INCONSISTENT REGULATORS: EVIDENCE FROM BANKING*

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DECEMBER, 2013

Abstract

We find that regulators can implement identical rules inconsistently due to differences in their institutional design and incentives and that this behavior may adversely impact the effectiveness with which regulation is implemented. We study supervisory decisions of U.S. banking regulators and exploit a legally determined rotation policy that assigns federal and state supervisors to the same bank at exogenously set time intervals. Comparing federal and state regulator supervisory ratings within the same bank, we find that federal regulators are systematically tougher, downgrading supervisory ratings almost twice as frequently as state supervisors. State regulators counteract these downgrades to some degree by upgrading more frequently. Under federal regulators, banks report worse asset quality, higher regulatory capital ratios, and lower return on assets. Leniency of state regulators relative to their federal counterparts is related to costly outcomes, such as higher failure rates and lower repayment rates of government assistance funds. The discrepancy in regulator behavior is related to different weights given by regulators to local economic conditions and, to some extent, to differences in regulatory resources. We find no support for regulator self-interest, which includes "revolving doors" as a reason for leniency of state regulators.

Keywords: Banking Regulation, Supervision, Dual Banking, CAMELS, Financial Crisis, Financial Regulation, Institutions.

JEL Classification Codes: G21, G28.

*Acknowledgments: The authors would like to thank Larry Katz, Randy Kroszner, Ross Levine, Jesse Shapiro, Andrei Shleifer, Robert Vishny, and four anonymous referees for detailed comments. We also thank Alberto Alesina, Adam Ashcraft, Gadi Barlevy, Paul Beaudry, Matilde Bombardini, John Cochrane, Richard Crump, Josh Coval, Peter DeMarzo, Doug Diamond, Gene Fama, Mark Flannery, Gary Gorton, Bev Hirtle, Anil Kashyap, Cathy Lemieux, Thomas Lemieux, Christian Leuz, Jamie McAndrews, Evran Ors, Anna Paulson, Sam Peltzman, Gordon Phillips, Tomasz Piskorski, Raghuram Rajan, Uday Rajan, Rich Rosen, Philipp Schnabl, and Luigi Zingales, anonymous referees as well as seminar participants at Arizona, Arizona State, Bank of Canada, Berkeley, Brown, Chicago Booth (Finance and Applied Micro), the Chicago Fed, Columbia GSB, Darden, ECB, HBS, Harvard, Insead, Minneapolis Fed, Northwestern, NY Fed, Oregon, Princeton, SFU, UCLA, USC, UBC, and conference participants at AFA, Bocconi CAREFIN, CEPR Summer Symposium, NBER Political Economy, NBER Monetary Economics, Red Rock Conference, and JAR/NY Fed Conference for useful discussions. We are also grateful to Conference of State Bank Supervisors for useful discussions and feedback. Tanya Mann, Jonas Mishara-Blomberger, Justin McPhee, and especially Caitlin Kearns and Allen Zheng provided outstanding research assistance. The views expressed in this paper are those of the authors and do not necessarily reflect the views of the Federal Reserve Bank of New York or the Federal Reserve System.

I. INTRODUCTION

Does regulatory effectiveness depend only on written rules, or do the institutions that are entrusted with implementing those rules also matter for regulatory outcomes? This is a difficult empirical problem for several reasons. Since regulators' jurisdictions do not vary significantly over time, it is difficult to infer whether outcomes depend on rules, regulators' incentives, or both. In addition, regulated entities can often choose their regulators, further clouding this inference with selection bias. Finally, regulatory agencies often have overlapping jurisdictions and one cannot easily distinguish who is doing what.

In this paper we use a clearly identified setting in the context of U.S. banking and show that regulators play a key role in how effectively a rule is implemented. We show that regulators can implement identical rules inconsistently due to differences in their *"will"*—i.e., their institutional design and incentives—and that this behavior can adversely impact regulatory effectiveness. Several anecdotes suggest that inconsistent regulatory oversight can hinder its effectiveness, none more clearly than the demise in 2008 of the sixth largest U.S. bank at that time, Washington Mutual Bank (WaMu). According to a congressional investigation, the demise of WaMu resulted, to a large extent, from conflicting oversight by the bank's regulators that delayed corrective actions.[1] The endeavor of our analysis is to show that such conflicts in how regulators implement rules could be systematic.

The regulatory structure in U.S. banking provides a convenient laboratory for studying regulatory inconsistencies, as it involves oversight of commercial banks by two regulators—state and federal—with different institutional design and incentives.[2] These differences have been central in discussions on optimal banking regulatory design in the U.S. (see Scott 1977; Dixon and Weiser 2006), most recently in the fallout from the 2008 financial crisis. Proponents of a dual system of regulation point to synergies between local informational advantages of state supervisors and the broader national perspective of federal supervisors. It is also argued that competing supervisors allow for lower political interference, giving banks the choice of picking less "tyrannical" regulators, resulting in more efficient outcomes in the sense of Tiebout (1956). Critics of the dual system, on the other hand, suggest that such a complex system may produce regulatory arbitrage and result in a "race to the bottom" in terms of regulatory laxity (White 2011), as well as coordination issues between different regulators.

Empirical evidence validating or refuting these claims in banking has been lacking due to two main difficulties. First, it is hard to find comparable metrics of behavior across the myriad of

[1] See Committee on Homeland Security and Governmental Affairs (2010) for details on the tussle and on difference in incentives between WaMu's supervisors, the OTS and FDIC, in the run-up to WaMu's failure in September 2008.
[2] For instance, state regulators may care more about local economic conditions to preserve jobs in their states -- both in banking and other sectors. They may also have access to fewer resources to implement the rules relative to federal regulators. Finally state regulators may be more easily influenced by local constituents, for example, because only state regulators are directly funded through fees for conducting on-site examinations of state chartered banks.

dimensions affected by different regulators overseeing different firms, in particular complex entities such as banks. To overcome this issue, we rely in this paper on the easy-to-compare results of "safety and soundness" on-site examinations by regulators, which are a crucial micro-prudential supervisory tool. These examinations culminate in the assignment of a CAMELS rating, which summarizes the overall condition of a bank on a numerical scale applied to different components such as capital asset quality, management, earnings, liquidity, and sensitivity to market risk.[3] Second, and perhaps more challenging, a bank's regulatory setting is determined endogenously through its charter choice, and thus is driven by observable and unobservable bank characteristics. As a result, it is difficult to infer whether a bank picked the supervisor more suited to actions it intends to undertake, or whether the regulator itself changed the actions taken by a bank.

Our identification strategy exploits a legally determined rotation policy that assigns U.S. federal and state supervisors to the same banks at exogenously predetermined time intervals. This allows us to circumvent the issue of banks sorting into different regulatory settings. The policy on alternating examinations, which began on a state-by-state basis as early as the 1980s, was harmonized with the Riegle Act of 1994 and subsequent regulatory provisions. These laws and regulations were aimed at reducing compliance costs for regulators and banks, which would otherwise be burdened by on-site examinations by both regulators at the same time. The alternate examination programs (AEP) instead assign state-chartered commercial banks to fixed 12-month or 18-month rotations between state and federal supervisors. The rotation involves state regulators and the FDIC for nonmember banks (NMBs) and state regulators and the Federal Reserve (Fed) for state member banks of the Federal Reserve System (SMBs). These entities account for nearly 70% of all U.S. commercial banks and more than 27% of total commercial bank assets. Since the assignment of regulators is exogenous to the financial conditions of a bank, the AEP allows us to exploit within-bank variation to identify average difference in supervisory rating actions.

In our main test we study the systematic effect of supervisor identity on CAMELS. We find that federal supervisors are systematically more likely to downgrade ratings for the same bank relative to state supervisors. These effects are quantitatively large. Federal supervisors are twice as likely to downgrade relative to state supervisors, who in turn counteract federal downgrades to some degree by upgrading more frequently. While these effects are pervasive across the CAMELS subcomponents, they are the largest for the component where the potential for regulatory discretion is likely to be highest (management component, *M*).

[3] CAMELS ratings are a key input for several regulatory decisions such as the cost of FDIC insurance premia and access to the Fed's discount window and other government programs. In addition, regulators' licensing, branching, and merger approval decisions are based on these ratings as well (also see Peek, Rosengren, and Tootell 1999).

Next, we examine whether, on average, bank operations respond to the presence of a federal regulator relative to a state one, and find evidence of these effects. Following federal examinations, banks report higher capital ratios, an increase in expense ratios, a drop in their profitability, and a worsening of their asset quality, as measured by the ratio of delinquent and nonperforming loans.[4] We interpret these results as reflective of the supervisory authority being used by federal regulators in making a bank take corrective actions.

One could argue that supervisors of a different type regulating a given bank in rotation might be an efficient and cost-saving arrangement with, say, a less thorough or skilled regulator conducting a less extensive exam followed by a more detailed exam by a more rigorous regulator, much alike a "nurse/doctor" arrangement for routine physical check-ups. Alternatively, it is possible that federal and state regulators have an implicit "good cop/bad cop" arrangement that allows for richer information gathering from banks—federal regulators' toughness allows for better information to be gathered by state regulators, which in turn potentially allows for better implementation of regulation.[5] While these may be intriguing alternatives, we argue against both of these scenarios based on our findings. Instead, we find that inconsistent behavior of regulators seems to adversely impact the effectiveness with which regulation is implemented. A softer stance of state regulators relative to their federal counterparts is related to negative outcomes. States with more lenient local regulators relative to their federal counterparts experienced higher bank-failure and problem-bank rates, a higher proportion of banks that were unable to repay Troubled Asset Relief Program (TARP) money in the recent crisis, and a higher discount on assets of troubled banks that are liquidated by the FDIC. We find that past discrepancies between regulators are associated with an increased future likelihood of distress even when controlling for past ratings. This is consistent with the view that regulatory inconsistencies may give rise to costly outcomes due to delayed corrective actions.[6]

We also study the sources of regulatory differences by exploiting the substantial regional heterogeneity in the leniency of state regulators relative to their federal counterparts. While this analysis lacks the strong identification of our main tests, our results suggest that one main reason why state regulators may not crack down on banks as much as federal regulators do is that they care about the local economy, as indicated by the significant widening of the federal-state rating difference in tough local economic conditions. There is also some evidence that state regulators

[4] Some of these effects on balance sheet variables are detectable as the federal supervisory cycle approaches. This is reasonable since banks have a strong incentive to maintain good ratings, because their costs can go up with lower ratings. To the extent banks do "window-dress" for tougher federal regulators, our estimates on differences in ratings between federal and state regulators can be considered a lower bound of the true effect.

[5] It is worth noting that the Riegle Act was predominantly motivated by red tape reduction, and in no part of its text does it appear focused on the creation of an optimal mix of more and less lenient regulators. Our personal discussion of the matter with several supervision experts strongly supports this view.

[6] As we show, inconsistencies between regulators can induce variability in bank operations, potentially reducing transparency of bank balance sheets for agents in the economy who are unaware of the source of this variability, as the exact alternation schedule of regulators for each bank is not known to the public. Caballero, Hoshi, and Kashyap (2008) show that such opaque balance-sheet information can be costly and can adversely impact real allocations.

are softer in rating banks when they lack financial and human capital to implement the regulation. Finally, we find no support for the self-interest/regulatory capture hypothesis, which includes "revolving doors" as a reason for leniency of state regulators. We conclude by discussing the implications of these findings for optimal regulatory design, including the current debate on the redesign of banking regulation in the U.S. and Europe.

Our work is broadly related to several strands of the economics and finance literature. First, it is most directly related to work on regulatory design. The issue of the design of regulation spans from its early public-interest roots (Pigou, 1938) to the Chicago theory of Stigler (1971) and Peltzman (1976), who argued that regulation is often captured by the industry it is meant to regulate and is designed primarily for insiders' benefit, to the rent-seeking theory of regulation (e.g., Shleifer and Vishny 1999).[7] Most of this work (including in the context of banking) debates the pros and cons of different regulatory structures but provides surprisingly little systematic empirical evidence. Our work contributes to this literature by showing that regulators can be inconsistent and tracing the reasons and consequences of such behavior. Second, and more relevant to the issue of regulatory inconsistencies, this paper speaks to the literature in industrial organization that focuses on regulatory consistency and regulatory uncertainty (see Brennan and Schwartz 1982b; Viscusi 1983; Prager 1989; Teisberg 1993).

