THE EFFECTS OF BANK REGULATOR SWITCHING ON SUPERVISORY RATINGS*

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Abstract

I examine whether commercial banks improve their supervisory ratings by switching regulators. I establish a causal effect from switching on ratings using an empirical strategy that controls for selection bias. Regulators rate banks better after they change charters and this effect is large for both national and state charters. Also, banks that switched charters in the past fail more often than others even after controlling for their ratings. These results suggest that banks can arbitrage ratings by switching regulators and are consistent with regulators competing for banks by rating incoming ones better than similar banks that they currently supervise.

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1. Introduction

Commercial banks in the United States choose their regulators and can switch among them over time, potentially undermining their supervision and regulation. When a bank switches regulators this alters the regulators' powers, which depend on which banks they supervise, and often also affects their resources, because most regulators' budgets are funded by fees charged to the banks overseen. For example, in 2004, when HSBC Bank USA and J. P. Morgan Chase Bank transferred their New York state charters to national charters, the State of New York Banking Department lost 30 percent of its $ 80 million budget in supervisory fees paid annually by these two banks alone (Taylor, 2005). Regulators may thus be induced to compete for banks and their funds by supervising them leniently.

Indeed, this view has been strongly supported by policymakers for many years and has been emphasized since the financial crisis of 2007 and 2008. The adverse effects of the "well-understood fact that regulatory agencies are sometimes played off against one another" have been explicitly considered by policymakers at least since a famous speech by Federal Reserve (Fed) Chairman Arthur Burns (1974). More recently, the Federal Financial Institutions Examination Council (FFIEC, 2009) issued a statement to re-affirm that "charter conversions or changes in primary federal regulator should only be conducted for legitimate business and strategic reasons," in response to the fact that supervisory rating downgrades and supervisory actions have become more frequent since the recent financial crisis, thereby increasing the gains of switching to a lenient regulator.[1] U.S. President Barack Obama (2009) argued that the ability of financial institutions to "shop for the regulator of their choice" weakened the oversight prior to the crisis. The Financial Crisis Inquiry Commission (2011), which was responsible for identifying the causes of the crisis, concluded that "some institutions switched regulators in search of more lenient treatment."

[1] In 2009, when this statement was issued, the members of the FFIEC included the Federal Reserve Board, the Federal Deposit Insurance Corporation, the Office of the Comptroller of the Currency, the Office of Thrift Supervision, the National Credit Union Administration and the State Liaison Committee, which represents the State Banking Authorities.

This view in fact already had strong policy implications, as it supported the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 in eliminating the Office of Thrift Supervision (OTS), which was the primary federal regulator of all federal and most state-chartered thrift institutions, including Washington Mutual, IndyMac Bancorp and Countrywide Financial, all of which performed poorly during the crisis.

Despite the dominant view that regulator switching undermines regulation and supervision, up to now it has been supported only by anecdotal evidence of banks that after changing regulators either failed, had their supervisory ratings upgraded by the new regulators or had supervisory actions imposed by the previous regulators terminated by the new ones, instead of an empirical strategy that could establish a causal effect of regulator changes on their standards.[2] In this paper I attempt to fill this gap by analyzing the effects of regulator switching on the ratings that regulators assign to banks. Regulators assign a rating, named CAMELS, based on their assessment of the safety and soundness of banks. This rating impacts banks' profits because it determines how frequently supervisors examine them, the assessment fees they must pay and the supervisory actions they may be subject to, such as mandatory increases in capital or being declared insolvent. Thus, by examining whether banks can affect their own ratings by switching regulators I establish causality from these changes on a measure of supervisory standards that matters to banks. This causal effect is clearly established by an empirical strategy and data that control for selection bias, which may exist if the safest banks are more likely to be allowed to change regulators or benefit more from it.

I separate banks into those chartered by a state and by the Office of the Comptroller of the Currency (OCC) – state and national banks, respectively – and I analyze how regulators rate banks when they switch between national and state charters. I use data on banks' characteristics and examinations and

[2] See American Bankers Association (2009) and Calabria (2009) for arguments against this view.

an empirical strategy that together identify what determines the ratings of banks that switch charters and that control for selection bias. Indeed, banks that change regulators may be better rated than those that do not for three main reasons which must be separated. First, regulators may deny conversion by banks that seriously concern them, selecting only the safest. Second, regulators may differ in the ratings they would assign to banks independently of whether they are currently their regulators or not. Third, regulators may assign better ratings to incoming banks compared to others that they already regulate and that have exactly the same characteristics.

I find a large positive effect of charter switching on ratings in both directions between national and state charters. I show that banks that change charters are more likely to be considered fundamentally safe and sound by their supervisors than banks that do not. This result is robust to different empirical strategies. Moreover, I show that banks that change charters are more likely to fail than others even after controlling for their ratings, suggesting that for a given rating, banks that changed charters in the past are actually riskier. These results together suggest that banks can arbitrage ratings by switching charters in either direction and they are consistent with the argument that regulators compete for banks by rating incoming ones better than banks that they currently supervise with the same characteristics.

The paper is organized as follows. Section 2 discusses how the paper relates to the literature. Section 3 presents some background on bank regulator choice and supervisory ratings. Section 4 details the data, while Section 5 presents the results and Section 6 concludes.

2. Related Literature

This article examines the effects of regulator switching on supervisory standards and therefore it is related to empirical papers that have investigated either why banks change regulators or what determines their standards. These two questions, however, have never been examined together. The first was studied by Rosen (2003, 2005) and Whalen (2002).[3] Whalen found that riskier national banks are more likely to move to state charters. Rosen studied what commercial bank characteristics determine if they change regulators too and also investigated if this affects banks' performance and risk. Rosen (2003) examined whether switching increases bank risk and Rosen (2005) investigated whether it impacts various measures of performance and the probability that a bank fails, which can all be affected by supervisors but are also determined by other factors, such as economic conditions and bank management. I study the effects of switching on CAMELS ratings, which are decided by supervisors alone and thus measure more directly their standards. Indeed, the second question – what determines supervisory standards – has been addressed by studying whether these very ratings respond to changes in economic conditions or in their disclosure even after controlling for banks' characteristics. Berger, Kyle and Scalise (2001) examined whether supervisors toughened CAMELS' standards during the credit crunch of 1989 to 1992 and Feldman, Jagtiani and Schmidt (2003) studied whether changes in disclosure of these ratings affected the likelihood that supervisors downgraded banks. Although these two papers accounted for potential differences in regulators' standards, they did not examine whether banks that switch regulators are rated differently. Curry, Fissel and Hanweck (2008) and Krainer and Lopez (2009) analyzed whether supervisory rating standards for bank holding companies changed over time, but since the Federal Reserve is the primary regulator of all these companies, they cannot switch regulators. Thus,

[3] See also Whalen (2010), in which the author studied charter choices by new banks.

these papers have not analyzed these two questions together, which I do here by estimating the effects of regulator switching on ratings.[4]

This paper is also related to theoretical research on the effects of competition among bank regulators on their standards. The effects of regulator switching on ratings that I estimate here exemplify the general result from these models that regulation and supervision are weakened by competition among regulators. The logic behind many of these models can be traced back to Stigler (1971) and Peltzman (1976), who argued that firms determine how their regulators behave by pressuring them, and is related to others who have discussed specifically why competition among bank regulators drives their objectives away from the social optimum, such as Kane (2000) and Calomiris (2006). Weinberg (2002) examined a model based on the regulatory framework of the U.S. banking industry in which regulators value supervising a larger share of the industry and monitor banks to prevent them from engaging in risky projects, which are more profitable to the latter given that they are insured by the former. He showed that in this case regulators monitor their banks less than they would in a first-best solution. The causes of races to the bottom of regulatory or supervisory standards and the optimal frameworks to prevent them, however, have been mostly studied in international settings. In Acharya (2003) and Dell'Ariccia and Marquez (2006), national regulators lower their standards to help their respective banks to compete internationally, but banks cannot choose their locations to pick their favorite regulators as in the case I study.[5] In Morrison and White (2009), banks from different countries have separate regulators and choose where to locate, but they cannot compete against each other. Regulators however cause an externality across borders by raising their standards because they attract the best banks leaving other countries with the worst ones. In this paper, like in Morrison and White (2005), regulators deny licenses

[4] See also Provost (2010), who provides a well-documented qualitative analysis of the effect of banks' ability to change regulators on their supervisory standards.

[5] See also Kahn and Santos (2005) and Holthausen and Rønde (2005), which also analyze coordination in bank supervision. In these papers, banks are supervised by multiple regulators but cannot choose them and thus regulators do not compete with each other.

to unsafe and unsound banks before they set up operations, conforming with the U.S. banking industry where regulators are supposed to reject applications from unstable banks, thereby helping to explain why the ratings of banks that change charters are better than those of banks that do not.

