22%
	-0.53	-0.57	-2.02	-1.50	-1.69	-1.68
Assets	-50.96%	-50.90%	-35.93%	-141.43%	-139.93%	-61.25%
	-1.19	-1.19	-2.87	-1.30	-1.29	-2.33
Assets^2	3.54%	3.54%	2.68%	11.63%	11.50%	4.96%
	1.08	1.08	2.80	1.23	1.22	2.09
Assets^3	-0.08%	-0.08%	-0.07%	-0.32%	-0.32%	-0.13%
	-0.97	-0.97	-2.66	-1.18	-1.17	-1.85
(Assets - threshold) × 1(Assets ≥ $250MM)				-1.29%	-1.39%	-0.52%
				-0.69	-0.74	-0.52
(Assets - threshold)^2 × 1(Assets ≥ $250MM)				3.03%	3.16%	1.12%
				1.23	1.28	1.07
(Assets - threshold) × 1(Assets ≥ $500MM)				-3.99%	-4.11%	-1.34%
				-1.59	-1.63	-1.31
(Assets - threshold)^2 × 1(Assets ≥ $500MM)				-0.03%	-0.19%	-0.26%
				-0.01	-0.08	-0.23
R-squared	1.26%	1.27%	2.87%	0.71%	0.55%	0.98%
Bank fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Number of banks	2,158	2,158	2,158	2,158	2,158	2,158
Number of observations	15,189	15,189	15,189	15,189	15,189	15,189

Note: Panel OLS regression based on (1), and IV estimates are based on the panel instrumental variables regression in (2) and (3). "CAP" is the risk-based Captial ratio, "T1CAP" is the Tier 1 risk-based Capital ratio and "EC/TA" is Equity Capital as a percentage of Total Assets. Bank-level clustered T-statistics are shaded in grey.

Table 9: Capitalization measures, all banks, years 1997-2006

	Panel A: OLS			Panel B: IV		
Dependent Variable	CAP	T1CAP	EC/TA	CAP	T1CAP	EC/TA
Days between examinations	-0.04%	-0.03%	-0.02%	-1.52%	-1.57%	-0.06%
	-1.05	-1.00	-2.93	-2.29	-2.37	-0.42
Assets	-140.84%	-140.59%	-30.95%	-556.22%	-557.14%	-57.10%
	-1.77	-1.77	-4.56	-2.56	-2.58	-2.46
$Assets^2$	11.08%	11.06%	2.33%	50.17%	50.27%	4.76%
	1.73	1.73	4.29	2.54	2.55	2.22
$Assets^3$	-0.29%	-0.29%	-0.06%	-1.50%	-1.51%	-0.13%
	-1.70	-1.70	-3.95	-2.52	-2.53	-2.01
(Assets - threshold) × 1(Assets ≥ $250MM)				3.35%	3.06%	0.33%
				2.00	1.80	0.57
$(Assets - threshold)^2 \times 1(Assets \geq \$250MM)$				11.26%	11.64%	0.48%
				2.15	2.22	0.49
(Assets - threshold) × 1(Assets ≥ $500MM)				-8.52%	-8.73%	-0.63%
				-2.36	-2.41	-0.82
$(Assets - threshold)^2 \times 1(Assets \geq \$500MM)$				4.34%	4.02%	0.54%
				2.31	2.10	0.74
R-squared	2.90%	2.88%	3.00%			3.03%
Bank fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Number of banks	7,940	7,940	7,940	7,940	7,940	7,940
Number of observations	45,374	45,374	45,374	45,374	45,374	45,374

Note: Panel OLS regression based on (1), and IV estimates are based on the panel instrumental variables regression in (2) and (3). "CAP" is the risk-based Captial ratio, "T1CAP" is the Tier 1 risk-based Capital ratio and "EC/TA" is Equity Capital as a percentage of Total Assets. Bank-level clustered T-statistics are shaded in grey.

Table 10: Capitalization measures, "Very Well Captialized" banks, years 1997-2010