Third, this paper is connected to studies on regulatory arbitrage (Rosen 2003, 05; Rezende 2011) that suggests that banks actively shop for regulators who are likely to be softer on them through different channels, such as charter changes, mergers with other banks, or changing their location of incorporation. Other work in this area (Kane 2000, Calomiris 2006; White 2011) also discusses changes in regulatory standards due to competition between regulators. Such behavior by banks may induce a sizable selection bias when assessing the effects of regulatory actions. Our empirical design circumvents this issue and shows how such bias occurs and provides guidelines on causal estimates of the influence of regulators.[8] Finally, our work complements the empirical literature on the effects of banking regulation and supervision. Such work encompasses studies of developed economies (Jayaratne and Strahan 1996; Berger and Hannan 1998; Kroszner and Strahan 1999), as well as in developing financial sectors across the globe (e.g., see Beck et al. 2000; Barth et al. 2004).

II. U.S. BANKING REGULATION, ALTERNATING SUPERVISION AND DATA

II.1 An Overview of U.S. Banking and Regulation and Alternate Examination Policies

[7] For review of the public interest theory see Laffont and Tirole (1993), which also focuses on a modern take on regulation, encompassing the role of asymmetric information (also see Dewatripont and Tirole (1994), Boot and Thakor (1993), and Hellman, Murdock, and Stiglitz (2000)). The issue of centralized versus decentralized regulation, has been discussed in Martimort (1999), Laffont and Martimort (1999), and Laffont and Pouyet (2004).

[8] The literature on regulatory shopping and a race to the bottom extends beyond banking. For instance, see literature on shopping for rating agencies by issuers of mortgage-backed securities (e.g., Bolton et al. 2011).

Banks in the U.S. can choose between a national and a state charter. Only federal regulators, in particular the Office of the Comptroller of the Currency (OCC), supervise nationally chartered commercial banks. State-chartered banks are supervised both by state banking departments and federal regulators. The primary federal regulator of state banks is determined by their membership in the Federal Reserve System.[9] The Federal Reserve (Fed) supervises state member banks (SMBs), while the Federal Deposit Insurance Corporation (FDIC) supervises nonmember banks (NMBs). Until the 1980s, different charters implied significant differences in permissible activities and regulatory requirements, but over the years many of these differences have disappeared and banks mainly select their charter based on regulatory costs and regulators' accessibility (Blair and Kushmeider 2006; Bierce 2007).

Banking supervision in the U.S. relies on two supervisory pillars, off- and on-site monitoring, in conjunction with potential enforcement actions. In off-site monitoring, supervisors track banks' conditions through their regulatory filings, known as call reports. In on-site examinations, teams of examiners audit the content of these filings and gather more information, for example through reviewing banks' loan portfolios and operations and meeting with banks' management. On-site examinations culminate with a written report and the assignment of a CAMELS rating, which summarizes the conditions of a bank broken down into six components: capital adequacy, asset quality, management, earnings, liquidity, and sensitivity to market risk. Ratings for each of the six components and the composite rating are on a scale of 1 to 5, with lower numbers indicating fewer problems. Banks with a rating of 1 or 2 are considered in satisfactory condition and present few significant regulatory concerns. Banks with a 3, 4, or 5 rating, however, present moderate to extreme levels of regulatory concerns.

CAMELS ratings are not only the central and comparable output of banking supervision, but also a key input for a number of regulatory decisions. These include the cost of FDIC insurance premia and access to the Fed's discount window and other government programs, for example, small business lending and the Troubled Asset Relief Program (TARP). In addition, regulators' licensing, branching, and merger approval decisions are based on CAMELS. When in the course of on-site visits examiners uncover problems at banks, regulators can take supervisory actions ranging from informal to formal, up to removal of a bank's management and termination of deposit insurance. These actions can be taken and enforced by both federal and state regulators, depending on interagency agreements.

Cooperation between state and federal banking regulators has increased over time to curb supervisory costs for both regulators and banks, while safeguarding each supervisor's jurisdiction. The exogenous alternate examination policies between state and federal supervisors,

[9] Starting in the fall of 2011, the OCC also has primary supervisory oversight on savings and loan banks, which were previously supervised by the Office of Thrift Supervision (OTS). The Federal Deposit Insurance Corporation has secondary supervisory authority on all banks as the insurer of their deposits.

the key to econometric identification in our analysis, are a result of this process. In the early 1970s, state-chartered banks were examined annually both by state banking departments and federal banking agencies. In the mid-1970s, the FDIC began experimenting by alternating exams with banking departments in a few states to address the duplicative examination efforts (FDIC 1997). Based on these new policies, FDIC examiners could rely at times on results of state banking exams, eliminating the need for both regulators to audit the same bank in the same year. The Fed followed with similar policies in the early 1980s. These early exam-alternating efforts were somewhat sporadic and the timing of the alternations idiosyncratic. For example, the Federal Reserve allowed its examiners to rely on results of state examinations every other year for banks in good standing with assets between $500 million and $10 billion, in two out of three years for banks with assets between $100 million and $500 million, and in three out of four years for banks with assets below $100 million (SR 85-28 and FRRS 3-1531).

The standardization of the exam-alternating policies improved significantly in the 1990s as a result of two key acts of federal legislation. The Federal Deposit Insurance Improvement Act (FDICIA) of 1991 first codified that federal agencies could rely on state examinations in an alternate cycle if the appropriate agency determined that the state examination was sufficient for its purposes. The timing of the alternation in FDICIA was restricted to every other exam, and in 1994 the Fed adapted its rules to fully comply with this timing (FRRS 3-1531.1). In terms of applicability across states, Section 349 of the Riegle Community Development and Regulatory Improvement Act of 1994 required the Federal Financial Institutions Examination Council, or FFIEC—which is an interagency body that prescribes uniform banking regulatory principles and reports—to issue guidelines to standardize the acceptability of state examinations by federal regulators. The FFIEC issued guidelines in June 1995 recommending that federal agencies evaluate the completeness of the exam reports produced by state banking departments and evaluate the resources of the state agency as measured by their budgeting, examiner staffing and training, and accreditation by the Conference of State Banking Supervisors (CSBS), the association of state banking departments.

Following the FFIEC guidelines, federal agencies entered into cooperative agreements with state banking departments, or revised those already in place. These agreements are not public, but reports by the FDIC's Inspector General Office (Audits 99-032 and 04-013) discuss the evolution of the cooperation process. The FDIC was in alternate agreements with the vast majority of states, covering more than 90% of all banks, by the end of the 1990s. As of the mid-2000s only the states of Rhode Island and Vermont did not fall under cooperative agreements, and only states that chartered a small number of banks lacked a CSBS accreditation by mid-2000s.[10]

[10] Based on information from the CSBS public website, the states of South Carolina, South Dakota, New Hampshire, Rhode Island, Montana, and Nevada were not CSBS accredited at that time, and by 2010 (the end of our sample period) only Nevada, New Hampshire, Rhode Island and South Carolina were not accredited.

A small fraction of banks in states with an alternate examination program (AEP) are excluded from rotations. Based on the FDIC and Fed commercial bank examination manuals, which are available on their websites, only well-capitalized banks with CAMELS of 1 or 2 as of their last exam rotate under the AEP. In addition, banks with assets above $10 billion are excluded.[11] Finally, AEPs also exclude banks that recently switched charters, de novo banks (less than 5 years old), and banks that underwent a change in control in the 12 months prior to the exam. Outside AEPs, federal regulators examine banks either independently or jointly with states, and when the banks are found to be in less-than-satisfactory condition, exams occur more frequently. Finally, full-time on-site examiners typically examine year-round at the largest institutions outside AEPs.

In the empirical analysis we focus on banks that fall under the AEP to exploit the exogenous timing of the supervisory rotations. For these banks, since FDICIA, federal bank supervisors are required to conduct on-site examinations every 12 months. The act also allowed banks with assets below $100 million and a CAMELS of 1 to be examined every 18 months. The 18-month cycle was extended to banks with assets up to $250 million and CAMELS of 2 in 1997 following the 1994 Riegle Act, and the asset threshold was further expanded to $500 million in 2007 following the 2006 Financial Services Regulatory Relief Act.

II.2 Data and Descriptive Statistics on Rotation

In the empirical analysis we study exam results and conditions of banks that fall under the AEP. We use a unique data set from the National Information Center of the Federal Reserve covering results of all on-site exams conducted by U.S. banking regulators. Key data for our analysis are the examiner identity (FDIC, Fed, or state banking departments) and the CAMELS rating assigned at an exam. We merge this examination information with measures of the bank's balance sheet, profitability, and asset quality from call reports. We also use budget and other information about state banking departments obtained from the annual profiles of CSBS; state-level economic measures; and indicators of banking stress, such as failure rates.

We select the sample of banks based on the AEP rules described in the previous section. We exclude banks with assets greater than $10 billion and only select banks that in their most recent exam had a CAMELS of either 1 or 2. As a result, in our sample upgrades are from a rating of 2 to 1 and downgrades may occur from a rating of 1 to 2 or above (3, 4, or 5) or from a rating of 2 to 3 or above (4 or 5). If a bank's CAMELS is above 2 for a period of time, the bank is excluded but can be included again should its rating be upgraded back to 1 or 2. Rather than trying to apply all other special rules for exclusion from the AEPs (e.g. a change in control or a

[11] NMBs above $250 million, which amount to less than 20 percent of all NMBs, fall under the AEP but are often examined in joint exams with the state or the FDIC alternating in their lead role in the examination (FDIC-OIG Audit 04-013). We include these banks in the sample, but because of their limited weight in the sample our results do not hinge on this decision.

supervisory action), we exclude banks that have never had a rotation or have had non-standard standard on-site examination, such as targeted examinations, because these don't fall under the AEP. As we will see below, these selection criteria do a very good job at identifying a set of banks and exams that fall under the AEP.

The sample period starts in 1996:Q1 and ends in 2010:Q4. The start date is six months after June 1995, which is when the FFIEC released its guidelines for relying on state examinations. This small time gap is included to allow for new state-federal cooperation agreements to be signed, and modifications of old agreements to include the new FFIEC guidelines, which for most states were in already in place. While the dates of the cooperative agreements are not public, our results are robust to shifting the start date. In supplementary analysis discussed in the paper and available in an Appendix, we find that even pre-1994, state-federal supervisory effects on banks' ratings and conditions are qualitatively similar when we study the first supervisory rotation at the inception for each bank of the AEP. We report summary statistics for banks' characteristics and ratings in Table I.[12]

Figure I outlines the supervisory spell and timing of changes in CAMELS rating and bank characteristics. We define a supervisory rotation spell as the time between a regulator's on-site exam and the alternate regulator's exam. We use this definition throughout the paper. For CAMELS, which do not change between on-site exams under the AEP, we run regressions at exam frequencies. In contrast, we run regressions at quarterly frequencies for bank characteristics, which change every quarter, and thus compare average levels of the characteristics across federal and state regulatory spells.

Figure II reports the histogram of the length of rotation (solid bars) and examination (hollow bars) spells for the main sample used in our paper (Table II, column 3). Examination spells are similar to supervisory rotation spells, but rather than measuring the gap between supervisory alternations, they measure the time gap between on-site exams. For a bank that rotates between supervisors at each exam, the time gap between two consecutive exams and between supervisor rotations are the same. As mentioned above, there are several exceptions when the supervisors may not rotate at the exam date. Thus, the differences between the two histograms help assess the empirical frequency of alternations under the AEP in our sample. The histogram is shown separately for banks with minimum mandated exam frequencies of 12 and 18 months, which we classify using the minimum CAMELS and size threshold discussed in the previous section. Because the legislation only imposes a minimum frequency—that is a maximum time gap between two exams—examination may occur at the exact minimum

[12] The bank-level characteristics are: Tier 1 risk-based capital ratio, leverage ratio (Tier 1 capital as a share of total risk-unweighted assets), efficiency ratio (noninterest expense as percent of net operating revenue), return on assets, share of nonperforming loans to total loans, and delinquency rate of the loan portfolio. Delinquent loans include loans that are 30-plus days past due and loans in nonaccrual status, and nonperforming loans that are 90-plus days delinquent and loans in nonaccrual status.

frequency as well at a higher frequency (i.e. below threshold). We find that, consistently, nearly all banks that we classify as having an 18-month spell have examination spells below that threshold (right panel). In contrast, we do observe some banks in the sample classified as having a 12-month spell rotating at 5 or 6 quarters. This may be due to a mismatch between our definition and the size thresholds used in practice, which are not available to us (e.g., banks' assets may be as of exam-scheduling dates, that occur well before the actual exam dates). As well, this could also be due to the fact that regulators may not be able to fully comply at all times with the minimum mandated frequencies because of staffing issues at either federal or state offices, or to accommodate structural changes at the supervised institutions that may prolong an exam (FDICOIG 98-089).