More broadly, this paper contributes to the debate on whether a system with a single chartering authority would be superior to the current dual banking system, where national and state charters coexist. This debate revolves mostly around three arguments, which can be found for instance in Scott (1977) and Greenspan (1998). The first two arguments are related to Tiebout's (1956) conclusion that sorting can lead to an efficient allocation of "local public goods." The first refers to the value for banks of being able to choose regulators. Since banks choose regulators in order to maximize profits, having more options implies equal or higher profits than if they were restricted to only one, assuming the characteristics of regulators are held fixed. The second and the third arguments are based exactly on the idea that regulation and supervision are shaped by competition among regulators. On the one hand, regulation and supervision may improve due to competition, becoming less burdensome, more flexible and more innovative while at the same time guaranteeing that banks remain safe and sound. On the other hand, as discussed above, it may cause the opposite effect, making them excessively permissible, and therefore endangering the system, if agencies are concerned with losing institutions under their supervision. This paper provides some evidence that this third argument is relevant because regulators are pressured by banks that may switch to or from other regulators and because it suggests that they actually yield to this pressure when they upgrade incoming banks.

The question of whether competition among regulators affects the supervisory ratings they assign to banks is analogous to the question of whether competition among credit rating agencies affects the ratings they publish about securities. Indeed, the effect of regulator switching on supervisory ratings that I estimate can be partially explained by the theoretical result that competition among rating

agencies inflates ratings and corroborates the empirical evidence that supports it. In most of these theoretical models, agencies rate securities truthfully, but competition inflates ratings because issuers can then select from a bigger pool which ones they will disclose to the public (Faure-Grimaud, Peyrache and Quesada, 2009; Sangiorgi, Sokobin and Spatt, 2009; Skreta and Veldkamp, 2009), while in others agencies do not necessarily report the truth and competition among them inflates ratings both because issuers can shop among more agencies and because this changes the relative value of short-term gains from inflation compared to the long-term gains from holding a reputation for accurate ratings (Bolton, Freixas and Shapiro, 2011).[6] The empirical framework I use here includes both of these effects to explain an increase in a bank's CAMELS rating after it switches regulators: It may either have a better match with the new regulator or it may receive a premium for switching.

Empirical papers on the effects of competition among agencies have studied its effect on the ratings of collateralized debt obligations (Benmelech and Dlugosz, 2009), corporate debt (Becker and Milbourn, 2011; Bongaerts, Cremers and Goetzmann, 2011), commercial mortgage backed securities (Cohen, 2011) and insurance companies (Doherty, Kartasheva and Phillips, 2009). Except for the last paper, they found that the ratings published by incumbents increase when new agencies enter the market, cover more securities or gain market share. These authors' empirical strategies differ from mine because the settings themselves differ. First, each bank must have one and only one supervisory rating, while a security can be rated by more than one agency. Second, credit rating agencies and regulators also differ in how they have competed over time. The structure of the market for security ratings has changed in recent years while commercial bank regulators have remained the same for decades. Thus, those papers identify the effects of competition on ratings exploiting entry and changes in coverage or market share

[6] See also Farhi, Lerner and Tirole (2010) who study how the market structure determines transparency and turn-around time in applications for certification and Bar-Isaac and Shapiro (2011) who compare agencies' incentives to invest in ratings accuracy under monopoly and duopoly.

of rating agencies over time, while I do the same by comparing ratings of banks that switched regulators to those of banks that did not.

3. Bank Regulator Choice and Supervisory Ratings

3.1 Bank Regulator Choice

Commercial banks fall into one of three possible categories corresponding to different combinations of regulators: state banks that are not members of the Fed; state chartered banks that are also members of the Fed; and national banks, which are chartered by the OCC and must all be members of the Fed. Banks in all these categories are necessarily insured by the Federal Deposit Insurance Corporation (FDIC).[7] The chartering authority - either the respective state banking department or the OCC - is the primary regulator. The primary federal regulator is the OCC for national banks, the Federal Reserve for state member banks and the FDIC for state nonmember banks.[8]

The relative advantages of each combination of regulators determine banks' choices. The main differences affecting the relative value of different charters and Fed membership are in regulation, membership costs and supervision. Differences in regulations may be originated by regulations imposed by a bank's own chartering authority or primary federal regulator or by preemption of laws imposed by

[7] A fourth category, corresponding to state nonmember banks not insured by the FDIC, existed in the past but was eliminated as all states started requiring FDIC insurance from their chartered depository institutions and the Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991 established extremely costly requirements for noninsured banks. However, even before these regulatory changes, FDIC insurance was considered very advantageous competitively, with only a few commercial banks choosing not to be insured. For this reason, this fourth category is ignored in my analysis.

[8] The Fed, the FDIC and the states where banks operate also regulate banks that they do not charter or for which they are not the primary federal regulators. The FDIC charges banks an annual premium for insurance, demands corrective actions in case they become undercapitalized and in certain circumstances may declare insolvency. All banks must abide by the laws of the states where they operate, such as legal provisions on contracts, torts and zoning, while others apply only to state banks since national banks can preempt certain laws, such as those governing deposits and lending practices. Also, every bank must satisfy the reserve requirements set by the Fed, independently of its regulator choice.

other regulators that would otherwise apply to all banks.[9] Even when a regulation applies to different regulators, they may also differ in how they interpret the regulation or in how they use the discretion allowed by it, thereby having a similar effect as differences in regulation itself.[10]

Membership costs also affect the relative value of regulators. State-chartered banks incur lower supervisory costs than national banks in general mainly because the Fed and the FDIC do not charge assessment fees. On the other hand, national banks pay assessment fees to the OCC, and the total amount of these fees funds almost completely the Comptroller's budget. State bank departments also charge the banks they charter for supervision, but since their supervisory work is shared with the Fed and the FDIC, their costs, and consequently, their assessment fees are significantly lower than the OCC's. Fed membership also implies restrictions on asset allocation, favoring state nonmember banks. Even though the Fed does not charge for supervision, members of the Fed are required to hold stock of their respective regional Federal Reserve Bank, yielding a fixed annual dividend of six percent.

Regulators may also determine banks' choices depending on how they supervise them. Although regulators must use the same criteria to assess the safety and soundness of banks, in practice it is possible that their ratings differ systematically, thereby giving banks opportunities to arbitrage their own ratings by changing regulators. Indeed, whether banks can improve their ratings by changing regulators is the main question I address in this paper. Banks may also find their relation with regulators especially attractive due to support and lower supervisory burden. Regulators may be particularly

[9] For example, until 1997 interstate branches of state banks were subject to the same restrictions on activities that applied to banks chartered by the states where these branches were located, while national charters were exempt from state regulation that restricted interstate branches activities, being allowed to offer the same products nationwide. Such difference made national charters more attractive than state charters, and thus motivated a measure to rebalance competition between charters. The Riegle-Neal Amendments Act of 1997 allowed the same activities for interstate branches, provided that national banks or state banks chartered by the host state were also allowed to perform them.

[10] For example, in 1996 the OCC broadened the scope of commercial banks' activities by extending its interpretation of Section 92 of the National Bank Act to authorize national banks to sell insurance from a "place" of 5000 or fewer in population.

beneficial if they provide support and feedback based on matters they supervise, such as risk management techniques. Regulators are also more attractive the lower the burden they impose on banks. For instance, they may reduce it by examining banks jointly with other supervisors or, in the case of the Fed, which is responsible for regulation and supervision of bank holding companies and financial holding companies, by leveraging the supervisory work regarding these companies in the case of banks affiliated to one.[11]

Banks have the right to switch regulators and face no difficulties in doing so if they are safe and sound. Banks may transfer between state departments and the OCC without approval from the chartering authority they are leaving. Similarly, a state-chartered bank can give up Fed membership without its approval, although such approval must be requested to become a member. Regulators are expected, however, to deny membership to an applicant if they consider it unsafe and unsound or if it has serious pending supervisory actions.[12] I return to this issue in the next subsection after discussing the CAMELS ratings of safety and soundness.

3.2 Supervisory Ratings

Supervisors assign CAMELS ratings based on off-site analysis and on-site bank safety and soundness examinations. In off-site monitoring, supervisors gather data and documents on the respective bank to make an assessment of its condition and to identify potential problems that require more attention during the on-site examinations. In an on-site examination, supervisors read additional documents from the bank, review and evaluate its loan portfolio and meet with the bank's management. Based on the information obtained, supervisors evaluate six main areas and prepare an individual assessment of each

[11] See Rezende (2011) for an analysis of what determines whether federal and state supervisors examine state banks independently or together.
[12] See FFIEC (2009).

one in a final report. The areas are Capital Adequacy, Asset Quality, Management, Earnings, Liquidity, and Sensitivity to Market Risk. Based on the evaluation of these six areas, a composite CAMELS rating is assigned. The rating ranges from 1 to 5, where 1 is assigned to banks that raise no supervisory concern and 5 is assigned to institutions that warrant immediate attention from supervisors.[13]

Once the review is finished, supervisors discuss the findings with the bank's senior management and they may act based on them. Supervisors comment on areas that must be improved and can advise the banks on them. Depending on a bank's condition, they also discuss with senior management the need for informal or formal supervisory actions. Informal actions are established through a commitment from the bank to solve the deficiencies identified, in the form of a memorandum of understanding or a bank board resolution. Formal actions are more severe; they include cease-and-desist orders, suspension or removal of banks' senior management and termination of insurance. These are also legal decrees and can be enforced in courts. Informal actions are usually assigned when a bank's condition deteriorates and it reaches a CAMELS 3 rating, while formal actions are imposed when it reaches a CAMELS 4 or 5 rating (FDIC, 1997). Examiners also disclose to senior management the CAMELS rating assigned after the review. A final report of the findings is sent to the bank's senior management. It describes the bank's overall condition and justifies the CAMELS rating assigned. It also summarizes the on-site communications with senior managers, including the commitments they made.[14]

The CAMELS rating assigned to a bank has a substantial impact on its profits because of the examination burden, assessment fees and potential supervisory actions. Banks are subject to more frequent examinations – and therefore a heavier burden – the higher their rating.[15] Banks also often pay higher

[13] The sixth component of the CAMELS rating, Sensitivity to Market Risk, was added in 1997.