	Panel A: OLS			Panel B: IV		
Dependent Variable	CAP	T1CAP	EC/TA	CAP	T1CAP	EC/TA
Days between examinations	-0.05%	-0.05%	-0.03%	-0.66%	-0.68%	-0.11%
	-0.93	-0.94	-3.22	-2.97	-3.07	-1.31
Assets	-212.58%	-212.80%	-40.12%	-644.59%	-646.44%	-77.07%
	-2.01	-2.00	-4.40	-2.98	-3.00	-2.56
Assets^2	17.22%	17.25%	3.14%	57.97%	58.15%	6.64%
	1.97	1.96	4.10	2.96	2.97	2.40
Assets^3	-0.46%	-0.46%	-0.08%	-1.73%	-1.74%	-0.19%
	-1.93	-1.92	-3.74	-2.94	-2.96	-2.27
(Assets - threshold) × 1(Assets ≥ $250MM)				9.02%	9.00%	1.23%
				2.43	2.42	1.46
(Assets - threshold)^2 × 1(Assets ≥ $250MM)				6.14%	6.19%	0.12%
				2.60	2.61	0.14
(Assets - threshold) × 1(Assets ≥ $500MM)				-4.61%	-4.68%	-0.28%
				-2.17	-2.18	-0.30
(Assets - threshold)^2 × 1(Assets ≥ $500MM)				10.62%	10.65%	1.35%
				2.59	2.60	1.39
R-squared	4.05%	4.02%	2.50%	4.52%	4.41%	2.39%
Bank fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Number of banks	7,516	7,516	7,940	7,516	7,516	7,516
Number of observations	47,703	47,703	45,374	47,703	47,703	47,703

Note: Panel OLS regression based on (1), and IV estimates are based on the panel instrumental variables regression in (2) and (3). "CAP" is the risk-based Captial ratio, "T1CAP" is the Tier 1 risk-based Capital ratio and "EC/TA" is Equity Capital as a percentage of Total Assets. Restricted to banks that have capital and leverage ratios that are more than 1% above the "Well Capitalized" thresholds specified in the FDIC Rules and Regulations (see Table 1). Bank-level clustered T-statistics are shaded in grey.

Table 11: All measures, all banks, years 1997-2010, quartic polynomial and cubic splines

	Panel A: Profitability		Panel B: Loan loss and delinquency			Panel C: Capitalization		
Dependent Variable	ROE	NIM/TL	NPL/TL	CO/TL	PLLL/TL	CAP	T1CAP	EC/TA
Days between examinations	-0.92%	-0.26%	0.37%	0.05%	0.10%	-0.01%	-0.02%	-0.06%
	-3.80	-2.21	8.24	2.70	4.79	-0.04	-0.19	-0.84
Assets	-827.51%	200.86%	-17.17%	50.04%	27.26%	-4295.38%	-4297.61%	-454.60%
	-1.20	1.88	-0.44	0.98	0.70	-5.48	-5.50	-2.06
Assets²	121.86%	-30.36%	2.54%	-6.86%	-3.48%	592.45%	592.70%	61.93%
	1.17	-1.95	0.45	-0.96	-0.64	5.48	5.50	1.99
Assets³	-7.79%	2.01%	-0.17%	0.42%	0.19%	-36.23%	-36.24%	-3.76%
	-1.13	2.01	-0.48	0.95	0.58	-5.47	-5.49	-1.95
Assets^4	0.18%	-0.05%	0.00%	-0.01%	0.00%	0.83%	0.83%	0.09%
	1.09	-2.07	0.52	-0.92	-0.50	5.47	5.49	1.91
(Assets - threshold) × 1(Assets ≥ $250MM)	-7.37%	-1.75%	2.12%	0.34%	0.41%	-11.91%	-11.85%	-2.30%
	-1.51	-1.02	3.65	1.15	1.52	-4.79	-4.77	-2.05
(Assets - threshold)² × 1(Assets ≥ $250MM)	18.42%	10.07%	-9.02%	-1.43%	-2.26%	4.89%	4.56%	4.18%
	1.67	1.46	-4.52	-1.33	-2.38	1.01	0.94	1.41
(Assets - threshold)³ × 1(Assets ≥ $250MM)	-19.45%	-7.88%	8.32%	1.54%	2.26%	-14.15%	-13.77%	-4.92%
	-1.75	-1.27	4.30	1.50	2.45	-2.82	-2.73	-1.66
(Assets - threshold) × 1(Assets ≥ $500MM)	3.31%	2.31%	-2.25%	-0.45%	-0.74%	-7.60%	-7.64%	-0.47%
	0.78	1.44	-2.85	-1.22	-1.85	-3.15	-3.15	-0.38
(Assets - threshold)² × 1(Assets ≥ $500MM)	18.03%	7.74%	-8.59%	-1.63%	-2.45%	12.25%	11.75%	4.86%
	1.65	1.25	-4.22	-1.53	-2.56	2.48	2.36	1.58
(Assets - threshold)³ × 1(Assets ≥ $500MM)	16.74%	8.81%	-8.41%	-1.42%	-2.24%	1.75%	1.40%	3.57%
	1.59	1.39	-4.31	-1.37	-2.41	0.36	0.29	1.23
R-squared	2.91%	1.96%		3.14%	4.58%	7.66%	7.65%	3.33%
Bank fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of banks	8,306	8,306	8,294	8,295	8,294	8,306	8,306	8,306
Number of observations	59,209	59,209	59,144	59,146	59,145	59,209	59,209	59,209