Regardless, most importantly for our study, the two histograms in each panel show that nearly all (close to 95%) of supervisory rotation spells match the length of the examination spells. This implies that state and federal supervisors alternate in the data at each examination as is exactly predicted by the AEP. We also run robustness, restricting our sample to rotations where rotation and examination spells match and/or fall exactly at 4 and 6 quarters. As will become clear, we find no significant difference in the results relative to our main findings when we change the sample along these lines.

III. IDENTIFICATION STRATEGY

We now present our empirical model and describe our identification strategy. Consider a regulatory outcome variable of interest Y_{it} (e.g., the composite CAMELS rating) to be linearly determined by a vector of characteristics of bank i at quarter t, B_{it}, and by the characteristics of the supervisor S_{it} at quarter t according to:

$$Y_{it} = \alpha + \beta B_{it} + \sigma S_{it} + \theta_i + \lambda_t + c_{it} ,$$

including bank-specific fixed effects θ_i and quarter fixed effects λ_t. Let us consider within-bank/within-quarter deviations from averages to partial out all fixed effects. Representing the within deviations with lower-case variables and dropping bank-quarter subscripts, it follows:

$$y = \beta b + \sigma s + c . \qquad (1)$$

In the main specification, we consider two types of regulators (state and federal), and s is a dummy indicating the identity of the regulator. Vector b includes bank characteristics such as changes in the bank's ROA, capital ratios, or shifts in the management's composition.

The key challenge in estimating (1) is the selection bias resulting from a bank's chartering decision, for example whether to become a state or a national bank as a new bank, or even to switch charter at a later date (Rosen 2005). More formally, assume that the decision of choosing supervisor s by a bank with characteristics b is described by:

$$s = \gamma y + \delta b + u \ , \tag{2}$$

where y is a bank's expected regulatory treatment and u is an error term.[13] The resulting selection problem is similar to matching bias in empirical contract theory, as, for instance, studied by Ackerberg and Botticini (2002).[14] Given (2), regressing y on b and s in (1) results in biased coefficients due to $cov(s, c) \neq 0$.

Our identification strategy is based on the availability of a policy p guaranteeing that, for the set of state-chartered banks under the AEP that have rotating regulators, the assignment of a new regulator is predetermined by the policy rule

$$s = p + \eta \ , \tag{3}$$

with the following orthogonality condition

$$E(c|s) = 0 \ for \ i \in AEP, \tag{4}$$

rather than by (2). The error term η accounts for idiosyncratic shocks that may introduce variation in the implementation of the rotation policy, which, as noted in Section 2.3, include conflicting meeting schedules or other factors that lead to temporary unavailability of examiners. Conditional on the bank following the AEP and given (3) and (4), fixed-effects panel estimation of the parameter vector of interest $[\beta, \sigma]$ in (1) is unbiased and consistently estimated. Since (3) and (4) break the simultaneity of b and s that would have been implied by (2), we also study the effect of supervisor s on bank behavior b as measured by the parameter ξ in:

$$b = \xi s + v \ . \tag{5}$$

Before turning to the estimation results, let us discuss two important issues that relate to the interpretation of estimates obtained using our identification strategy. Aside from time and bank fixed effects, our main empirical specification of (1) only includes the identity of the regulator s. Estimates of σ will therefore measure both the *direct* effect of a supervisor on CAMELS rating and any *indirect* effect that the supervisor has on CAMELS rating by altering bank behavior. To see this, replace (5) in (1) to obtain:

$$y = (\beta\xi + \sigma)s + \beta v + c = \sigma' s + c' . \tag{6}$$

In our main specification we consistently estimate parameter σ', which captures all channels both direct σ and indirect $\beta\xi$, including those through unobserved time-varying bank

[13] An example of Equation (2) would be the choice by Countrywide Financial Corp. to become a thrift in 2007. As discussed in the Financial Crisis Inquiry Commission Report (2011, p. 174), Countrywide moved under OTS oversight because of the increased scrutiny on property appraisals under OCC and because of adverse views on option ARMs voiced by the Fed (both OCC and Fed were Countrywide's previous regulators).

[14] A main difference in our paper is our focus on selection issues arising both in changes and in levels, as opposed to selection arising in levels only. This excludes the possibility of using panel variation as a source of identification in our setting, while it is occasionally employed in matching models. See Ackerberg and Botticini (2002).

characteristics.[15] That said, we will also estimate specifications of (1) including a large set of observables *b*.

Our identification strategy could potentially suffer from the omission of dynamic interactions between regulators, such as expectations of federal regulators about subsequent behavior of state regulators. For instance, federal regulators could decide to preemptively downgrade the rating in expectation of a more lenient future state regulator. As a result, σ could only be recovered if information on the nature of the dynamic interaction across regulators were available. Absent such information, estimates of σ still represent consistent reduced-form equilibrium effects. We limit ourselves to such an interpretation here.

IV. EMPIRICAL RESULTS ON SUPERVISORY RATINGS AND BANK VARIABLES

4.1 Differences in Supervisory Ratings

In this section, we exploit the predetermined assignment of regulators for banks under the AEP to assess the effect of a supervisor's identity on the CAMELS rating obtained by a depository institution. More precisely, we estimate Equation (6), where *s* is a dummy variable that is equal to one when the regulator is federal and zero otherwise. As discussed in Section 2, because CAMELS can change only on the exam date, we use only the observation on that date for each supervisory spell.

Table II.A reports the results for the composite CAMELS rating for subsamples of NMB, SMB, and all state-chartered banks under the AEP. In addition, Table II.B reports estimates for each of the ratings' six subcomponents to detect possible deviations across the various dimensions scored, since state supervisors might emphasize different safety and soundness components relative to their federal counterparts. Each regression includes quarter and bank fixed effects, and standard errors are clustered at the state level in order to correct for both between-bank/within-state and within-bank serial correlation in the error terms.

The coefficient σ on the dummy variable for the presence of a federal regulator is statistically significant and positive with similar economic magnitude across the main specifications for the sample of NMB, SMB, and all state chartered banks (Table II.A, columns 1 through 5) as well as across CAMELS rating subcomponents (Table II.B, columns 1 through 6).

[15] It is worth noting that we could get some guidance on what this indirect effect in our context is likely to be. In particular, suppose we believe that—for whatever reason—regulators are different in how they rate the same bank, with one regulator being systematically tougher than another. As explained earlier, banks have a strong incentive to maintain good ratings because their costs, such as the insurance premium on deposits, can go up substantially with worse ratings. Thus, to the extent banks have some flexibility, they may change some elements of β in anticipation of the tougher regulator—i.e., do window-dressing—to get a reasonable rating. Under this scenario, the indirect effect would create a bias against finding any differences in supervisory ratings across the two regulators. Of course, besides changing β in anticipation of the tougher regulator's supervisory spell, a bank can also change β during the rotation spell. Consequently, pinning down the precise nature of indirect effect is difficult.

Federal regulators are tougher and systematically assign higher (that is, worse) CAMELS ratings to a bank. The largest difference is for the management (*M*) component, where supervisory discretion is likely to be highest.

To gauge the economic magnitudes of these estimates, it is important to account for the high persistence of the CAMELS ratings, since these ratings do not vary frequently for a bank. Comparing the within-bank coefficient estimates around the rotation with the within-bank standard deviation of the CAMELS rating (or its components) provided at the top of the tables reveals that the effects are very large. In particular, the effect of a switch from a state regulator to the Fed or to the FDIC is about a third of the within-bank standard deviation across specifications. Because of the similarity of the effects and to streamline the presentation below, we will focus on the pooled federal regulators regression (Table II.A, column 3) in subsequent analysis.

To assess the robustness of these findings, we consider two additional specifications. First we re-estimate the pooled federal dummy specification (Panel A, column 3) but using model (1) rather than (6). As discussed in Section 3, by including bank characteristics, specification (1) excludes from σ any indirect effect of regulator on ratings through these controls. Conditioning on the (logarithm of) banks' assets, as well as all other balance sheet, profitability, and asset quality, we find that the point estimate of σ is only slightly lower and remains highly statistically significant (Panel A, column 4). This finding implies that the direct federal regulator effect on CAMELS discussed in Section 2 accounts for about 90% of the total. Furthermore, this also suggests that selection effects of banks between federal and state regulators in our sample are likely to be small given the similarity between σ estimates with and without additional control. This is what one would indeed expect given the exogeneity of the regulator assignment rules under the AEP.

Next, we re-estimate the pooled federal specification, but constraining the sample to those exam-bank observations for which the length of the examination spells and the regulatory spells coincide. Specifically, for this sample, the federal and state regulators switch exactly at the time of the on-site exams. As shown in Figure II, the set of banks for which the two spells are different in the pooled federal sample is small. The number of observations drops by about 8% in the constrained sample (Panel A, column 3 versus column 5). More important, the point estimate of σ is identical to that in column 3, confirming our findings and highlighting that deviations from the AEP in our sample are exogenous and random (that is, the error term η in Equation (3) has these properties). We also find that our results are unaffected when we further condition the supervisor and examination spells to be exactly 4 or 6 quarters, or when estimating σ in a fixed-effect panel IV specification, where we instrument the regulator identity using the AEP assignment rule and the lagged regulator identity.

As a more intuitive and direct way of displaying the magnitudes of the results in Table II we next discuss raw frequencies of changes in CAMELS ratings by federal and state regulators in Table III. Conditional on a ratings change, the table shows which agency is more likely to downgrade (i.e., report a CAMELS increase) or upgrade (i.e., report a CAMELS drop). The results are reported for both the SMB and NMB subsamples, as well as for all banks together. The difference between state and federal regulators is striking. Fed and FDIC are at least twice as likely as their state counterparts to downgrade a commercial bank. For SMBs, 73% of the downgrades originate from the Fed and only 27% from the state regulator. For NMBs, 60% of the downgrades originate from the FDIC and only 40% from the state regulator. For the pooled sample, 62% of the downgrades originate from the federal regulator and only 38% from the state regulator. These patterns are accentuated when we restrict attention to harsher downgrades (i.e., include banks whose CAMELS ratings increase to 3, 4, or 5), for which we now find that 69% of downgrades are originated by federal regulators.

Notably, the Fed and the FDIC are also less likely to upgrade relative to the average state regulator (only 35% of SMB upgrades are Fed-originated and only 46% of NMB upgrades are FDIC-originated). Thus, federal regulators are systematically and unambiguously more stringent than their state counterparts, while state regulators counteract some of the federal regulator stringency by upgrading more frequently.

We showed in Table II that CAMELS ratings are higher in federal spells relative to state ones. Moreover, in Table III we found that federal regulators are systematically more likely to downgrade, while state regulators have a higher tendency to upgrade. We put all these results together in Figure III. For each exam observation at date t in the sample of Table II.A column 3, we track the evolution of the CAMELS following date t and in future exams by computing the average cumulative CAMELS change from the date t–1 rating.[16] The figure displays the average of this rating evolution when conditioning the date t rotation to be a federal spell (solid line) or for all exams (dashed line). For the solid (black) line, the gray vertical bars highlight dates that always have federal agency-led exams.

CAMELS ratings have increased on net in our sample, mainly, but not solely, as the result of the 2007-08 financial turmoil. The average evolution rating (dotted line) reflects this fact, with the average rating increasing by about a quarter of a notch from the first to the eighth rotation on average in a bank's life cycle (or about 8 to 12 years, depending on the size of the bank). As shown by the solid line, downgrades generally occur in federal spells, while upgrades occur in state spells. Because of the alternation between federal and state regulators, and given the

[16] As we lack future realizations of exams toward the end of the sample and truncate paths following an exit from the AEP for consistency, the number of observations underlying the average CAMELS evolution declines with each rotation, but is still based on a few thousand observations as of the last (eighth) rotation shown.

systematic difference in how these regulators rate the banks, this implies that the cumulative rating evolves over time in a saw-tooth pattern. Of course, this is only an average effect and not necessarily patterns that are realized in every bank. Indeed, from Table III, the standard deviation of a rating's change is about one, which implies that following the first exam, federal regulators are about 14% more likely to downgrade a bank, while state regulators are about 8% more likely to upgrade in the following exam.[17]

4.2 Regulators' Effects on Bank Behavior

In this section we examine whether, on average, bank operations respond to the presence of a federal regulator relative to a state one. One may reasonably conjecture that, in addition to imposing stricter ratings, federal regulators may impose more stringent capital allocations—that is, higher capital imposition (such as higher Tier 1 RBCR)—and better governance—that is, explicit booking of past delinquent and nonperforming loans, all at the expense of returns (i.e., resulting in lower ROA and higher expense ratio).[18] We employ information from call reports to formally test this proposition along three main dimensions of bank operations: regulatory capital, profitability, and asset quality.