[14] Knowledge of the CAMELS ratings was restricted to regulators until 1982. Between 1982 and 1988 supervisors started disclosing the composite ratings to bank senior management and directors and between 1996 and 1997 their components also started being communicated. See Feldman, Jagtiani and Schmidt (2003) for details.

[15] Since the beginning of the sample used in this paper all the three federal regulators and many state banking departments already imposed minimum required frequencies of examinations based on banks' condition or past

supervisory assessment fees the higher the rating is, either because some supervisors' fee schedules depend directly on ratings or because they depend on the frequency of examinations, which in turn depends on ratings.[16] Supervisory actions are also more likely to be imposed and are increasingly severe the worse the bank's rating, as discussed above.

Figure 1 shows the distribution of CAMELS ratings across commercial banks from 1993 to 2010. Ratings improved from the beginning of this period until 1997, and then started worsening continuously until 2010. The percentage of banks considered fundamentally sound – those rated 1 or 2 – has historically remained above 80 percent, except for the beginning and the end of the interval, while those in the riskiest groups – 4 and 5 – always accounted for less than 10 percent, except for the last year sampled.

3.3 Regulator Switching and CAMELS Ratings

When banks switch regulators, the new supervisors are expected to maintain the ratings previously assigned and any outstanding supervisory actions. They should upgrade incoming banks' ratings or terminate supervisory actions only if the banks' safety and soundness truly justifies it. Moreover, in these cases the new chartering authority should consult with the FDIC (the deposit insurer and the receiver for failed banks) and the Fed (the holding company supervisor if the bank that belongs to one) on any application by a bank which its current supervisor has either rated or plans to rate this bank 3, 4

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ratings. The Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA) effective in December 1992 then established that federal supervisors must examine banks every 12 to 18 months, depending on their size and risk profile. The FDICA required that all commercial banks be examined annually with the exception of banks with a rating of 1 and assets of $ 100 million or less which could be examined every 18 months only. The Riegle Community Development and Regulatory Improvement Act of 1994 then lowered the required rating to 2 or better and also extended eligibility for the 18-month cycle to banks with ratings of 1 and assets of $250 million or less. The Economic Growth and Regulatory Paperwork Reduction Act of 1996 amended the FDICA allowing federal supervisors to extend the 18-month examination cycle to banks with a composite rating of 2 or better and total assets of $250 million or less. This value was raised to $ 500 million on April 2007 when the FDIC, the OCC, the Fed and the OTS approved Interim Rules to implement the Examination Amendments of 2006. See FDIC (1997), Fed (2007) and Straw (2007).

[16] For example, the OCC charges different assessment fees for banks rated 1 or 2, 3 and 4 or 5 (OCC, 2008).

or 5, or has imposed or plans to impose a serious or material corrective program on this bank (FFIEC, 2009). A change in regulators coupled with an improvement in ratings, however, may indicate a situation in which this requirement is not satisfied, thereby undermining the integrity of the regulatory system and the safety of financial institutions.

I argue that whether a bank is rated 2 or better as opposed to 3 or worse is the most relevant boundary between ratings for this analysis because it affects banks' profits and supervisors' concerns and because many banks that change regulators are rated 2 or 3. As discussed above, banks rated 3 are more frequently examined, often pay higher supervisory fees and are more likely to be subject to supervisory actions than those rated 2. For supervisors this boundary also separates banks that are fundamentally sound from those that are not, thereby justifying the more frequent examinations and supervisory actions. Moreover, many banks are rated 2 or 3 and many of them change charters too. As shown in Figure 1, in 2010 almost 70 percent of banks were rated 2 or 3. Also, Figure 2 shows that many banks that changed charters were assigned these ratings too. This figure shows the distribution of ratings across banks that switched charters ten years before and after conversion. Around 70 percent of the banks that switched charters were rated 2 or 3 just before converting.

The other ratings boundaries are not as relevant to my analysis. The boundary between 1 and 2 is not as relevant for banks' profits because these banks are examined with similar frequencies, they generally pay the same assessment fees and are typically not subject to serious supervisory actions. From supervisors' viewpoint, all these banks are considered fundamentally sound. Banks rated 4 or 5, on the other hand, typically pay higher supervisory fees and are subject to more severe actions than those rated 3, but their ability to change regulators is significantly constrained by the supervisory concerns they raise. This low frequency of change and the fact that there are fewer banks rated 4 or 5 together than any other rating imply there are only a few charter changes by these banks, as shown in Figure 2,

which in turn implies that the impact of charter changes on ratings around this boundary is not as important for supervisory purposes.

It remains to discuss why banks that change regulators can improve their ratings. Banks that change regulators can obtain higher ratings than those that do not for three main reasons. First, regulators should deny conversion by banks that seriously concern them. For instance, consider two banks *i* and *j*, both supervised by regulator *A* and rated 3, that decide to convert to regulator *B*. Suppose also that *i* and *j* would be assigned ratings 2 and 4, respectively, by any regulator in their next examinations. In case *B* does not accept incoming banks that deserve a rating equal to 4 or 5, the data would show that *i* switched to *B* and had its rating improved while *j* stayed with *A* and had its rating worsened even though every regulator agrees on the ratings that should be assigned to them.

Second, regulators may differ in the ratings they would assign to banks independently of whether they are currently their regulators or not. In this case, banks might change over time to the regulators that rate them best, and the data would show a positive relation between regulator changes and CAMELS improvements. Third, regulators might assign better ratings to incoming banks compared to others that they already regulate and that have exactly the same characteristics. This might occur, for instance, if regulators want to attract banks from their counterparts by offering them lenient supervision. This third potential phenomenon is what I am most interested in measuring in this paper.

4. Data

The unit of observation in the data is a commercial bank examination. Data on examinations come from the Safety and Soundness Examinations table from the National Information Center (NIC) of the Federal Reserve System. The data contain every safety and soundness examination of banks in the United States

since 1989. I restrict the sample to on-site exams of commercial banks from 1993 to 2010 with a valid CAMELS rating.[17] For each examination, the data provide the identity of the bank and the CAMELS rating assigned to it ranging from 1 to 5, which is the main dependent variable in the paper. The data give the exit meeting date, which I use to determine the date when a new rating was assigned to a bank. The data also give the name of the regulator leading the examination - a state banking department, the Fed, the FDIC or the OCC.

To control for information available from previous examinations, I match each examination with the previous one on the same bank. I eliminate examinations taking place fewer than 22 weekdays (one month) or more than 524 weekdays (two years) after the previous one. Examinations within a short interval may be registered by mistake either because the same examination was double-counted or because the date of at least one examination is wrong. They may also have occurred within a short interval, but due to delays in exam schedules or simply errors in the data, the exam supposed to be the last one – and whose CAMELS rating will prevail – appears in the data as the first one. Exams within intervals longer than two years are also eliminated because they are likely to be cases in which an exam that was performed between them was not registered in the data. Besides eliminating observations based on these interval criteria, I also control for this interval in the estimations, because the frequency of examinations is closely related to banks' condition.

The identity of the regulators comes from the entity type reported in the Call Reports submitted by banks quarterly. I assign to each examination the entity type of the bank (national, state nonmember or state member) reported in the first Call Report following the respective exit meeting date. The fact that Call Reports are submitted quarterly may cause discrepancies in the data if a bank changes its regulator

[17] I restrict the data to examinations from 1993 or after to ensure that all examinations in the sample were subject to the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA), which became effective in December 1992 and requires that banks be examined every 12 to 18 months, depending on their size and risk profile.

after the exit meeting date of an exam with the previous regulator and before the quarter ends. Alternatively, I could use the identity of the regulator leading the examination. The OCC leads examinations of national banks while state banking departments, the Fed and the FDIC lead examinations of state banks. This alternative, however, has a number of drawbacks. First, the identity is indeterminate in case of examinations lead by a state agency without participation of a federal regulator because in these cases the bank can be either a state member or a state nonmember bank. Second and most important, in some situations regulators other than the primary ones can examine a bank. For instance, when a bank is about to change regulators, the future regulator often examines the bank even before the change occurs officially and the same is true for the previous primary regulator after the transition. Also, regulators from other banks from the same bank holding company or the Fed, which regulates bank holding companies, often examine banks from different regulators when they consider they may obtain information that is relevant for assessing the safety and soundness of their own institutions. For these reasons, regulators are identified in this paper using Call Reports. In any case, these two alternatives identify different regulators in only 0.6 percent of the observations and I eliminated these observations. Table 1 summarizes the changes in charter between exams and shows that switching is a fairly rare event: banks' charters differed between two consecutive exams in only 458 of the 126,372 pairs of exams in the sample, or 0.36 percent of the observations.