Note: Panel OLS regression based on (1), and IV estimates are based on the panel instrumental variables regression in (2) and (3). "ROE" is Returns on Equity, "NIM/TL" is Net Interest Margin as a percentage of Total Loans, "NPL/TL" is Non-performing Loans as a percentage of Total Loans, "CO/TL" is Charge-offs as a percentage of Total Loans, "PLLL/TL" is Provision for Loan and Lease Losses as a percentage of Total Loans, "CAP" is the risk-based Captial ratio, "T1CAP" is the Tier 1 risk-based Capital ratio and "EC/TA" is Equity Capital as a percentage of Total Assets. Restricted to banks that have capital and leverage ratios that are more than 1% above the "Well Capitalized" thresholds specified in the FDIC Rules and Regulations (see Table 1). Bank-level clustered T-statistics are shaded in grey.

Table 12: All measures, banks within +/- 10 percentiles of the threshold, years 1997-2010

	Panel A: Profitability		Panel B: Loan loss and delinquency			Panel C: Capitalization		
Dependent Variable	ROE	NIM/TL	NPL/TL	CO/TL	PLLL/TL	CAP	T1CAP	EC/TA
Days between examinations	-1.65%	-0.33%	0.38%	0.07%	0.13%	-0.48%	-0.44%	-0.06%
	-5.00	-3.63	6.33	3.03	4.95	-3.30	-3.01	-0.70
Assets	-2466.05%	-3035.32%	1017.91%	426.06%	588.39%	-3172.98%	-2666.12%	-2260.52%
	-0.40	-1.50	0.98	0.97	1.22	-1.57	-1.33	-1.79
Assets²	216.32%	253.33%	-86.73%	-35.83%	-49.58%	263.58%	221.49%	187.39%
	0.43	1.51	-1.02	-1.00	-1.26	1.59	1.34	1.81
Assets³	-6.31%	-7.05%	2.46%	1.00%	1.39%	-7.30%	-6.13%	-5.17%
	-0.46	-1.52	1.06	1.02	1.29	-1.61	-1.36	-1.83
(Assets - threshold) × 1(Assets ≥ $250MM)	7.24%	1.55%	-1.84%	-0.67%	-0.93%	0.76%	0.61%	2.19E-05
	1.99	1.09	-2.58	-2.44	-3.11	0.43	0.35	0.00
(Assets - threshold)² × 1(Assets ≥ $250MM)	24.07%	17.34%	-7.12%	-2.11%	-3.06%	17.78%	15.20%	11.43%
	1.01	1.67	-1.87	-1.28	-1.72	2.21	1.90	2.35
(Assets - threshold) × 1(Assets ≥ $500MM)	-3.20%	-3.08%	1.42%	-0.32%	-0.07%	-8.65%	-8.15%	-3.26%
	-0.50	-1.27	1.25	-0.51	-0.11	-3.99	-3.78	-2.39
(Assets - threshold)² × 1(Assets ≥ $500MM)	16.39%	17.18%	-7.32%	-2.53%	-3.97%	22.03%	19.07%	13.54%
	0.52	1.48	-1.26	-1.09	-1.57	2.01	1.75	1.96
R-squared	6.34%		4.55%	9.59%	10.97%			5.02%
Bank fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of banks	2,068	2,068	2,066	2,066	2,066	2,068	2,068	2,068
Number of observations	8,567	8,567	8,558	8,558	8,558	8,567	8,567	8,567

Note: Panel OLS regression based on (1), and IV estimates are based on the panel instrumental variables regression in (2) and (3). "ROE" is Returns on Equity, "NIM/TL" is Net Interest Margin as a percentage of Total Loans, "NPL/TL" is Non-performing Loans as a percentage of Total Loans, "CO/TL" is Charge-offs as a percentage of Total Loans, "PLLL/TL" is Provision for Loan and Lease Losses as a percentage of Total Loans, "CAP" is the risk-based Captial ratio, "T1CAP" is the Tier 1 risk-based Capital ratio and "EC/TA" is Equity Capital as a percentage of Total Assets. Restricted to banks that have capital and leverage ratios that are more than 1% above the "Well Capitalized" thresholds specified in the FDIC Rules and Regulations (see Table 1). Bank-level clustered T-statistics are shaded in grey.