As discussed in Section 2, we define a supervisory spell as the quarters between a regulator's on-site examination and the alternate regulator's exam. Since bank variables can change every quarter, the point estimate on the dummy variable (*Federal Agency*) measures the average difference in the value of that variable in a federal versus a state regulator spell.

The estimates of the regression specification (Equation (5)) are reported in Table IV. They confirm that bank behavior is affected in ways consistent with the earlier conjecture. The rotation from a state regulator to a federal regulator unambiguously produces an increase in Tier 1 RBCR and the regulatory leverage ratio (defined as Tier 1 capital divided by total risk-unweighted assets). In addition, we find that relative to state spells, federal regulatory spells see a drop in ROA and an increase in delinquent and nonperforming loans booked by the depository institution. Consistent with the lower ROA, we also find the expense ratio, measured as noninterest expense over net operating revenues, to be higher in federal regulator spells. This suggests that during federal regulator spells banks may be more likely to undertake costly adjustments such as increasing their loan loss provisioning. These results are consistent with federal regulators enforcing formal or informal corrective actions for problems that emerge

[17] To see this, note that we present cumulated CAMELS change from date 0. This change in at 0.14 at t =1 (first Fed) and 0.06 at t=2 (first State). Under the assumption that when a change occurs it is one notch, which is what Table III tells us, the change in cumulated mean equals the difference in probability of downgrades minus the upgrades in every spell (recall, higher CAMELS implies downgrades). Thus, on average the Fed is more likely to downgrade a bank with about 14% probability after its first exam. Because the cumulative CAMELS are about 0.06 at the subsequent state spell, on average, CAMELS went down about 0.08 during the state spell. Thus, state regulator must have upgraded on net about 8% of the times.

[18] There is a large literature that documents bank discretion in booking losses on its loan portfolio and the factors that influence such behavior. For instance, see Caballero, Hoshi, and Kashyap (2008) for Japanese banks and Kane (1989) and Kroszner and Strahan (1996) for U.S. banks.

during their examinations. Interestingly, we find no change in loan growth, which suggests that vis-à-vis state regulators, more-stringent federal regulators do not appear to limit credit supply. The economic magnitudes of the estimates that are statistically significant range between 3% and 5% of a within-bank standard deviation per extra quarter of federal regulator oversight.[19]

These magnitudes appear reasonable, especially given the short time interval available to banks between rotation spells. More important, because of the deterministic nature of the rotation rule, banks may attempt to smooth the impact on their balance sheet, profitability, and asset quality in anticipation of a regulator switch, for example by "window-dressing." In the working paper draft of this paper we find some evidence of anticipatory effect in the two quarters leading up to a switch from a state regulator to a federal regulator spell. Given the short time horizon between regulatory spells, it should not be surprising that such behavior is limited. Because the state spell includes some of these anticipatory effects, the point estimates in Table IV -- which measure the average difference in bank characteristics in a federal versus state regulatory spell -- also likely contain a downward bias of the total effect of a federal regulator.

V. ASSESING COSTS AND BENEFITS OF INCONSISTENT REGULATION

We have so far shown that the two types of regulators rate the same bank differently. It is not the case that one regulator is tougher sometimes and the other regulator is tougher at other times. Rather, the difference in how they assess a bank and provide their ratings is systematic. Given the nature of our empirical design, it is statistically implausible that these patterns occur because the federal regulator is more likely to confront banks precisely when they are not doing well. However, based on our evidence so far, it is difficult to assess whether federal regulators are being too tough, thereby imposing unnecessary costs to the banks, or whether state regulators are being too lenient, thus delaying implementation of corrective regulatory actions. In this section we attempt to address this issue.

V.1 Does State Regulator Leniency Have Consequences?

We start this section by illustrating that there are significant regional differences in the federal-state spreads. To this end, we extend specification (6) and instead of a single federal-state dummy S_{it}, which compares federal regulators with the average state regulator, we estimate fifty different federal-state contrasts. Figure IV reports the coefficients on the state dummy variable interactions for the federal regulators with their 95% confidence intervals. The estimated effects are above zero for the vast majority of states—that is, the federal regulators systematically assign

[19] We further analyze the nature of a bank's asset portfolio and components of ROA that are affected by the stricter governance imposed by federal regulators. In particular, we analyze the nature of delinquencies and nonperforming loans when we break the loan portfolios of banks into real estate loans—commercial and residential—and commercial and industrial loans (C&I). We find that the change in delinquency and nonperforming loans documented in Table IV is driven mainly by a change in real estate loans (both commercial and residential), while there is only limited variation in C&I loan quality around rotations. In addition, we examine the components of ROA that contribute to its change in Table IV. We find that increases in the provision for loan loss and noninterest expenses (with salaries being the largest component) largely contribute to this change.

higher CAMELS across states. In addition, there is substantial heterogeneity in laxity of state regulators relative to federal regulators across states—certain states appear less lenient than others—and it is this heterogeneity we want to understand in our subsequent analysis.[20]

To that end we explore the correlation between the strictness of federal regulators relative to their state counterparts—henceforth, the "federal-state spread"—and various outcome variables at the state level measuring either costs or benefits of regulatory strictness, such as bank failures and bank lending volume. Admittedly, interpreting these patterns causally would require assumptions on how the federal-state spreads are assigned across states. Moreover, for each of these measures—for instance, the rate of bank failures—one can argue that to balance adequate risk taking in the economy, the optimal rate of bank failures needs to be higher than zero. This makes it difficult to conclude whether a less lenient supervisory stance of states relative to their federal counterparts is good or bad. These caveats notwithstanding, we now try to assess how differences in the way state and federal regulators apply regulatory ratings on banks are related to real outcomes.

In Table V, we study the possible costs and benefits of inconsistent regulation by assessing the relation between the federal-state spread and bank failures in a given state. Previous research suggests that such failures hamper the proper functioning of the financial system and can stall real economic activity (Calomiris and Gorton 1991).[21] It is not immediately obvious whether the relative leniency of a state regulator would manifest itself in a higher bank failure rate in that state. On the one hand, even if state regulators are lenient, corrective actions by federal regulators could improve the health of a bank and reduce its chances of failure. On the other hand, state regulatory laxity may slow down timely corrective action, thereby increasing the chances of a bank failing in that state.

Table V.A presents estimates of the baseline CAMELS rating regression (column 3, Table II.A) augmented with interaction terms of the federal dummy with state-level measures of bank distress (different columns). We omit the coefficient on the uninteracted measures of state-level distress when we report the results in the table for brevity reasons. Each measure is standardized for ease of interpretation. Because of this standardization, the coefficients on the federal dummy are by construction equal to the baseline specification (column 3, Table II.A) up to small sample differences. We first calculate the *Failure Rate*, a variable that measures the

[20] Note that this analysis allows us to exclude the possibility that our results in Table II may have been driven by a specific subset of states. We also examined the heterogeneity within federal regulators by following an analogous procedure. Both Fed and FDIC prudential supervision activities are in fact organized by geographical divisions—specifically, by twelve regional Federal Reserve Districts and eight FDIC Regions. The specification in this case compared each federal regulator in its different regional districts against the "average" state regulator in that regional jurisdiction. No particular regional district appears to be driving our results (unreported for brevity).

[21] While bank failures are an important element in banking supervision and are frequently discussed in the context of banking crises, policy makers also want to ensure that harsh reserve requirements—which would reduce the frequency of such crises—do not end up hampering allocation of credit in the economy.

bank failure rate in the same state and quarter as the bank under consideration. As shown in column 1, the federal-state spread is larger in states with high bank-failure rates. In other words, states where bank-failure rates are high are also those where state regulators appear less willing to apply strict ratings relative to their federal counterparts. The economic magnitudes suggested by the coefficients are large—a one-standard-deviation movement in the bank failures in a given state is associated with about a 40% increase in the federal-state spread in ratings.

In the next column, we repeat this exercise, replacing bank failure rates with average problem-bank rates for each state and quarter. Problem banks capture the wider set of banks that have CAMELS of 4 or 5, which are considered by regulators to be in severe financial distress. Because actual bank failures are rare, policy makers and regulators frequently rely on problem-bank rates to gauge the condition of the banking system in a region. In column 2, we reestimate the regression, including the interaction of a dummy that indicates federal regulator presence with *Problem Bank Rate*, a variable that measures the problem-bank failure rate in the same state as the bank under consideration. The results are qualitatively similar to those in the first column and show that a one-standard-deviation movement in the bank failures in a given state is associated with about a 65% increase in the federal-state spread in ratings.

Next, we use a measure called *TARP (Troubled Asset Relief Program) Repayment* to capture potential costs of regulatory ineffectiveness. The notion behind this measure is that difficulty in repaying these government assistance funds—which were injected into the financial system to boost the banking sector's capitalization levels—may be indicative of the weakness of banks in a given state. For each state, the variable measures TARP funds that were repaid by banks in the same state as the bank under consideration from the onset of the program in 2008:Q3 to 2010:Q4, which marks the end of our sample. As shown in column 3, state regulators appear less willing to apply strict ratings relative to their federal counterparts in states where banks faced more difficulty in repaying TARP funds at the end of the sample period.

Finally, in column 4 we construct another measure to capture the potential costs of delayed regulatory actions. The measure, called *Asset Sale Discount*, represents the discount on sale of assets such as loans when FDIC liquidates or restructures troubled deposit-taking financial institutions. This variable is constructed using the information from liquidations for which FDIC makes the data public, averaging across such episodes during our sample period and in the same state as the bank under consideration. A larger discount potentially captures delayed intervention by regulators, which could result in reduced value of sold assets on account of fire sales.[22] As shown in column 4, which presents estimates of the baseline CAMELS regression, including the interaction of a dummy, states where bank assets were sold at high discounts

[22] This notion behind using this measure and test is similar to the WaMu example we discussed in the introduction. In particular, delayed regulatory intervention was considered to be one important factor that led to a large discount on the value at which the assets of WaMu were eventually sold relative to what policy makers believed was the true value of these assets (reflected somewhat in the book value of assets).

relative to their book value were also ones where state regulators appeared less willing to apply strict ratings relative to their federal counterparts. In column 5, we present a multivariate version where we include all the interaction terms together. The qualitative inferences presented earlier remain unchanged.

Concerning the costs of regulator stringency, it is worth reiterating that we have already assessed, in a setting similar to Table V.A, whether excessive regulatory stringency on the part of federal regulators is associated with reduction in the credit supply in the economy. As was shown in column 7 of Table IV, there is no relationship between supervisor identity and a bank's growth of new loans. Thus, excessive regulatory stringency by federal regulators is not statistically or economically associated with lower credit supply, at least in the short run.

So far we have assessed the relationship between the federal-state spread and various outcome variables contemporaneously. We now sharpen our analysis by exploring whether the relationship between the federal-state spread for a given bank and its subsequent performance holds in a predictive sense. We conduct such an exercise in Table V.B by predicting whether a given bank becomes a problem bank in a given quarter based on the average degree of inconsistency between regulator ratings in the past *excluding the quarter in which the problem status is measured*. We focus on problem-bank status because of the limited number of actual bank failure occurrences in the sample. This specification intends to capture scenarios where a large difference between federal and state ratings for a given bank results in delayed intervention at the bank level, with the latter proxied by the given bank becoming a problem bank. The explanatory variable, *Lagged Mean Difference*, is the lagged average difference between federal regulator and state regulator ratings for a given bank. As can be observed from column 1, it is indeed the case that banks where federal and state regulators have differed in their ratings in the past are more likely to become problem banks in the future.

In the baseline specification we control for bank and quarter fixed effects to account for bank time-invariant and macro effects that may affect bank survival probability. Nevertheless, it is possible that the relationship we find could reflect the (time-varying) state of the bank, which is not accounted for in these controls. Most important, because federal regulators are more likely to downgrade a bank, the predictability of the problem status may be the result of that finding and the fact that CAMELS ratings are persistent. To guard against this alternative, we control for the lagged level of the CAMELS ratings (*Lagged CAMELS*, column 2) and find a smaller estimated coefficient, but one still highly significant and economically large. Based on the parameter estimates, a one-notch increase in past ratings differences raises the likelihood of entering into problem-bank status by 6.3%.