Data on examinations is complemented with information on banks' characteristics, bank holding company affiliation and merger activity. Data on banks' characteristics come from Call Reports too, but to ensure consistency in income variables, I use information from year-end Call Reports only. Each examination is matched to the most recent year-end Call Report filed by the respective bank before its exit meeting. Call Report data control for variables that supervisors take into account when evaluating the safety and soundness of a bank. I assign to each exam the bank's total assets, return on assets, return on equity, net operating margin and the ratios of net charge-offs to total loans, provisions for

loans and leases losses to total loans, nonperforming loans to total loans, equity capital to total assets and loans to deposits.[18] Data on bank holding company affiliation indicates whether a bank belongs to a bank holding company and if it does, it identifies the company and the other banks affiliated with it. Based on them I create a dummy for whether a bank is affiliated to a bank holding company, a dummy for whether it is the largest bank in a holding company, three dummies for whether the bank is in a bank holding company that has at least one national bank, one state nonmember bank and one state member bank other than the bank itself, and I also count the number of banks within the same holding company. Data on merger activity identify which banks or bank holding companies merged with other institutions in the last three calendar years including the year of the exam. I also use data from the FDIC on the dates of bank failures.

I include in the data an estimate of supervisory fees charged to banks. This is an estimate of the assessment fees that the OCC would charge each bank if it were a national bank. In the case of banks affiliated with a bank holding company that contains other commercial banks, the fee is calculated as if those other banks held national charters too. Thus, this estimate does not depend on the charter that the bank actually holds. I simulate these assessment fees using the OCC's General Assessment Fee schedule effective January 2009 (OCC, 2008) and apply it to each bank-year pair in the sample. This schedule is a concave function of a bank's total assets, it is discounted by 12 percent for every bank that is not the lead national bank in a holding company, and the fees corresponding to the first $ 20 billion of assets are surcharged at 50 percent in case of banks with a CAMELS rating of 3 and at 100 percent in

[18] I eliminate observations with return on assets lower than -50 percent or more than 100 percent and percentage of nonperforming loans to total loans above 100 percent.

case of banks rated 4 or 5. These simulated fees replicate what a bank would pay to the OCC if its schedule were the same as in 2009.[19] The data are summarized in Table 2.

5. Evidence

I separate banks in two categories depending on their chartering authority: national and state banks. Thus, state member and nonmember banks are grouped together in the latter category. I do this for a variety of reasons. First, the chartering authority determines most differences in supervisory standards. Second, although state member and nonmember banks are subject to exclusive regulations and supervision by the Fed and the FDIC, they are also subject to a common regulatory and supervisory structure because they are all chartered, regulated and supervised by states. Third, by reducing the number of regulator choices from 3 to 2, I also reduce the number of combinations of previous and current regulators from 9 to 4, therefore also decreasing the number of parameters to be estimated. Fourth, the small number of banks leaving a state member bank type implies that the variance of estimators of its effect would be large if I considered state member banks as a separate category.

5.1 Descriptive Statistics

Figure 3 shows the cumulative probability of CAMELS ratings assigned to national and state banks conditional on the rating received in the previous examination and on the charter at that time. The two columns of the graphs correspond to institutions that were national and state banks in the previous exam and the rows refer to banks that were then rated 1, 2, 3 and 4 or 5, where banks previously rated

[19] To apply this schedule to bank data from different years, I deflated assets using the GDP Implicit Price Deflator. The OCC fee schedule is stable over time and tends to be updated annually mostly to correct for inflation. A Matlab code that simulates these fees is available upon request.

4 or 5 are grouped together because there are only a few, as shown in Figure 1. For example, the graph in the upper-left corner of the figure shows the distribution of ratings for national and state banks that in the previous exam were national banks that were assigned a rating of 1.

These graphs display three clear patterns of the examination data, namely, good ratings persist over time, bad ratings improve when banks switch charters, and the distributions of ratings are similar for banks that held national and state charters in the previous exam. The graphs in the first two rows show that banks that were previously well rated tend to keep good ratings in future exams independently of their charter choices. The first row shows that for any combination of previous and current charters, more than 95 percent of banks that were rated 1 in the previous exam receive a good rating – equal to 1 or 2 - in the current one. Similarly, the next row shows that more than 90 percent of banks rated 2 in the previous exam maintain a good rating in the current one independently of their combination of charters.

The graphs in the third and the fourth rows show the second pattern: the ratings of banks that switch charters first-order stochastically dominate the ratings of banks that do not for any previous charter and either a previous rating of 3 or 4 or 5. The cumulative probabilities of ratings also differ substantially between banks that switch charters and those that do not. Less than one third of the CAMELS 3 national banks that retain their charter are upgraded in the next examination, but more than 80 percent of those that switch charters are. Similarly, around 40 percent of the CAMELS 3 state banks that keep their charter are upgraded, while about 60 percent of those that switch are. This evidence suggests that banks can improve their ratings by switching charters.

Finally, the distributions of the ratings are similar for banks that held national and state charters in the previous exam for most ratings and charter choices. Although there are a few differences between the graphs on the left and on the right, they do mirror each other, which corroborate this third pattern.

Moreover, from the discussion above it is clear that those first two patterns hold for both charters also, suggesting that charter changes in either direction should impact ratings similarly.

5.2 Univariate Probit Results

In this section I estimate the effect of changing charters on ratings. I start with a univariate probit model where the dependent variable equals 1 if a bank is assigned a CAMELS rating of 1 or 2 in the exam and equals zero otherwise.[20] This variable is chosen because, as discussed before, the boundary between ratings of 2 and 3 is the most relevant for my analysis. As discussed in Section 4, the independent variables used are data from the current exam, from the previous exam and from call reports submitted by banks. All the call report variables used are from the most recent year-end submission before the exam exit meeting date, except for the three dummies that indicate whether there is another national, state nonmember and state member bank in the same bank holding company. These three variables are computed using the most recent submission before the previous exam exit meeting date because a bank's decision to switch charters may be correlated with this decision for other banks within the same bank holding company. The results, however, remain roughly unchanged if I compute these variables using the most recent submission since the current exam's exit meeting date. Standard errors are clustered at the bank level.

Table 3 presents results for banks that were national and state-chartered in the previous exam, respectively. The impact of changing charters is captured by a dummy that equals one if a bank switched its charter since the previous exam and zero otherwise. The estimated effect is large and statistically

[20] The results shown in this section are different if this dependent variable is substituted by the five CAMELS ratings in an ordered probit model, in particular due to the fact there is a higher probability that state banks rated 1 that switch regulators obtain in the next exam a rating of 2 or worse as opposed to those that remain with their regulators, as shown in figure 1.

significant for both types of banks. The 0.955 coefficient estimate in the first column implies that the odds that a representative national bank obtains a rating of 1 or 2 rise from 91 percent - the percentage of these ratings in exams of national banks that did not switch charters since the previous exam - to 99 percent if it transfers to a state charter. Among exams of state banks that kept their charters since the previous exam, 88 percent of them rated banks 1 or 2 and, given the 0.880 coefficient estimate, this probability increases to 98 percent if a representative state bank changes its charter to national.[21]

The specifications in Table 3 rely on an assumption that I impose throughout the paper that can potentially bias the estimates of the effects of charter switching on ratings. I assume that the coefficients of banks' characteristics are the same for both national and state banks. I impose this to identify these effects with a simple empirical framework. This assumption, however, can bias the estimates in case banks' characteristics affect national and state banks' ratings differently.

In order to investigate whether the coefficients of the charter change dummy depend on this assumption, I now estimate them with different samples from those in the first two columns. Although I must keep this assumption, I examine how much the estimates depend on it by changing the samples of banks. When the samples are changed, the charters that determine the coefficients of banks' characteristics for each direction of charter switching also change, thereby allowing me to examine whether the estimates of the impact of charter switching are robust to changes in these coefficients. More specifically, in the first two columns the samples of banks were determined by their charters in the previous exam. In column 1, the sample of banks that held national charters in the previous exam is used to estimate the effect of switching a national charter to a state one. Because the large majority of banks do not change charters between exams, this implies that the coefficients of banks' characteristics

[21] Throughout the article, I evaluate the estimated effect of transferring from a national to a state charter by considering the transfer of a representative national bank and vice versa. This national bank is representative in the sense that its predicted probability of obtaining a CAMELS of 1 or 2 equals the fraction of these ratings in national bank exams. Thus, the estimated effect is $\Phi(X\beta^* + \gamma^*) - \Phi(X\beta^*)$ where $X\beta^*$ is chosen so that $\Phi(X\beta^*)$ equals that probability.

in this column are mostly determined by national banks. Conversely, in column 2, where I estimate the effect of switching a state charter to a national one, these coefficients are mostly determined by state banks because here the sample of banks that held this charter in the previous exam is used.

In column 3, I now use the sample of banks that held national charters in the current exam and therefore the charter change event now means moving from a state charter in the previous exam to a national one in the current exam. Thus, a charter change from state to national is now paired with a different sample of banks. The coefficient of this change is now equal to 0.970, which is larger than the 0.880 estimate corresponding to the same change found in column 2. By the same token, in column 4 the sample of current state banks is used to estimate the effect of changing a national charter to a state one. The coefficient of 0.830 is now lower than the 0.970 estimate from column 1. The coefficients of the charter change dummy are larger in columns 1 and 3, where the samples dominated by national banks are used, most likely because these banks are more frequently rated 1 or 2. These results suggest that assuming that the coefficients of banks' characteristics are the same for both national and state banks does not affect the estimates of the effects of charter flipping on ratings for both charter types. Moreover, these effects corroborate the evidence from Figure 3: They are similarly large in both directions and thus do not warrant any conclusions that certain regulators might rate incoming banks better than others.