An alternative interpretation of our findings could be that the CAMELS difference may just be a proxy for disagreement between the two regulators and that this disagreement may be

high for more complex banks that are harder to supervise and more likely to end in distress. We account for this possibility in column 3 by also including the lagged absolute value of the difference between the federal and state ratings (*Lagged Absolute Difference*) as a disagreement proxy. While we find the coefficient on the disagreement proxy to be positive and significant, the predictability of the lagged mean difference is intact. In addition to these alternative specifications we employ lagged mean difference using rolling, rather than expanding, windows and find very similar results.

In conclusion, we find that across states, laxity of state regulators relative to their federal counterparts is associated with worse economic outcomes as measured by bank distress. We also find that when federal regulators have been harsher than state regulators in a bank's past, that bank is more likely to end in distress in the future—suggesting that regulatory inconsistencies are associated with a worsening of future outcomes at the bank level. Overall, while the cross-state patterns presented in this section are correlations, the collage of evidence is consistent with the view that differences in how state and federal regulators apply regulatory ratings on banks could have real economic costs in terms of delayed regulatory intervention.

V.2 Is the Existing Regulatory Structure a Desirable Arrangement?

The findings so far can help inform on the efficiency of the existing structure of dual banking regulation. In general, even in the face of the evidence of Section 5.1 one could argue that multiple entities regulating a given bank in rotation might be a desirable arrangement. For example, it might simply be efficient to monitor banks for more serious and less serious concerns in alternation if less thorough examination (say, by state regulators) were significantly less resource intensive than the more intense ones (say, by federal regulators). Alternatively, it might be the case that federal and state regulators have an implicit "good cop/bad cop" arrangement allowing for richer information gathering from banks—federal regulators' toughness allows for better information to be gathered by state regulators, which in turn potentially allows for better implementation of regulation.[23] On balance, the collage of evidence in Section 5.1 suggests that leniency of state regulators relative to their federal counterparts is related to costly consequences and proxies for delayed corrective actions, which generally go against these rationales. We now discuss several additional pieces of evidence that reinforce this conclusion.

First, the findings in Section 4 work against the first rationale. Indeed, the evidence in Tables II and III, which are summarized in Figure IV, show that while federal regulators are significantly tougher than state regulators, there is also, on average, a counteraction of these downgrades by state regulators, who are more likely to upgrade. This is hard to rationalize as an efficient arrangement involving a more thorough regulator examining banks infrequently, since

[23] It is worth reiterating that, as discussed in detail in footnote 3, the good-cop/bad-cop scenario is unlikely given that the Riegle Act was predominantly motivated by red tape reduction. Nevertheless, to be comprehensive, we entertain this alternative in our discussion and in interpreting our evidence.

in that case the less thorough regulator would be unlikely to actively undo decisions of the more thorough regulator. Moreover, as we will show in Section 6, the extent of leniency of state regulators relative to federal regulators is accentuated when banks confront adverse local economic conditions, which also goes against a potential efficient arrangement. Such an arrangement would not likely have a less thorough regulator supervising banks, when this regulator is at its most lenient, and when the banking system likely needs thorough supervision the most.

Second, we provide additional evidence in the Internet Appendix against the second rationale by examining the change in regulatory behavior around the passage of the Riegle Act of 1994. At the introduction of the rotation policy, a bank moves from having simultaneous federal and state oversight every period to having federal and state oversight in alternation. This setting allows us to assess whether the alternation arrangement is as effective as having the tougher, more competent regulator examine the bank at all times. Specifically, we can trace the changes in regulatory outcomes and bank behavior resulting from the change in regulatory structure. The necessary assumption for this comparison is that when a bank is supervised by both regulators concurrently before the Riegle Act, the supervision philosophy of the more stringent regulator dominates. This assertion is plausible, since in its absence banks would systematically fail examinations by the stricter regulator, a pattern not observed in the data. Under this assumption, the period around the passage of the act provides us a setting where a bank moves from having a yearly on-site examination by the federal regulator to having the federal exam every two years.

Using a difference-in-differences analysis of a matched sample of a state-chartered bank before and after the start of the rotation and national banks (which are always OCC supervised) around the Riegle Act, we find that relative to the control group, state-chartered banks enjoy lower (i.e., better) CAMELS ratings after state and federal regulators begin rotating. The treatment banks marginally reduce their equity relative to assets, enjoy lower red-tape costs as measured by a lower expense ratio, and have marginally higher ROAs. State-chartered banks also display a reduction of the share of nonperforming loans and delinquencies reported in their balance sheets. This analysis highlights that while the alternation arrangement may have saved regulatory costs for supervisors and banks, it resulted in a more lenient regulatory regime when compared to a system where a “bad cop” supervised the bank at all times. As shown earlier, such leniency in supervision is associated with costly outcomes.

VI. WHY DO DIFFERENCES EXIST BETWEEN REGULATORS?

In this section we exploit cross-state and time-series variation to assess why differences between state and federal regulators may exist in the first place. These differences may be a result of many factors that may influence their incentives. First, state regulators may care more about the local economy—for instance, to preserve jobs both in banking and in the real economy—and as a result do not want to crack down on banks, especially at times of harsh

economic conditions. Second, state regulators may lack resources—financial as well as human capital—to implement written rules. Finally, state regulators might be lenient because they may be captured, *à la* Stigler (1971) and Peltzman (1976), by the banks they supervise. To streamline our discussion we follow the framework of Shleifer (1996) and refer to these potential reasons for lenient state regulator behavior as "local interests," "weakness of regulators," and "self-interest of regulators."

Local Interests

We start our analysis by examining whether state regulators are softer relative to federal regulators because they care more about the local economy than their federal counterparts. We test this alternative by exploring whether the federal-state spread is accentuated when the local economy is doing poorly, since these are instances when motives, such as preserving jobs in banking or in the real economy, should become more important. In particular, state regulators might be softer on banks during harsh economic times since higher CAMELS ratings may boost the likelihood of a bank closure (or a merger with a bigger out-of-state bank), which could result in loss of local banking jobs and lending activity. In contrast, federal regulators may care more about nationwide systemic stability rather than worrying about the geographical allocation of banking jobs and credit.

Table VI.A presents estimates of the baseline CAMELS rating regression (column 3, Table II.A) augmented with interaction terms of the federal dummy with time-series measures of state-level economic conditions. Coefficients on the uninteracted measures of economic activity are included in the specification but are again omitted for brevity reasons when we report the results in the table. We also standardize each measure to ease interpretability across columns and panels of Table VI, which also implies that the coefficient on the uninteracted federal dummy is equal to the baseline specification up to small sample differences. We consider two measures of local economic activity: the unemployment rate at each date in the state in which a bank is located (*Local UR*) and the 12-month growth rate of the state's house price index (*Local HPI*). In what follows, all controls are standardized, so that the coefficients indicate the economic impact of a one-standard-deviation increase in the controls.

Consistent with the local-interests hypothesis, we find that the interaction term for unemployment rate is positive, while the interaction term for house price growth is negative. In other words, the federal-state spread is significantly larger in states where (and when) the local economy is doing poorly, which is exactly when it is most costly for local regulators to be tough on local banks. Point estimates suggest that, all else equal, a one-standard-deviation increase in local unemployment (house price growth) results in the state regulators being more lenient relative to their federal counterparts by around 50% (20%).

Weakness of Regulators

Next, we assess whether softer ratings by state examiners could be due to a lack of resources—financial or human capital—necessary to implement the written rules. It is not immediately obvious that lack of resources related to supervision in a given state would lead to leniency. For instance, a lack of resources in a given state could result in more noisy, but unbiased, ratings by regulators in that state relative to federal regulators. On the other hand, a lack of resources may be associated with better ratings if supervisory resources were greater in exams of banks under stress.

As we did for the local-interests analysis, we interact the federal dummy in our baseline CAMELS rating regression (column 3, Table II.A) with measures of state supervisors' resources: (a) the state banking department budget relative to assets under supervision (*Budget Ratio*); (b) the ratio of the number of commercial bank examiners relative to the number of SMBs and NMBs in the state (*# Examiner Ratio*); (c) the percentage of the state department budget spent in training the examiners (*Training Ratio*); and (d) the percentage of commercial bank examiners with more than five years of experience (*% Experienced Examiner*).

The results in Table VI.B (columns 1 to 3) show that states with higher expenditure on staff training display less lenient behavior relative to federal regulators (i.e., state and federal regulators behave more similarly). This result is consistent with the notion that financial resources invested by a state in training its examiners are reflected in how the examiners rate the banks. In addition, states with a higher share of experienced examiners appear less lenient relative to their federal regulators. We interpret this result as suggesting that teams with a higher number of experienced examiners are better able to understand bank operations.[24] We find no systematic relation between leniency of state regulators relative to federal counterparts and the number of examiners per bank or the banking department budget per dollar of assets supervised in that state.

In columns 2 and 3, we employ information from alternative sources to construct a measure that captures the quality of examiners in a given state regulatory agency. We construct this measure by using public information on the career path of state examiners (their online CVs), with the subsequent move into the private financial sector signaling a better-quality examiner pool. The measure *Turnover* captures the proportion of examiners in a given state who were able to find a subsequent job in the financial sector. As the results show, the quality of examiners is related to the state regulators' leniency. States where examiners are not as mobile into the financial sector—indicating worse quality of examiners—are also more lenient on banks.

[24] This result could also be interpreted as being inconsistent with the revolving-door hypothesis—the notion that regulators might be soft on entities they regulate in hope for future career opportunities in such entities. Under the revolving-door argument one would expect more experienced examiners—ones who are more likely to garner future career opportunities at regulated entities—to be more lenient. However, as discussed, we do not find this to be the case. We will discuss this hypothesis in detail when we explore the "corruption" alternative later in this section.

Overall, the results in this section suggest that lack of financial and human resources might be resulting in more lenient state regulators relative to federal ones. The economic magnitudes of the finding are large, though smaller than what we obtained when we tested the "local interests" alternative. For instance, a one-standard-deviation increase in the quality of examiners, as measured by *Turnover,* results in the state regulators being softer than their federal counterparts by around 25%.

Self-Interest of Regulators

We now evaluate whether state regulators might be softer on banks because of corruption or capture. Following the empirical approach above, we consider different measures of corruption and institutional quality from previous literature. In particular, in columns 1 and 3 we use: (a) a measure of Glaeser and Saks (2006), based on federal convictions of government officials for corrupt practices, to capture the propensity for misconduct across states (*Corruption Measure*); (b) a state ranking of integrity created by the Better Government Association, which takes into account freedom of information laws, whistleblower protection laws, campaign finance laws, gifts, trips, and honoraria laws, and conflict of interest laws (*Integrity Rank*); (c) a state's institutional quality score from Karabegovic and McMahon (2005), which is based on security of property rights, the fairness and balance of the judicial system, the strength of contract enforcement, and limits on government's ability to transfer wealth through taxation and regulation (*Institutional Quality*); and (d) average state and local expenditures per capita (*Expenditure per capita*), which Glaeser and Saks argue are more likely to be higher in environments that are conducive to corrupt practices.

The results in Table VI.C (columns 1 and 3) show that a state's corruption index, its integrity rank, and its institutional quality do not correlate with how lenient the state's examiners are relative to federal regulators. There is some evidence that states with poorer fiscal policy tend to have more lenient state bank regulators, though it is hard to conclude from this result that such states are more captured. In unreported tests we also experimented with other measures of corruption that have been used in prior literature (e.g. average tax burden in a state, defined as total state tax revenues as a percent of personal income), but similarly do not find them to explain federal-state spreads.

In columns 2 and 3, we assess the role of revolving doors between regulators and banks, which is commonly discussed as a reason for leniency of regulators. We do so by including in the regression the *Turnover* measure, which, as explained earlier, is the proportion of examiners in a given state who were able to find a subsequent job in the financial sector. We also construct two measures that are related to the organization structure of the examination team, since prior literature argues that there could be a connection between centralized and hierarchical organizations and the extent of corruption they promote (Shleifer and Vishny, 1993). We proxy for the hierarchical structure of local regulators by using standard measures of *Organizational*

Span (average number of examiners per manager) and *Organization Depth* (number of layers between the top manager and the examiner at the entry level).

The results in columns 2 and 3 refute the revolving-door hypothesis since states with lenient regulators are not the ones where regulators are more likely to find a career opportunity in the financial sector. Rather, these states had a lower turnover rate into the financial sector, which, as explained earlier, potentially supports the notion that these states may have examiners of worse quality. We do not find systematic evidence that the organization structure measures help explain the federal-state spread. Overall, we find no support that regulator self-interest is driving leniency of state regulators relative to their federal counterparts.

Other Bank-level Evidence: Fees, Lending Portfolio and Ownership Status

We end this section by discussing bank-level evidence that may drive the federal-state spread. We study this evidence separately because, while useful, these factors will not help separate earlier hypotheses. We also estimate a regression that includes all the key explanatory variables that serve as proxies for the competing explanations discussed thus far.

The first factor we consider relates to the difference in the nature of payments across state and federal regulators for their supervision activity. In particular, while states finance their prudential supervision efforts through the use of assessment fees, the Fed and the FDIC are not funded through assessment fees and receive no payment from member or nonmember banks for their on-site examinations.[25] We assess whether such fees might be important in influencing the leniency of state regulators relative to federal ones. Since we lack information on the exact fees collected by state regulators, we assess whether local regulators are more lenient toward larger banks as measured by the logarithm of bank assets (*Size*), given that assessment fees collected by for their supervision are proportional to bank assets (Blair and Kushmeider 2006). Next we study whether relative leniency of state regulators depends on how large the lending portfolio of the bank is relative to its assets (*Loans/Assets*). In addition, as argued by Morgan (2002), banks with larger loan portfolios may be more opaque. Consequently, this measure may indicate more opaqueness. We also analyze whether ownership of a bank by local constituents, as measured by whether a bank is publicly traded or privately held (*Public*), affects its assessment by state regulators relative to federal ones. As shown by estimates in Table VI.D (columns 1, 2, and 3), state regulators are about 30% more lenient with banks that are one standard deviation larger, as well as with privately held banks. These findings are consistent with all three hypotheses

[25] Mere presence of fees for state regulators does not immediately imply that there should be a leniency on the part of local regulators relative to federal ones. In particular, reputational effects could provide a strong reason for state regulators to care about the accuracy of their supervisory activity. Moreover, federal regulators carry out other activities that interact with their supervisory role and, like fees for local supervisors, could potentially make them lenient in their supervisory decisions relative to state regulators. See the Federal Reserve Chairmen (Bernanke 2010, Greenspan 1997), Peek, Rosengren, and Tootell (1999), and White (2011) for discussion of the impact of the Fed's monetary policy decisions and its supervisory activities, and Goodhart (2001) for FDIC's role in setting premiums on deposit insurance and its supervisory activity.

discussed earlier.[26] The results also reveal that asset composition is not associated with differences in the federal-state spread.[27]

"Horse Race" among Competing Explanations

As a horse race among competing explanations, we estimate a regression for variables that we found to be significant in all panels of Table VI: *Size*, *Public*, *Local UR*, % *Experienced Examiner*, *Turnover*, and *Expenditure per capita*. The estimates (Table VI.D, column 4) indicate that a bank's size, its public status, and the state's unemployment rate and expenditure per capita are the only significant explanatory variables. Abstracting from the fiscal expenditure, which as discussed above is harder to interpret, the local UR has the largest economic effect on the federal–state spread among all variables. Our results with public status and a bank's size lend further support to the local-interests hypothesis. In sum, by exploiting the significant cross-sectional and time-series variation in the federal-state spread, we find that regulatory discrepancy is related to different weights given by regulators on local economic conditions and, to some extent, to differences in regulatory resources. Moreover, we find no support for a self-interest hypothesis, which includes "revolving doors" as a reason for leniency of state regulators.

VII. BROADER APPLICABILITY AND IMPLICATIONS FOR OPTIMAL REGULATORY DESIGN

VII.1 How Broadly Applicable Are Our Findings? Analysis Including All Banks and Thrifts

Our analysis so far makes inferences based on the quality of supervision under state and federal regulators for state-chartered banks under the AEP. It is natural to ask how our inferences would change if we were to include bank movements into (from) state charter from (into) national charter. Moreover, we have not discussed the external validity of our estimates—that is, how our results would apply to an average bank in the economy. We now undertake these tasks.

[26] The bank-size result is consistent with the self-interest hypothesis because big banks pay more fees to state regulators, although such resources may not be necessarily earmarked for bank supervision and may accrue to a general state fund. It is also supportive of the local interest hypothesis, since big banks employ and lend more in the aggregate. Moreover, because relocation and charter-switching costs are largely fixed, large banks are also more likely to escape state regulator jurisdictions, vis-à-vis smaller banks. Finally, this evidence is potentially consistent with the weak-regulators hypothesis, since big banks are also more complex entities to understand. The public status results support the local-interests hypothesis since private banks are likely to be funded by constituents within state boundaries. It also supports the weak-regulators hypothesis since publicly traded banks might be easier to evaluate, given that other signals about their quality—such as market prices—are available to regulators.

[27] In addition to loan-to-assets, in unreported results we also study other proxies for bank opacity proposed by Morgan (2002) as drivers of rating agencies' split ratings: cash-to-assets and trading-assets-to-assets. Again, we do not find that these help explain the federal-state spread. One possible interpretation of this finding is that supervisors have much stronger auditing powers than the ratings agencies. For example, supervisors audit a mandated minimum fraction of loans, while the loan book cannot be audited by ratings agencies.

We extend the sample of banks used to estimate the parameters of the CAMELS rating regression to all U.S. depository institutions and regulators. Specifically, the sample now includes examination results for national commercial banks and thrifts, which are supervised by the OCC and OTS. As discussed in more detail in the Internet Appendix, we find that point estimates on the Fed and FDIC dummies are close to those in Table II.A once we include time and bank fixed effects. Because of the availability of the benchmark from Table II.A, which is not plagued by selection issues, we conclude that the nature of unobservable factors that drive the bank sorting decision into and from the state charter in our sample might be time-invariant. This analysis offers an insight that is relevant for the literature on regulatory shopping and bank sorting. It shows that inclusion of bank and quarter fixed effects may be a sufficient correction to account for charter shopping.

Understanding how our results apply to an average bank in the economy requires knowing how the quality of banks in the state-chartered system—on both observables and unobservables—compares to the quality of an average bank in the economy. For example, estimates in Table II.A could be lower for an average bank in the economy if weaker banks chose state charters. The reason is that weaker banks would be more likely to be rated harshly by the tougher federal regulators, thus accentuating the rating difference relative to what an average bank might receive.

While the quality of banks in state charter cannot easily be compared to that of the average bank in the population, we find evidence that the differences in regulator behavior across states impact a bank's initial charter choice. In particular, as discussed in detail in the Internet Appendix, states with significantly more new bank entries are also the ones where local regulators are softer relative to federal ones. Thus, the sorting of banks across various states is related to the regulatory rating environment inside that state. We will revert to this finding when we discuss the implications for optimal regulation next.

VII.2 Implications for Optimal Regulation and Conclusions

This paper shows large and significant differences in how regulators implement identical rules due to differences in their "will"—that is, their institutional design and incentives. Because of the exogenous assignments of regulators for banks under the alternate examination program (AEP), these differences in regulatory outcomes reflect regulators' views and incentives rather than bank heterogeneity and selection. Our main analysis is conducted on state-chartered banks. As mentioned earlier, these banks account for the majority of depository institutions in the U.S. and a significant fraction of total bank assets. In addition, state charters remain the most common chartering type for de novo banks today, accounting for about 85% of all new banks in 2010. Thus, the results of this paper are directly applicable to the part of the banking sector that is important both in terms of its economic size and in terms of its impact on financial stability.

As evidenced in the discussion in the previous section, our results have implications for banking regulation outside state charters. In particular, because in a dual banking system banks can pick their charter, understanding the optimal regulation of large banks in national charters cannot be done in a vacuum, without understanding regulation inside state charters. Indeed, while large banks tend to choose federal charters, the U.S. banking system has experienced a continuous osmosis of banks, both large and small, from one charter to another. For example, among the largest institutions, Chase Manhattan Bank switched to a state charter in 1995, and its successor, JPMorgan Chase Bank, returned to a national charter in 2004. Similarly, a large number of small banks have switched from federal to state charters, reportedly following the merger of the OTS and OCC in October 2011. The movement of banks between national and state charters makes the behavior of regulators inside each of these systems interdependent. Our results show that in picking state charters, banks face a tougher regulator only half the time. Thus, banks with national charters must be garnering benefits that are large enough to offset the lenient supervisory treatment they might otherwise obtain in the state charter. Understanding and quantifying these benefits remains a fruitful area of future research.

Our findings cannot directly speak to whether having competing regulators in a banking system is optimal. However, the difference-in-differences analysis of the onset of the AEP with the 1994 Riegle Act in Section 5.2 replicates a scenario where we move from a regime with a single regulator to a regime where multiple heterogeneous regulators share oversight. Based on our results, the stricter arm's-length regulator faces pressure on its supervisory decisions not only due to potential charter shopping decisions of banks, but also due to dilution of control from the presence of more lenient local regulators. Thus, sharing oversight among regulators may also have costs, similar to what competition among regulators introduces via a "race to the bottom" in terms of regulatory laxity.

More broadly, our findings speak to the current debate on the redesign of banking regulation in Europe. Based on current proposals of a supranational banking union, the European regulatory system could acquire very similar features to state charter banking in the U.S., with state supervisors continuing to act as the sole chartering authority and a dual supervisory system composed of national and a single supranational, or "federal," European authority possibly residing with the European Central Bank or the European Banking Authority. As discussed by Garicano (2012), the impetus for this redesign follows, to some extent, from the unwillingness of national regulators to take prompt corrective actions at key junctures of the European banking crisis. Our findings can help understand the tradeoffs involved in the allocation of supervisory powers and responsibilities in this new redesigned dual system.

While national regulators in Europe, who have been the sole supervisors for many years, may have an informational advantage relative to a federal supervisory authority, their "will" is as important in determining the efficacy of written regulations. In particular, by overweighing their

constituents, local regulators may be unwilling to crack down on distressed banks in tough economic conditions—especially banks that may be “too big to fail” for their local economies. An optimal dual regulatory arrangement for Europe will need to trade off the experience of local (national) supervisors with the local regulator bias that makes them softer toward local banks, or at a minimum bake in tripwires to allow for intervention by arm’s-length regulators, especially in tough times and for larger depository institutions.

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Table I: Summary Statistics of State Member Banks and Non-state Member Banks

The table presents summary statistics for state chartered banks in our sample. NMBs are non-member banks, SMBs are state-member banks and "all" include both SMBs and NMBs. The sample selection criteria are discussed in detail in Section 2. The bank-level characteristics are: Tier 1 risk-based capital ratio, leverage ratio (Tier 1 capital as a share of total risk-unweighted assets), efficiency ratio (noninterest expense as percent of net operating revenue), return on assets, share of nonperforming loans to total loans, and delinquency rate of the loan portfolio. Delinquent loans include loans that are 30-plus days past due and loans in nonaccrual status, and nonperforming loans that are 90-plus days delinquent and loans in non-accrual status. Sample period is 1996:Q1-2010:Q4.

	NMBs				
	Mean	**SD**	**Min**	**Max**	**Count**
Tier1 RBCR	16.19	7.89	3.35	81.49	39150
Leverage Ratio	10.46	3.47	2.25	38.91	39150
ROA	1.02	0.91	-7.08	5.97	39150
Efficiency	65.60	17.74	0	210.49	39150
Delinquency rate	2.69	2.43	0	22.35	39150
Non performing to loans	1.12	1.46	0	14.73	39150
% Loan Growth	2.63	6.11	-29.19	47.14	39150
CAMELS rating	1.65	0.62	1	5	39150
	SMBs				
	Mean	**SD**	**Min**	**Max**	**Count**
Tier1 RBCR	15.90	7.76	3.64	81.24	5062
Leverage Ratio	10.29	3.26	2.62	35.23	5062
ROA	1.01	0.83	-6.97	5.05	5062
Efficiency	66.20	17.48	0	208.07	5062
Delinquency rate	2.41	2.11	0	16.95	5062
Non performing to loans	1.00	1.26	0	14.93	5062
% Loan Growth	2.77	5.75	-25.41	46.92	5062
CAMELS rating	1.72	0.58	1	5	5062
	All				
	Mean	**SD**	**Min**	**Max**	**Count**
Tier1 RBCR	16.16	7.87	3.35	81.49	44212
Leverage Ratio	10.44	3.45	2.25	38.91	44212
ROA	1.02	0.90	-7.08	5.97	44212
Efficiency	65.67	17.71	0	210.49	44212
Delinquency rate	2.66	2.40	0	22.35	44212
Non performing to loans	1.10	1.44	0	14.93	44212
% Loan Growth	2.65	6.07	-29.19	47.14	44212
CAMELS rating	1.66	0.61	1	5	44212

Table II: Impact of Supervisor Identity on CAMELS Ratings

The table reports results from an OLS regression that examines the effect of the federal regulator being the lead regulator in on-site examination on combined CAMELS rating (Panel A) and each subcomponent (Panel B). The sample selection criteria are discussed in Section 2. All regressions include quarter and bank fixed effects and the standard errors are clustered at the state level. *** significant at 1% level. ** significant at 5% level. * significant at 10% level. Sample period is 1996:Q1-2010:Q4.