These results together therefore indicate significant effects of charter switching on ratings, but they demand additional investigation because selection on unobservable characteristics may also explain these estimated effects. In the next subsection I address this question.

5.3 Selection Bias and Bivariate Probit Results

In this subsection I present a model that helps to understand the challenges in estimating the effects of regulator choice on supervisory ratings and an empirical strategy that accounts for them.[22] Consider the following model. Each bank i has a profit function strictly monotonically increasing over two variables,

$$\pi_i = \pi(r_i, W_i). \tag{1}$$

The variable r_i is the bank's supervisory rating and W_i represents unobserved returns that are a consequence of the regulator it chooses and that may be unrelated to this rating. For example, a regulator may allow certain activities that impact its banks' revenues even if these activities do not directly affect their ratings. There are two regulators, A and B. I assume with no loss of generality that all banks are initially regulated by A and that banks may choose between staying with A or moving to B.

The rating r_i is determined by

$$r_i = X_i\beta + I_{si}\gamma + I_{si}\varepsilon_i + \nu_i. \tag{2}$$

The term X_i is a vector of bank characteristics and β is the respective vector of coefficients, which for convenience I assume is the same for both regulators. The indicator variable for regulator switching I_{si} is such that $I_{si} = 1$ if bank i switches to B, and $I_{si} = 0$ if it remains with A. ε_i captures the idiosyncratic match between bank i and regulator B, which can be interpreted as a deviation from γ, the mean outcome effect associated with switching to B. The term ν_i is an unobserved bank-specific effect. Assume that $E(\varepsilon_i|X_i) = 0$ and $E(\nu_i|X_i) = 0$. Given this framework, the change in profits associated with switching to regulator B is given by

$$\Delta\pi_i = \pi(r_{iB}, W_{iB}) - \pi(r_{iA}, W_{iA}), \tag{3}$$

where, from (2), r_{iA} and r_{iB} are given by

[22] The model and the empirical strategy are based on the school choice model presented in Neal (1997).

$$r_{iA} \equiv X_i\beta + \nu_i \tag{4}$$

and

$$r_{iB} \equiv X_i\beta + \gamma + \varepsilon_i + \nu_i, \tag{5}$$

and W_{iA} and W_{iB} are exogenously determined.

Equation (3) states that the change in profits is a function of supervisory ratings and of returns under the two alternative regulators and highlights the challenge imposed by selection bias. Suppose that I want to estimate the effect of switching charters on ratings γ given data on ratings, regulator choice and banks' characteristics. The profit gain from switching to B is an increasing function of r_i, which includes ε_i. Since banks with a comparative advantage in regulator B are more likely to switch to it, then $E(\varepsilon_i|X_i, I_{si} = 1) > 0$, and estimators of γ that do not account for this correlation will be biased upward. Moreover, the estimates will also be biased if returns W_{iA} or W_{iB} are correlated with unobserved characteristics that improve ratings. In this case, $E(\nu_i|X_i, I_{si} = 1) > 0$.

This potential selection on unobservable characteristics indicates that I must interpret with skepticism the results in Table 3. Given this possibility, it is natural to question whether these results really mean that banks improve their ratings by switching regulators or whether they were obtained simply because banks with superior unobserved characteristics are selected by new regulators – or self-selected – to switch charters. I address this question using the following bivariate probit model:

$$r_i = X_i\beta + I_{si}\gamma + \eta_{ri} \tag{6}$$

and

$$s_i = Z_i\alpha + \eta_{si}. \tag{7}$$

I now make a few adjustments to the notation of the model. For bank i, r_i is now the latent value for being assigned a CAMELS of 1 or 2 and I_{si} is now such that we observe $I_{si} = 1$ if $s_i \geq 0$ and $I_{si} = 0$ otherwise. s_i is the latent value of switching regulators and Z_i contains X_i and an instrument for charter switching. There is an observable indicator variable I_{ri} for a rating of 1 or 2 such that $I_{ri} = 1$ if $r_i \geq 0$ and $I_{ri} = 0$ otherwise. I assume that both η_{ri} and η_{si} have mean 0 given X_i and Z_i and that they have bivariate standard normal distributions.

The model supposes that banks' profits depend both on the ratings received and on other returns associated with the charter they choose. Banks cannot directly determine their own ratings, but they may be able to affect the odds of obtaining a good rating by choosing regulators. Given a bank's charter choice, the match between the bank and the regulator determines the latent value of its rating, and the bank is assigned a CAMELS of 1 or 2 if this value is positive.

The instrument in Z_i is the simulated assessment fee described in the previous section. These fees fund the OCC's budget and are intended to cover the costs of supervision incurred by this regulator. Thus, they also measure the supervisory burden a bank faces given its size and CAMELS rating, which increases the costs a bank faces in switching between regulators. Thus, higher fees should be associated with a lower probability of switching charters.

These fees however are not an adequate instrument if they are correlated with the error term in (6). As shown in (2), this error term has two components: for all banks it is composed of ν_i, an unobserved bank-specific effect, and for banks that change regulators it is also composed of ε_i, an idiosyncratic match between bank i and the regulator it switches to. Thus,

$$\eta_{ri} \equiv I_{si}\varepsilon_i + \nu_i. \tag{8}$$

By assuming that assessment fees are uncorrelated with η_{ri}, I am thus assuming that neither ε_i nor ν_i are correlated with this instrument. To better understand this assumption, notice that a bank's assessment fees can provide some information about its comparative advantage between two regulators even if it is uncorrelated with unobservable characteristics that equally affect the ratings by the two regulators. In this case, even if $E(\nu_i|Z_i) = 0$, it would be the case that $E(\varepsilon_i|X_i) \neq 0$. If these fees are correlated with ε_i, then the estimates of the impact of regulator changes from the bivariate probit model will be biased away from those that would be obtained in a random sample of banks that were exogenously assigned to regulators. However, it must also be observed that these fees are a function of variables that are included in X_i, namely, bank assets, past CAMELS ratings and existence of a larger bank in the same holding company. Therefore, the correlation I estimate between charter changes and simulated fees is not driven by any correlation between charter changes and any of these variables individually. Instead, this correlation depends on the specific form in which these variables enter the fee function.

In Table 4 I estimate the bivariate probit model described in equations (6) and (7) separately for banks that were national and state banks in the previous exam. These samples are the same as those used in the first two columns of Table 3, respectively. The first two columns in Table 4 correspond to the first and second stage equations for national banks, and the last two correspond to the same equations for state banks. Assessment fees are used as instruments and thus included in the first stage (7) but excluded from the second stage equation (6). In both cases the coefficients of these fees – equal to -0.888 and -1.044 respectively – are statistically significant, large, and have the expected sign, implying that higher fees prevent banks from switching charters. The coefficients of charter changes in this table are even larger than the estimates from univariate probit models in Table 3.

The coefficients in Table 4 do not provide evidence that the estimated effects of switching regulators reported in Table 3 are driven by the selection of superior banks moving to new regulators. For both samples, the estimated correlation between the errors in the two equations is negative, although statistically significant only for banks that originally held state charters. Thus, unobservable characteristics that induce banks to switch charters are correlated with those that lower their ratings, which contradicts the hypothesis that banks that flip charters are better rated due to their superior unobservable characteristics. Moreover, the estimates from the bivariate models imply stronger effects of charter changes on supervisory ratings than the univariate models'. In summary, the results show that ratings increase for banks that switch regulators and they do not support the hypothesis that this happens only because they are superior in unobserved characteristics.

5.4 Evidence from Bank Failures

I have shown so far that charter changes improve ratings by estimating this effect. I now provide further evidence testing an implication of this effect. If banks that change charters are better rated than equally risky banks that do not, then the former should fail more often than the latter after controlling for their ratings.

To test this implication, I estimate a duration model using annual observations from banks where the failure event is the respective bank failure. The time-varying covariates in the model are mostly the same independent variables used before, but for each bank-year pair I now use only the CAMELS ratings valid at the beginning of the year, i.e., from the most recent exam, and I also compute the dummies that indicate whether there is another national, state nonmember and state member bank in the same bank holding company – as well as all the variables that come from call reports – using the respective past year call report data from December 31. The estimates presented here assume that the hazard rate has

an exponential distribution, but they remain roughly unchanged if I use a Weibull distribution. All specifications use observations from both national and state banks. The covariate that I am most interested in this test is a dummy that equals one if the bank ever changed its charter in the past and zero otherwise.

Table 5 shows the estimate results. The coefficient of the charter change dummy is always larger than one and statistically significant, implying that charter changes are positively correlated with failures, therefore confirming the implication. The 1.821 coefficient of that dummy in the first column implies that banks that switched charters are 82 percent more likely to fail than those that never did. As expected, the CAMELS rating helps to explain the odds of failure and the estimates of the CAMELS dummies are statistically significant and imply higher probability of failure the worse the rating.