Panel A: Combined CAMELS Ratings

	(1)	(2)	(3)	(4)	(5)
	Combined CAMELS	**Combined CAMELS**	**Combined CAMELS**	**Combined CAMELS**	**Combined CAMELS**
Within-bank mean	1.751	1.694	1.700	1.694	1.699
Within-bank SD	0.303	0.312	0.311	0.296	0.318
FRB	0.097***				
	[0.016]				
FDIC		0.095***			
		[0.012]			
Federal Agency			0.095***	0.081***	0.095***
			[0.011]	[0.009]	[0.011]
Other controls				Yes	
Constrained sample					Yes
Cluster	State	State	State	State	State
Fixed effects	Quarter	Quarter	Quarter	Quarter	Quarter
	Bank ID	Bank ID	Bank ID	Bank ID	Bank ID
Observations	5161	39943	45104	44212	41530
Adjusted R-squared	0.509	0.470	0.474	0.570	0.472
# of banks	731	5896	6627	6559	6499
# of clusters	41	50	50	49	50

Panel B: Sub-components of CAMELS Ratings

	(1)	(2)	(3)	(4)	(5)	(6)
	Capital rating	**Asset rating**	**Management rating**	**Earnings rating**	**Liquidity rating**	**Sensitivity rating**
Within-bank mean	1.501	1.578	1.809	1.898	1.573	1.689
Within-bank SD	0.324	0.373	0.299	0.330	0.298	0.274
Federal Agency	0.074***	0.083***	0.119***	0.078***	0.057***	0.083***
	[0.010]	[0.016]	[0.010]	[0.011]	[0.009]	[0.008]
Cluster	State	State	State	State	State	State
Fixed effects	Quarter	Quarter	Quarter	Quarter	Quarter	Quarter
	Bank ID	Bank ID	Bank ID	Bank ID	Bank ID	Bank ID
Observations	45104	45104	45104	45104	45104	39205
Adjusted R-squared	0.461	0.402	0.432	0.491	0.468	0.405
# of banks	6627	6627	6627	6627	6627	6309
# of clusters	50	50	50	50	50	50

Table III: Tabulation of composite CAMELS upgrades and downgrades

The table reports the frequency of composite CAMELS upgrades and downgrades by the lead supervisory agency (FRB, FDIC or State) that took the regulatory action. Harsh downgrades are defined as downgrades such that the post-regulatory-action CAMELS equals 3 or above. The sample selection criteria are discussed in Section 2. Sample period is 1996:Q1-2010:Q4.

SMBs, FRB-STATE rotating						
	CAMELS upgrade		CAMELS downgrade		CAMELS harsh downgrade	
	Freq.	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
FRB	111	35	477	73	199	73
STATE	208	65	178	27	75	27
Total	319	100	655	100	274	100
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
ΔCAMELS	-1	0	1.09	0.33	1.22	0.49

NMBs, FDIC-STATE rotating						
	CAMELS upgrade		CAMELS downgrade		CAMELS harsh downgrade	
	Freq.	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
FDIC	1222	46	3188	60	1687	69
STATE	1413	54	2103	40	769	31
Total	2635	100	5291	100	2456	100
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
ΔCAMELS	-1	0	1.13	0.39	1.29	0.54

Federal Regualtors-STATE rotating (SMBs and NMBs)						
	CAMELS upgrade		CAMELS downgrade		CAMELS harsh downgrade	
	Freq.	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
Federal	1333	45	3665	62	1886	69
STATE	1621	55	2281	38	844	31
Total	2954	100	5946	100	2730	100
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
ΔCAMELS	-1	0	1.13	0.39	1.28	0.53

Table IV: Impact of Supervisor Identity on Bank Variables

The table reports results from an OLS regression that examines the effect of federal agencies being the lead regulator in on-site examination on banks' measures of asset quality, profitability, and loan growth. Column 1 looks at the Tier 1 Risk-Based Capital Ratio, column 2 looks at the Leverage Ratio, column 3 looks at Expense (Efficiency) Ratio, column 4 looks at the ROA, column 5 looks at Non-Performing Loans share, column 6 looks at Delinquency Rates, and column 7 looks at New Loan Growth. The sample selection criteria are discussed in Section 2. All regressions include quarter and bank fixed effects and the standard errors are clustered at the state level. *** significant at 1% level. ** significant at 5% level. * significant at 10% level. Sample period 1996:Q1-2010:Q4.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Tier1 RBCR	**Leverage Ratio**	**Efficiency Ratio**	**Return on Assets**	**NPL to total loans**	**Delinquency Rate**	**Loan Growth**
Within-bank mean	16.091	10.436	67.077	0.956	1.162	2.657	2.959
Within-bank SD	2.610	1.280	7.528	0.468	0.845	1.139	2.861
Federal Agency	0.066*	0.046*	0.326***	-0.017***	0.038***	0.044**	-0.050
	[0.038]	[0.024]	[0.093]	[0.006]	[0.011]	[0.017]	[0.052]
Cluster	State	State	State	State	State	State	State
Fixed effects	Quarter	Quarter	Quarter	Quarter	Quarter	Quarter	Quarter
	Bank ID	Bank ID	Bank ID	Bank ID	Bank ID	Bank ID	Bank ID
Observations	222836	223118	223215	222766	222775	223522	222137
Adjusted R-squared	0.813	0.774	0.550	0.411	0.374	0.458	0.188
# of banks	6610	6612	6620	6620	6605	6617	6596
# of clusters	49	49	49	49	49	49	49

Table V: Assessing costs and benefits of inconsistent regulation

This table reports results from an OLS regression that examines the effect of the federal regulators being the lead regulatory agency on CAMELS rating. Panel A assesses the costs and benefits of inconsistent regulation on state level variables that include Bank Failure rate, Problem Bank rate, TARP Repayment rate, and Asset Sale Discount. The level effects on interacted variables are included in all the regressions, but omitted in the table for sake of brevity. Panel B presents bank level regressions that predict the propensity of a bank becoming a problem bank in a given regulatory spell as a function of lagged CAMELS Federal-State spread at the bank level. All regressions include quarter and bank fixed effects and the standard errors are clustered at the state level. The sample selection criteria are discussed in Section 2. *** significant at 1% level. ** significant at 5% level. * significant at 10% level. Sample period 1996:Q1-2010:Q4.

Panel A: Costs and Benefits using State Level Variables

	(1)	(2)	(3)	(4)	(5)
	Combined CAMELS				
Federal Agency	0.094***	0.094***	0.093***	0.095***	0.092***
	[0.011]	[0.010]	[0.010]	[0.010]	[0.009]
Federal Agency * Failure Rate	0.037***				0.001
	[0.010]				[0.012]
Federal Agency * Problem Bank Rate		0.060***			0.054***
		[0.008]			[0.010]
Federal Agency * TARP Repayment			-0.020*		-0.017*
			[0.011]		[0.010]
Federal Agency * Asset Sale Discount				0.013**	0.016**
				[0.006]	[0.007]
Cluster	State	State	State	State	State
Fixed Effects	Quarter	Quarter	Quarter	Quarter	Quarter
	Bank ID	Bank ID	Bank ID	Bank ID	Bank ID
Observations	45065	45104	40823	44017	39999
Adjusted R-squared	0.556	0.563	0.558	0.551	0.568
# of banks	6619	6627	5995	6452	5866
# of clusters	49	50	41	46	39

Table V: Assessing costs and benefits of inconsistent regulation (contd.)

Panel B: Costs and Benefits using Bank Level Variables

	(1)	(2)	(3)
	Pr(Bank becomes a "Problem Bank" in a quarter)		
Within-bank mean		0.028	
Within-bank SD		0.128	
Lagged Mean Difference	0.120***	0.063***	0.057***
	[0.022]	[0.014]	[0.013]
Lagged CAMELS		0.122***	0.119***
		[0.010]	[0.010]
Lagged Rolling Mean FED Abs Diff.			0.035***
			[0.009]
Cluster	State	State	State
Fixed Effects	Quarter	Quarter	Quarter
	Bank ID	Bank ID	Bank ID
Observations	160097	160097	160097
Adjusted R-squared	0.267	0.401	0.401
# of banks	4992	4992	4992
# of clusters	48	48	48

Table VI: Why do differences exist between regulators?

The table reports the results from an OLS regression that examines the effect of the federal regulator being the lead regulator in on-site examination on combined CAMELS rating. Panels A, B and C test the "local interests," "weakness of regulators," and "self-interest of regulators" hypotheses outlined in the text. Panel D presents additional evidence using bank level data as well as a horse race between the competing explanations. The level effects on interacted variables are included in all the regressions, but omitted in the table for sake of brevity. We include quarter and bank fixed effects and the standard errors are clustered at the state level. *** significant at 1% level. ** significant at 5% level. * significant at 10% level. Sample period 1996:Q1-2010:Q4.

Panel A: Local Interests

	(1)	(2)	(3)
	Combined CAMELS		
Federal Agency	0.096***	0.096***	0.096***
	[0.011]	[0.011]	[0.010]
Federal agency * Local UR	0.065***		0.054***
	[0.009]		[0.010]
Federal agency * Local HPI		-0.050***	-0.020**
		[0.010]	[0.008]
Cluster	State	State	State
Fixed Effects	Quarter	Quarter	Quarter
	Bank ID	Bank ID	Bank ID
Observations	45065	45065	45065
Adjusted R-squared	0.483	0.480	0.485
# of banks	6619	6619	6619
# of clusters	49	49	49

Panel B: Weakness of Regulators

	(1)	(2)	(3)
	Combined CAMELS		
Federal Agency	0.096***	0.094***	0.095***
	[0.011]	[0.009]	[0.010]
Federal agency * Budget Ratio	-0.002		-0.003
	[0.004]		[0.004]
Federal agency * # Examiner Ratio	0.007		0.002
	[0.006]		[0.004]
Federal agency * Training Ratio	-0.010*		-0.007
	[0.006]		[0.007]
Federal agency * % Experienced Examiner	-0.013*		-0.015*
	[0.007]		[0.008]
Federal agency * Turnover		-0.023*	-0.026**
		[0.012]	[0.011]
Cluster	State	State	State
Fixed Effects	Quarter	Quarter	Quarter
	Bank ID	Bank ID	Bank ID
Observations	43157	43023	41618
Adjusted R-squared	0.474	0.470	0.470
# of banks	6354	6299	6098
# of clusters	45	40	37

Table VI: Why do differences exist between regulators? (contd.)

Panel C: Self-Interest of Regulators

	(1)	(2)	(3)
	Combined CAMELS		
Federal Agency	0.107***	0.087***	0.088***
	[0.010]	[0.026]	[0.025]
Federal agency * Corruption Measure	0.002		-0.006
	[0.009]		[0.008]
Federal agency * Integrity Rank	0.011		0.005
	[0.010]		[0.010]
Federal agency * Institutional Quality	0.010		0.009
	[0.009]		[0.009]
Federal agency * Expenditure per capita	0.070***		0.068***
	[0.010]		[0.010]
Federal agency * Organization Span		-0.014	-0.014
		[0.009]	[0.011]
Federal agency * Organization Depth		0.002	0.003
		[0.004]	[0.003]
Federal agency * Turnover		-0.024**	-0.023*
		[0.010]	[0.012]
Cluster	State	State	State
Fixed Effects	Quarter	Quarter	Quarter
	Bank ID	Bank ID	Bank ID
Observations	40440	41921	37603
Adjusted R-squared	0.483	0.470	0.479
# of banks	6333	6151	5884
# of clusters	47	39	39

Table VI: Why do differences exist between regulators? (contd.)

Panel D: Other Bank Level Evidence and "Horse-Race" among explanations

	(1)	(2)	(3)	(4)
	Combined CAMELS			
Within-bank mean				
Within-bank SD				
Federal Agency	0.094***	0.095***	0.094***	0.105***
	[0.011]	[0.011]	[0.011]	[0.010]
Federal agency * Size	0.034***		0.041***	0.013**
	[0.008]		[0.008]	[0.006]
Federal agency * Loans/Assets	0.000		0.002	
	[0.006]		[0.006]	
Federal agency * Public		-0.010*	-0.023***	-0.016***
		[0.005]	[0.005]	[0.005]
Federal agency * Local UR				0.034***
				[0.010]
Federal agency * % Experienced Examiner				0.004
				[0.009]
Federal agency * Turnover				-0.016
				[0.012]
Federal agency * Expenditure per capita				0.047***
				[0.012]
Cluster	State	State	State	State
Fixed Effects	Quarter	Quarter	Quarter	Quarter
	Bank ID	Bank ID	Bank ID	Bank ID
Observations	45034	45102	45034	38575
Adjusted R-squared	0.479	0.474	0.479	0.487
# of banks	6615	6626	6615	6020
# of clusters	49	50	49	40

Figure I: Supervisory Rotation Spells and Timing

This figure outlines supervisory rotation spells and the timing of changes in CAMELS rating and bank characteristics. A supervisory rotation spell is defined as the time between a regulator's on-site examination and the alternate regulator's examination. CAMELS ratings do not change between on-site exams under the alternate examination program (AEP), and are thus fixed across quarters within a spell. Bank characteristics instead vary in the quarters within a spell.

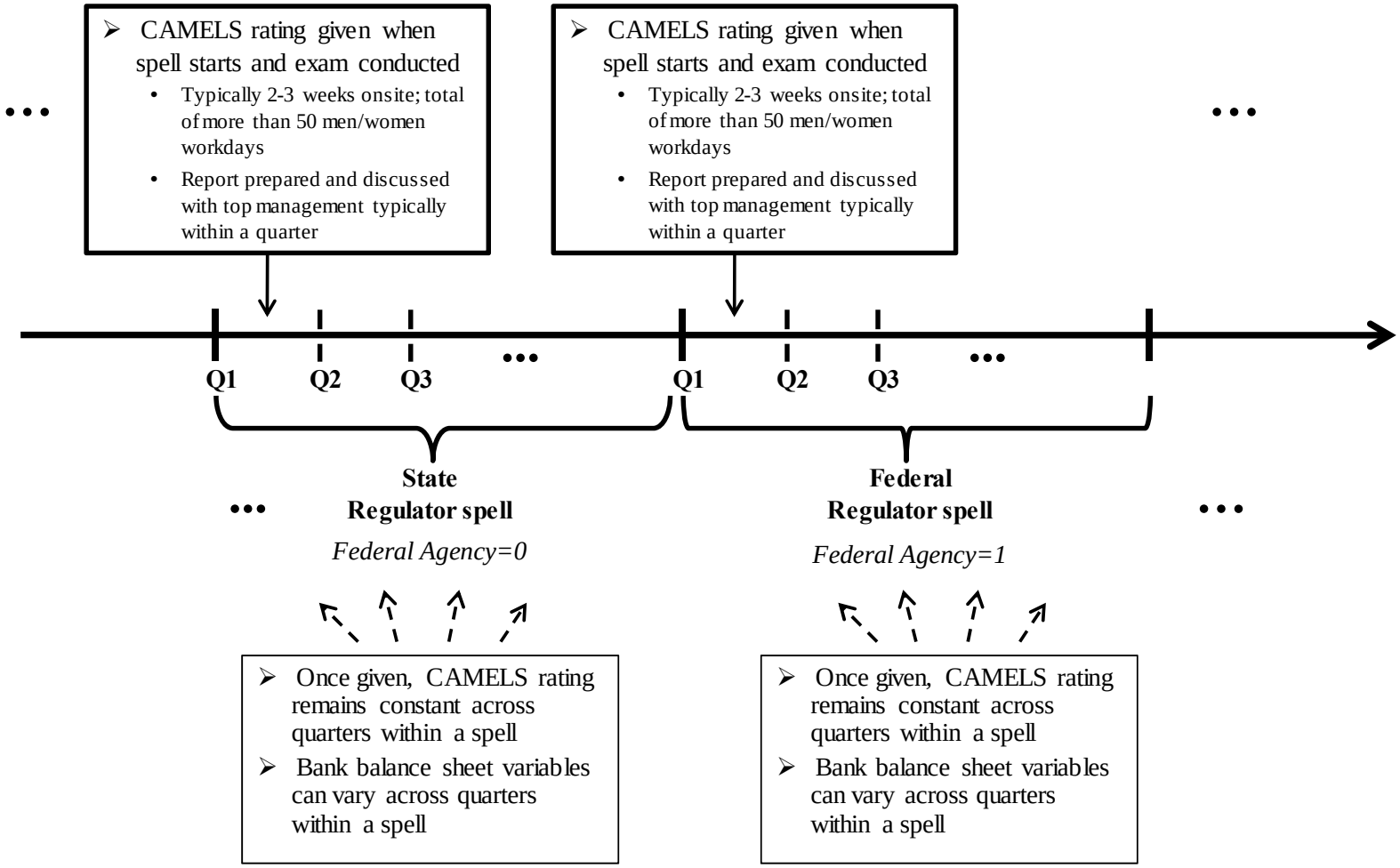

Figure II: Distribution of Regulator Rotation and Examination Spells for SMBs and NMBs

This figure shows histograms of durations of rotation and examination spells for the sample used in Table II (column 3). A rotation spell is defined as the time interval between when a federal (state) supervisor examines a bank on site and when the alternate state (federal) supervisor examines the same bank. An examination spell is, instead, the time interval between two consecutive on-site examinations. The overlap in the masses of the two distributions shows the extent to which rotations between federal and state supervisors occur at every onsite exam as predicted by the alternate examination program (AEP).

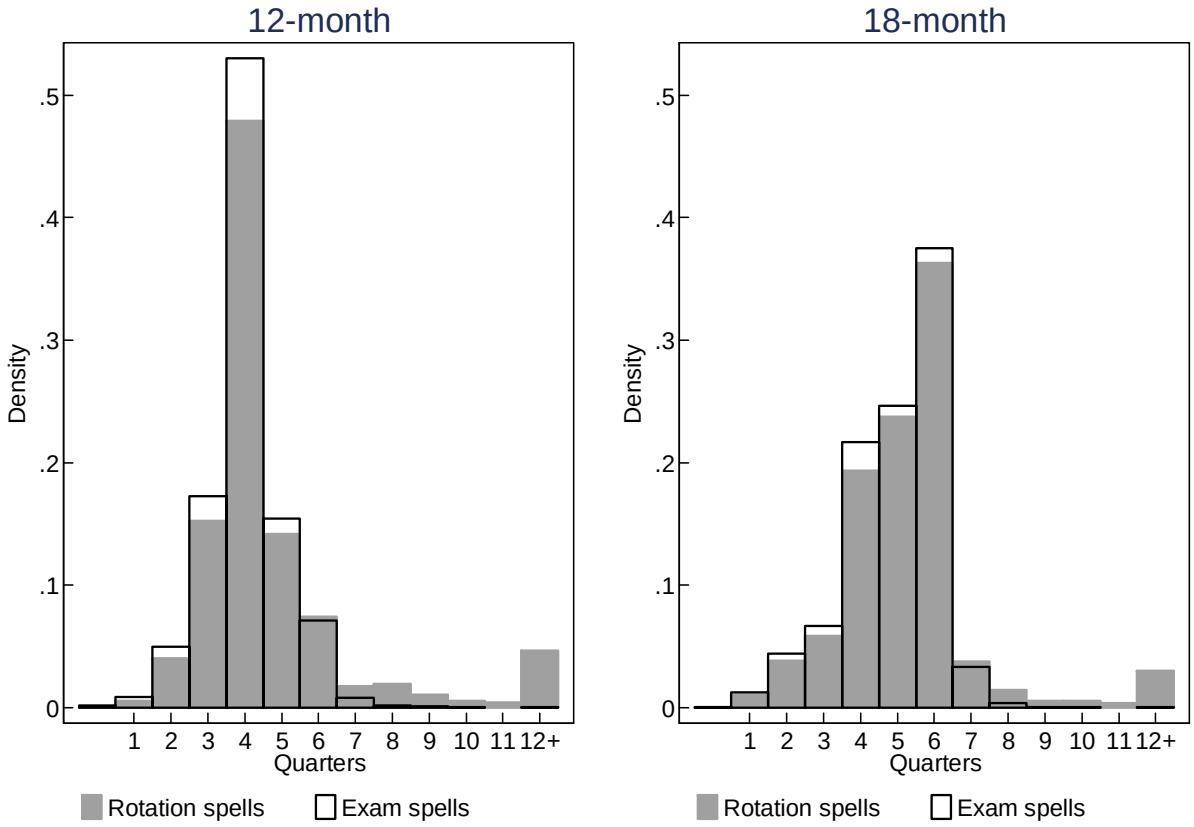

Figure III: Average evolution of CAMELS within a Bank

This figure plots the average cumulative CAMELS rating change from the level prior to each exam to the level at the exam (shown as the first rotation) and afterwards (the second to the eighth rotation). The sample corresponds to Table II (column 3). The solid line shows the average cumulative CAMELS evolution for all examinations in the sample. The dashed line, instead, shows the average cumulative CAMELS evolution conditional on the first exam being conducted by a federal agency. Because the examiner rotates at each exam, federal exams occur at odd rotations (highlighted as the grey bars), while state rotations occur at even rotations.

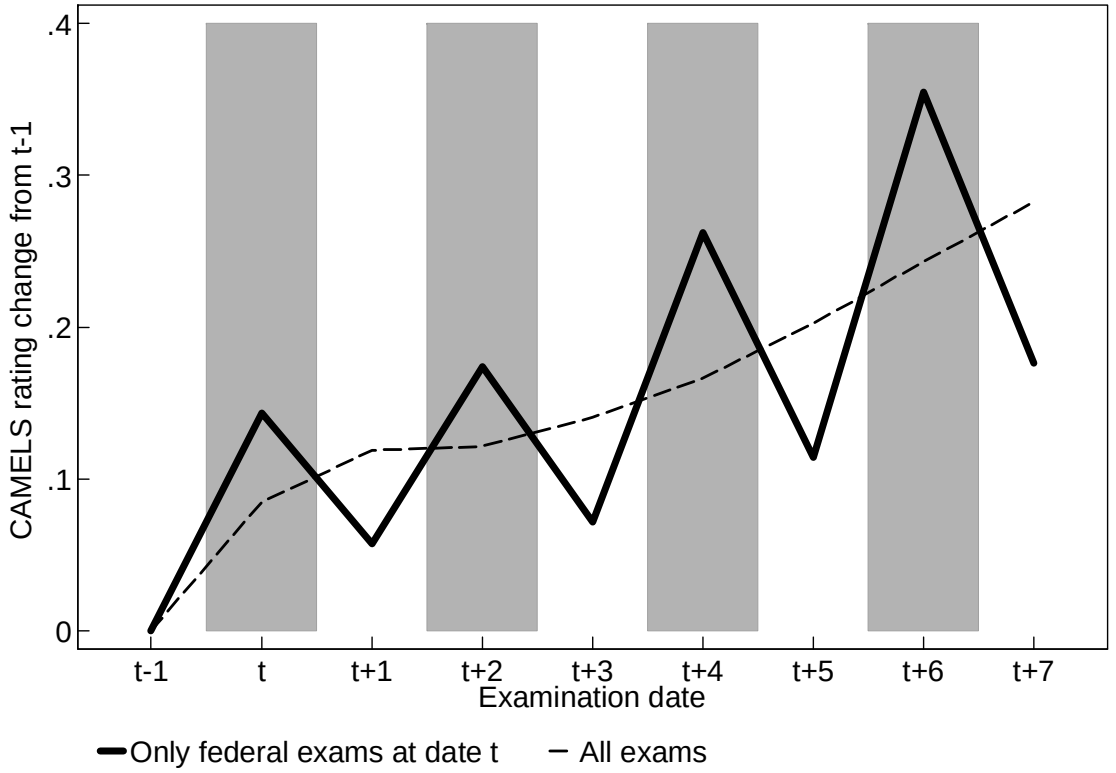

Figure IV: Federal and State CAMELS Spread across States

This figure is obtained from a regression specification analogous to Table II (column 3), which interacts the Federal Agency dummy with State effects. The figure shows the coefficients on the state dummy variable interactions for the federal regulators. Bars represent 95% confidence intervals clustered at the state level around the point estimates of the state contrasts.