In the second column I show that the large correlation between charter changes and failures cannot be attributed to the fact that the CAMELS ratings differentiate only among five grades. In this specification I include dummies for each rating in the first five individual components of this composite rating. I do not include dummies for the S component because this would then oblige me to drop all exams finished before 1997 from the sample. The coefficient of the charter change dummy when these twenty additional ratings dummies are included is similar to that in column 1.[23] The 1.710 coefficient is statistically significant and implies that banks that switch charters are 71 percent more likely to fail than others.

It must be noticed, however, that although a positive correlation between charter changes and failures is consistent with a positive effect of switching on ratings, this does not necessarily imply it. CAMELS ratings were not designed to predict failures and thus one should not expect them to incorporate all the

[23] The coefficients of the additional dummies are not included in table 5 for the sake of brevity but are available upon request.

correlation between charter switching and failures. Still, the results suggest that within each ratings group, banks that switched charters in the past are riskier than those that never did.

Also, this result does not imply that switching causes failure either, as Rosen (2005) already argued based on similar results. Rosen used a sample of commercial banks from 1977 to 2003 and also found that banks that switched regulators after 1991 were more likely to fail. As he argued, this result does not necessarily imply a causal effect of switching on failures, because banks that switch regulators may differ from those that do not in characteristics that determine the odds that they will fail. Still, it corroborates the hypothesis that charter flipping improves ratings, as confirmed by the previous results in this paper.

6 Conclusion

Can commercial banks improve their ratings by switching regulators? In this paper I find a substantial effect of charter switching on ratings. Banks that flip charters are more likely to be considered fundamentally safe and sound by their supervisors than others. Also, banks that change regulators are more likely to fail than others even after controlling for their ratings. A natural conclusion from these results is that banks can arbitrage ratings by switching charters, which undermines the integrity of bank supervision in the United States. Moreover, although I did not examine what causes such premium for charter changes, this phenomenon can be explained by competition among bank regulators, which has historically been identified as a major force driving charter changes and ratings improvements of risky institutions and which also compromises the safety and soundness of the banking system. Whether competition is actually responsible for the gains from charter switching is then a question with strong policy implications that deserves attention from researchers.

The results here also help to understand how competition among bank regulators affects their supervisory standards, but they leave some questions open. They show how competition among regulators affects the standards applied to banks that switch charters. However, more research is necessary to assess its overall impact on supervisory standards. If banks can improve their ratings by changing regulators, then regulators should be concerned with losing institutions that they currently supervise and could possibly lower the standards they apply to these banks to induce them to retain their charters. Thus, competition among regulators most likely affects the quality of supervision of all banks, including those that do not change charters, but to learn more about this overall effect, researchers must account for how regulators set their standards to preempt charter changes.

The results also help to understand whether a system with a single chartering authority might be superior to the current dual banking system. The fact that banks can improve their ratings by switching charters favors a single charter system. However, in order to properly evaluate what system would be optimal, one must also consider the positive effects of the dual banking system, such as the fact that more choices of regulators may help banks increase their profits and the fact that competition among chartering authorities can improve supervision and regulation by reducing their burden and making them more flexible and innovative. An answer to this question is also left for future research.

The arbitrage opportunity I study in this paper most likely impacts not only the safety and soundness of banks, but also bank credit. Banks with bad ratings are typically subject to supervisory actions that limit their ability to extend loans. Thus, these banks should be capable of extending more credit after they switch regulators, have their ratings upgraded and have any supervisory actions terminated.[24] Whether

[24] Consistent with this implication, Peek, Rosengren and Tootell (2003) show that banks with higher CAMEL ratings exhibit lower loan growth rates. Moreover, they provide evidence that the percentage of bank assets in CAMEL 5-rated banks have a negative effect on GDP growth. Curry, Fissel and Ramirez (2008) also show that bank lending at the state level correlate positively with average CAMEL ratings in the period from 1985 to 1993.

regulator switching impacts bank credit and whether its effects extend to other parts of the economy is also left for future research.

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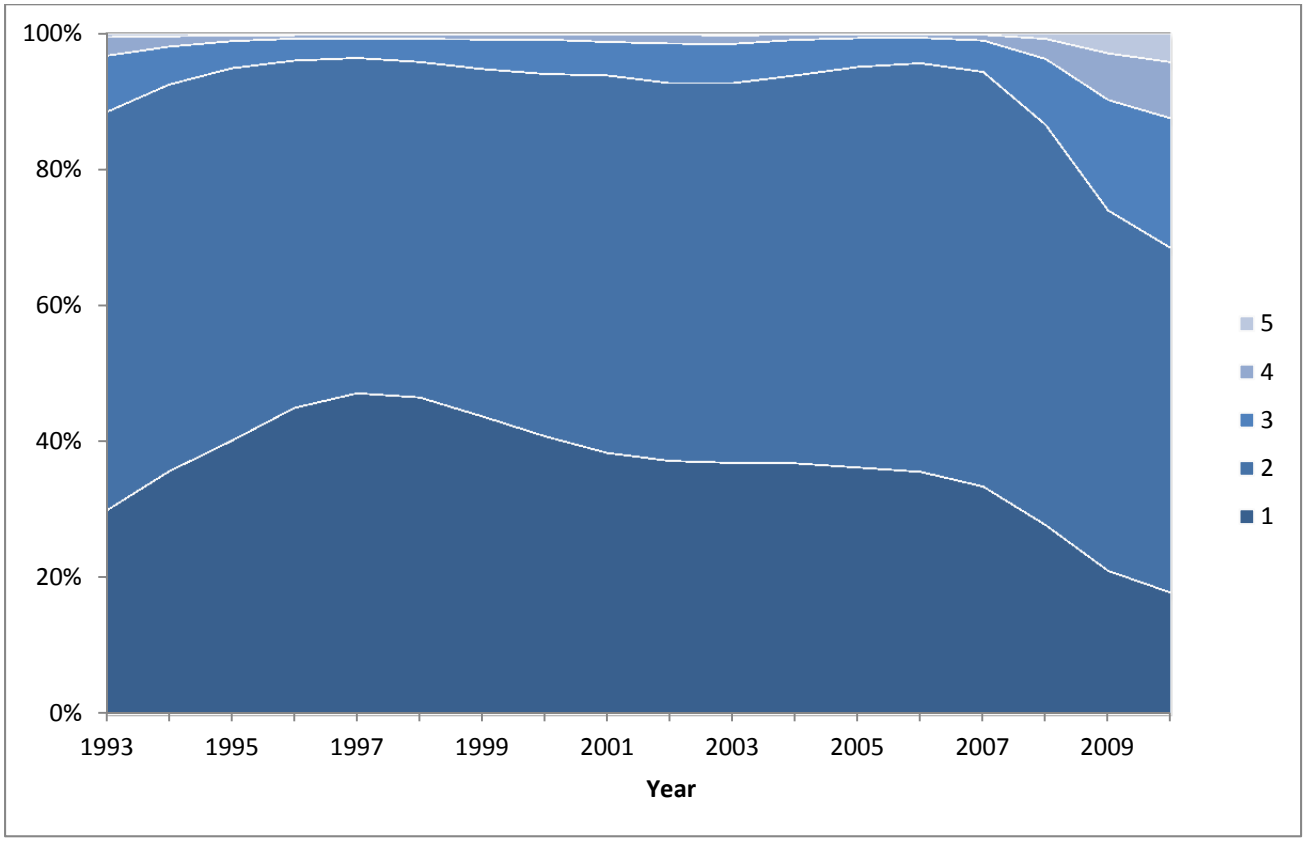
Figure 1

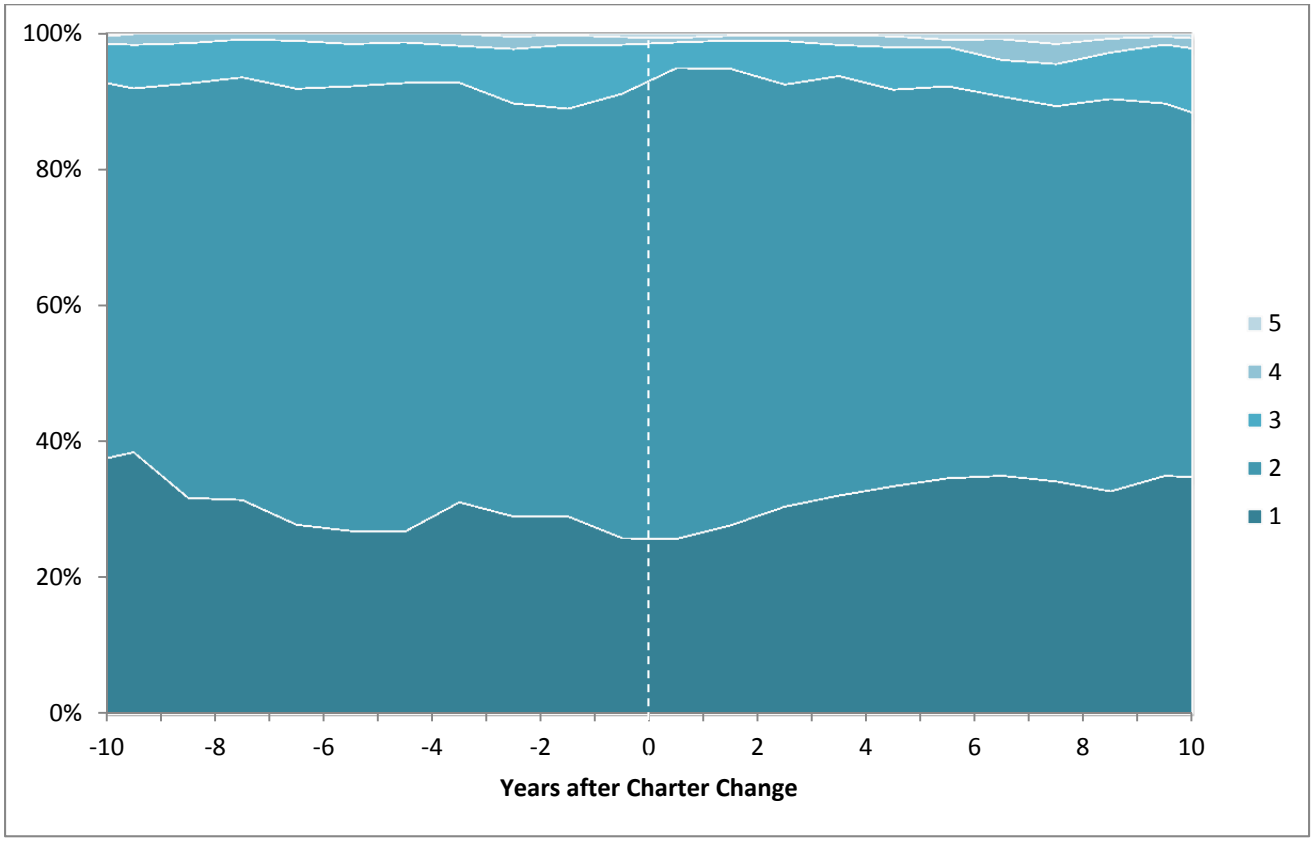
Distribution of CAMELS Ratings over Time



Note: This figure shows the percentage of CAMELS ratings assigned in commercial bank exams per year from 1993 to 2010.

Figure 2

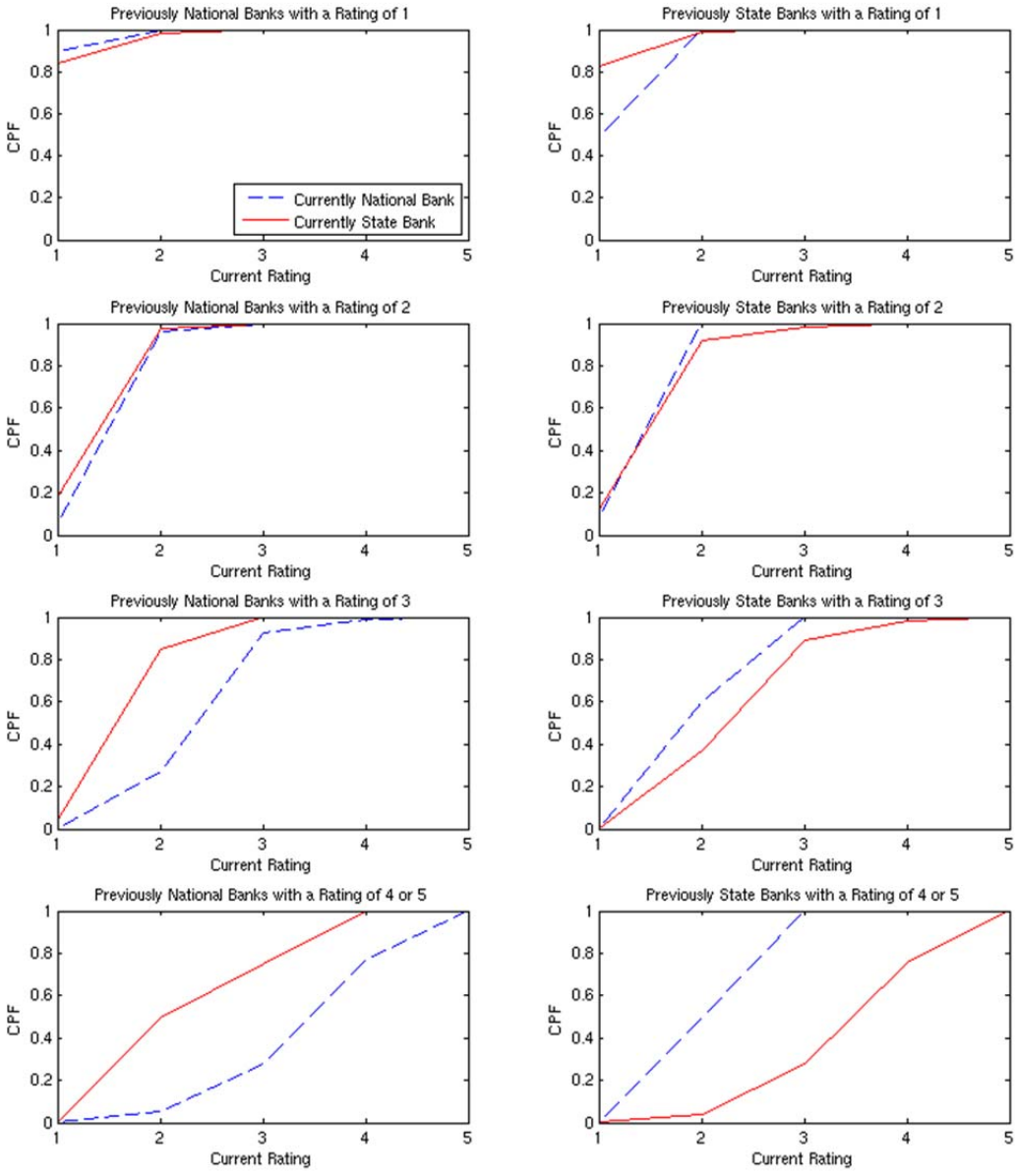
Distribution of CAMELS Ratings before and after Charter Change



Note: This figure shows the percentage of CAMELS ratings assigned in commercial bank exams per years since the respective bank switched charters. The dashed line separates observations from exams before and after charter changes.

Figure 3

Distribution of CAMELS Ratings Conditional on Previous Charter and Rating



Note: This figure shows the cumulative probability function (CPF) of CAMELS ratings assigned to national and state banks conditional on the rating received in the previous examination and on the charter at that time. The two columns of the graphs correspond to institutions that were national and state banks in the previous exam and the rows refer to banks that were then rated 1, 2, 3 and 4 or 5, where banks previously rated 4 or 5 are grouped together because there are only a few, as shown in Figure 1.

Table 1: Summary Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
Examinations data				
CAMELS of 1	0.35			
CAMELS of 2	0.54			
CAMELS of 3	0.08			
CAMELS of 4	0.02			
CAMELS of 5	0.01			
Weekdays since previous exam	267.27	119.11	22	524
Simulated assessment fees ($ thousands of 2009)	65.74	368.30	4.94	26,829.87
Number of observations	126,372			
Call Report data				
National bank (NAT)	0.26			
State nonmember bank (NMB)	0.63			
State member bank (SMB)	0.11			
Belongs to a BHC	0.80			
Largest bank in a BHC	0.12			
NAT in the same BHC	0.13			
NMB in the same BHC	0.19			
SMB in the same BHC	0.08			
Bank merged in last three years	0.09			
BHC merged in last three years	0.09			
Number of banks in the same BHC	2.83	6.51	1	83
BHC total assets ($ millions of 2009)	3,915.99	36,341.94	1.23	1,689,423.00
Total assets ($ millions of 2009)	795.91	14,486.86	1.23	1,594,975.00
Return on assets	0.01	0.01	-0.46	0.71
Return on equity	0.08	2.86	-887.46	411.97
Net operating margin	0.02	0.01	-0.71	1.18
Net charge-offs to total loans	0.01	0.66	0.00	251.03
Provision to loans and lease losses to total loans	0.01	0.63	-18.55	237.85
Equity capital to total assets	0.10	0.04	-0.05	1.00
Nonperforming loans to total loans	0.01	0.02	0.00	1.00
Total loans to total deposits	1.13	52.14	0.00	12,033.12
Number of observations	144,199			

Table 2: Charter Type Transitions Between Examinations

Charter Type Previous Exam	Charter Type Current Exam		
	National	State	Total
National	43,587	166	43,753
State	292	82,327	82,619
Total	43,879	82,493	126,372

Table 3: Probit Analysis of CAMELS of 1 or 2

Variable	Previously national	Previously state	Currently national	Currently state
Changed charter	0.955	0.880	0.970	0.830
	(0.275)***	(0.275)***	(0.322)***	(0.215)***
NAT in the same BHC	-0.002	0.085	-0.004	0.088
	(0.095)	(0.053)	(0.095)	(0.053)*
NMB in the same BHC	-0.088	0.035	-0.093	0.036
	(0.079)	(0.046)	(0.079)	(0.046)
SMB in the same BHC	-0.061	0.089	-0.061	0.089
	(0.114)	(0.054)	(0.113)	(0.054)
Belongs to a BHC	0.106	0.065	0.108	0.064
	(0.044)**	(0.022)***	(0.044)**	(0.022)***
Largest bank in a BHC	-0.004	0.065	-0.007	0.066
	(0.073)	(0.039)*	(0.073)	(0.039)*
Bank transformation	0.032	0.061	0.025	0.062
	(0.061)	(0.036)*	(0.061)	(0.036)*
BHC tranformation	0.048	-0.059	0.049	-0.059
	(0.070)	(0.037)	(0.070)	(0.037)
Previously state member bank		-0.071		-0.072
		(0.024)***		(0.024)***
Ln (number of banks in the same BHC)	0.189	0.044	0.197	0.043
	(0.097)*	(0.044)	(0.097)**	(0.045)
Ln (BHC total assets)	0.045	-0.015	0.041	-0.014
	(0.047)	(0.026)	(0.046)	(0.026)
Ln (total assets)	-0.018	0.058	-0.012	0.058
	(0.047)	(0.026)**	(0.046)	(0.026)**
Return on assets	41.367	28.356	44.970	28.271
	(6.532)***	(3.988)***	(5.966)***	(3.956)***
Return on equity	0.191	0.609	-0.155	0.621
	(0.442)	(0.162)***	(0.321)	(0.148)***
Net operating margin	-21.816	-12.466	-22.139	-12.509
	(4.651)***	(3.355)***	(4.674)***	(3.352)***
Net charge-offs to total loans	11.576	6.872	11.504	6.902
	(2.721)***	(2.094)***	(2.707)***	(2.091)***
Provision to loans and lease losses to total loans	-5.768	-9.152	-5.738	-9.166
	(3.876)	(1.925)***	(3.901)	(1.921)***
Equity capital to total assets	6.465	5.099	6.488	5.092
	(0.655)***	(0.450)***	(0.659)***	(0.449)***
Nonperforming loans to total loans	-14.396	-10.514	-14.469	-10.508
	(0.966)***	(1.969)***	(0.969)***	(1.965)***
Total loans to total deposits	0.006	0.001	0.006	0.001
	(0.001)***	(0.001)	(0.001)***	(0.001)
Ln (weekdays since previous exam)	-0.059	0.214	-0.053	0.209
	(0.029)**	(0.027)***	(0.028)*	(0.027)***
Previously CAMELS of 1	3.745	2.832	3.941	2.816
	(0.385)***	(0.262)***	(0.425)***	(0.256)***
Previously CAMELS of 2	3.155	2.044	3.347	2.029
	(0.378)***	(0.258)***	(0.419)***	(0.253)***
Previously CAMELS of 3	0.850	0.616	1.032	0.602
	(0.372)**	(0.257)**	(0.414)**	(0.251)**
Previously CAMELS of 4	0.100	-0.460	0.268	-0.471
	(0.378)	(0.268)*	(0.418)	(0.262)*
Pseudo R-squared	0.614	0.510	0.616	0.510
Number of observations	43,843	82,493	43,676	82,619
Number of banks	3,635	9,318	3,609	9,339

Note: When the currently national subsample is used the dummy variable "previously state member bank" is omitted because it predicts success perfectly. Both equations include state and year fixed effects.
*, ** and *** denote significant at the 10, 5 and 1 percent level, respectively.

Table 4: Bivariate Probit Analysis of CAMELS of 1 or 2

Variable	Previously national		Previously state	
	Charter change	CAMELS 1 or 2	Charter change	CAMELS 1 or 2
Changed charter		1.196		3.128
		(0.380)***		(0.364)***
Ln (OCC fees)	-0.888		-1.044	
	(0.305)***		(0.343)***	
NAT in the same BHC	-0.078	-0.002	0.760	0.003
	(0.099)	(0.095)	(0.095)***	(0.054)
NMB in the same BHC	0.252	-0.090	0.035	0.020
	(0.080)***	(0.079)	(0.089)	(0.045)
SMB in the same BHC	0.163	-0.062	-0.093	0.073
	(0.101)	(0.113)	(0.107)	(0.053)
Belongs to a BHC	0.087	0.106	0.086	0.064
	(0.075)	(0.044)**	(0.095)	(0.02)***
Largest bank in a BHC	-0.121	-0.003	-0.050	0.060
	(0.075)	(0.073)	(0.077)	(0.038)
Bank transformation	0.143	0.032	-0.060	0.060
	(0.076)*	(0.061)	(0.091)	(0.036)*
BHC tranformation	0.029	0.048	0.204	-0.067
	(0.081)	(0.070)	(0.080)***	(0.036)*
Previously state member bank			0.074	-0.072
			(0.075)	(0.023)***
Ln (number of banks in the same BHC)	0.085	0.189	-0.129	0.058
	(0.080)	(0.097)*	(0.083)	(0.044)
Ln (BHC total assets)	-0.037	0.045	0.050	-0.014
	(0.040)	(0.047)	(0.045)	(0.025)
Ln (total assets)	0.583	-0.018	0.855	0.049
	(0.220)***	(0.047)	(0.251)***	(0.025)**
Return on assets	3.357	41.314	4.504	28.116
	(5.898)	(6.536)***	(6.156)	(3.931)***
Return on equity	-0.086	0.191	-0.545	0.616
	(0.102)	(0.442)	(0.240)**	(0.159)***
Net operating margin	-3.219	-21.783	-10.437	-12.212
	(4.807)	(4.648)***	(4.688)**	(3.311)***
Net charge-offs to total loans	0.896	11.568	-6.443	6.789
	(2.073)	(2.722)***	(4.734)	(2.090)***
Provision to loans and lease losses to total loans	-6.026	-5.762	-1.862	-9.013
	(2.532)**	(3.878)	(1.205)	(1.908)***
Equity capital to total assets	-0.217	6.466	0.638	4.963
	(0.725)	(0.655)***	(0.819)	(0.440)***
Nonperforming loans to total loans	-1.572	-14.384	-4.808	-10.373
	(1.948)	(0.966)***	(3.026)	(1.970)***
Total loans to total deposits	-0.021	0.006	-0.002	0.001
	(0.055)	(0.001)***	(0.026)	(0.001)
Ln (weekdays since previous exam)	0.406	-0.061	0.367	0.200
	(0.063)***	(0.029)**	(0.152)**	(0.027)***
Previously CAMELS of 1	-1.263	3.746	28.806	2.817
	(0.532)**	(0.383)***	(5.128)***	(0.261)***
Previously CAMELS of 2	-0.931	3.155	29.189	2.042
	(0.521)*	(0.376)***	(5.122)***	(0.257)***
Previously CAMELS of 3	-0.340	0.850	29.590	0.620
	(0.463)	(0.371)**	(5.152)***	(0.256)**
Previously CAMELS of 4	-0.245	0.101	30.192	-0.458
	(0.472)	(0.377)	(5.270)***	(0.267)*
rho	-0.097		-0.859	
	(0.083)		(0.057)	
Number of observations	43,879		82,493	
Number of banks	3,641		9,318	

Note: Both equations include state and year fixed effects. *, ** and *** denote significant at the 10, 5 and 1 percent level, respectively.

Table 5: Duration Analysis of Bank Failures

Variable	Composite CAMELS only	Composite and Individual CAMELS
Changed charter	1.821	1.710
	(0.437)**	(0.416)**
CAMELS of 1	0.028	0.141
	(0.012)***	(0.158)*
CAMELS of 2	0.060	0.153
	(0.015)***	(0.126)**
CAMELS of 3	0.207	0.765
	(0.047)***	(0.454)
CAMELS of 4	0.580	0.976
	(0.087)***	(0.328)
National bank	0.881	0.863
	(0.184)	(0.187)
Nonmember state bank	0.828	0.828
	(0.150)	(0.154)
NAT in the same BHC	2.179	2.050
	(0.940)*	(0.892)*
NMB in the same BHC	1.880	1.759
	(0.767)	(0.712)
SMB in the same BHC	0.164	0.156
	(0.187)	(0.177)
Belongs to a BHC	1.019	0.995
	(0.174)	(0.174)
Largest bank in a BHC	1.147	1.119
	(0.370)	(0.363)
Bank transformation	0.861	0.843
	(0.212)	(0.212)
BHC tranformation	0.913	0.863
	(0.294)	(0.278)
Ln (number of banks in the same BHC)	0.451	0.472
	(0.155)**	(0.161)**
Ln (BHC total assets)	1.135	1.168
	(0.192)	(0.203)
Ln (total assets)	0.932	0.883
	(0.156)	(0.153)
Return on assets	0.001	0.001
	(0.002)***	(0.002)***
Return on equity	1.000	1.000
	(0.001)	(0.001)
Net operating margin	0.016	0.013
	(0.058)	(0.048)
Net charge-offs to total loans	0.186	0.170
	(0.161)**	(0.151)**
Provision to loans and lease losses to total loans	0.192	0.171
	(0.140)**	(0.129)**
Equity capital to total assets	0.000	0.000
	(0.000)***	(0.000)***
Nonperforming loans to total loans	19.607	21.653
	(14.643)***	(16.692)***
Total loans to total deposits	1.003	1.003
	(0.014)	(0.015)
Log likelihood	1,591.498	1,604.983
Number of observations	144,206	
Number of banks	13,040	
Number of failures	339	

Note: All equations include state and year fixed effects. *, ** and *** denote significant at the 10, 5 and 1 percent level, respectively.