Finance and Economics Discussion Series
Divisions of Research & Statistics and Monetary Affairs
Federal Reserve Board, Washington, D.C.

The Effects of Bank Charter Switching on Supervisory Ratings

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2014-20

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March 5, 2014

Abstract

I study whether commercial banks can improve their supervisory ratings by switching charters. I use the fees charged by chartering authorities to establish a causal effect from switching on ratings. Banks receive more favorable ratings after they change charters, an effect that is large for both national and state charters. In addition, controlling for bank ratings, banks that switch charters fail more often than others. These results suggest that banks can arbitrage ratings by switching charters and are consistent with regulators competing for banks by rating incoming banks better than similar banks that they already supervise.

JEL Classification: G21, G28

Keywords: Bank Charter, Bank Regulator, Banking Supervision, Ratings

I thank my conference discussants Selcuk Caner, Di Kang, Dasol Kim, Ross Levine, Alan Morrison, Tobias Wenzel, and Han Yan, as well as Bill Bassett, Lamont Black, Philip Bond, Paul Calem, John Driscoll, Simon Firestone, Mike Gibson, Martin Goetz, Barbara Hagenbaugh, Seung Lee, Bekah Richards, Jeremy Stein, Eugene White, Jason Wu, and seminar participants at the Federal Reserve Board, the 2011 International Tor Vergata Conference on Money, Banking and Finance, the 2012 Midwest Finance Association Meeting, the 2012 International Industrial Organization Conference, the 2012 Eastern Finance Association Meeting, the 2012 Financial Intermediation Research Society Conference, the 2012 European Meeting of the Econometric Society, the 2012 Financial Management Association Annual Meeting, the 2013 American Finance Association Annual Meeting, and the European Central Bank workshop "Banking Supervision and Central Banks: Insights from Research" for comments. Jane Brittingham, Aaron Game, Mike Massare, and Braden Moore provided excellent research assistance. A previous version of this paper circulated under the title "The Effects of Bank Regulator Switching on Supervisory Ratings." The views expressed herein are my own and do not necessarily reflect those of the Board of Governors or the staff of the Federal Reserve System.

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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 switch alters the regulators' powers, which depend on which banks they supervise, and also often affects regulators' resources, because most regulators are funded by fees charged to the banks overseen.[1] Regulators may thus be induced to compete for banks and their funds by supervising banks leniently.

Indeed, policymakers have raised this concern for many years and have emphasized it since the financial crisis of 2007. In 1974, Federal Reserve (Fed) Chairman Arthur Burns [1974] stressed the "well-understood fact that regulatory agencies are sometimes played off against one another." More recently, U.S. President Barack Obama [2009] argued that the ability of financial institutions to "shop for the regulator of their choice" weakened oversight prior to the crisis. The Financial Crisis Inquiry Commission [2011] concluded that "some institutions switched regulators in search of more lenient treatment." This view also supported the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 in eliminating the Office of Thrift Supervision (OTS) and in imposing additional requirements for banks to switch regulators.[2]

Despite being widely accepted, the idea that regulator switching undermines regulation and supervision up to now has been based only on anecdotal evidence.[3] This evidence includes 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. No empirical strategy has established a causal effect of regulator changes on their standards. In this paper, I fill this gap by examining whether commercial banks can improve the ratings that regulators assign to them by switching charters. Regulators assign a rating, named CAMELS, based on their assessment of the safety and soundness of banks. This rating significantly affects banks' profits, because it determines how often regulators examine banks, the assessment fees that regulators charge banks, and the supervisory actions that regulators impose on banks, such as requiring banks to raise more capital or declaring banks insolvent.

I analyze whether regulators rate banks higher after banks switch between national and state charters. National and state-chartered banks are supervised by mutually exclusive sets of regulators: the Office of the Comptroller of the Currency (OCC) supervises banks with a national charter, while

[1] The Office of the Comptroller of the Currency is the only federal regulator funded by fees charged to banks. At least 42 of 54 state banking departments (including District of Columbia, Guam, Puerto Rico, and Virgin Islands) are partially or fully funded by these fees [Conference of State Bank Supervisors, 2005].

[2] The OTS 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. Regarding the requirements to switch regulators, the Federal Financial Institutions Examination Council [2009] issued a statement in 2009 to reaffirm that "charter conversions or changes in primary federal regulator should only be conducted for legitimate business and strategic reasons." This statement also imposed restrictions on bank regulator switching and remains in effect.

[3] See American Bankers Association [2009] and Calabria [2009] for arguments against this idea.

the state banking departments, together with the Fed or the Federal Deposit Insurance Corporation (FDIC), supervise banks with a state charter. Thus, when banks switch between national and state charters, banks also switch between mutually exclusive sets of regulators that rate them. Therefore, by estimating the effects of charter switching on ratings, I estimate the effects of switching between mutually exclusive sets of regulators on ratings.

Estimates of these effects can be biased, however, if they do not account for the fact that charter choice is endogenous to ratings. Indeed, banks select charters depending on the ratings that they expect to receive. Also, regulators are supposed to deny conversion by banks that seriously concern them, selecting only the safest. Thus, one must break the endogeneity between charter switching and ratings to establish a causal effect of switching on ratings.

For this purpose, I use exogenous variation in charter switching caused by the assessment fees that chartering authorities charge banks. The OCC and most state banking departments charge fees to the banks that they supervise. Both the fees and the difference between the fees that the OCC and the states charge can be large compared to bank assets or income, particularly for small banks. Thus, banks take these fees into account when deciding whether to switch charters, implying that these fees potentially cause an exogenous variation in charter switching.

However, assessment fees depend on supervisory ratings, which implies that fees are not valid instruments for switching. To obtain a valid instrument based on fees, I need variation in those fees that is exogenous to ratings. To this end, I calculate the fees that the OCC and the states would charge each bank if banks differed only in total assets, which is the main characteristic that regulators use to determine each bank's fees. Thus, I calculate proxies of fees that do not vary with any other bank characteristic besides assets (including ratings), implying that these proxies are valid instruments to estimate the effects of charter switching on ratings.

These proxies of fees vary with bank assets, regulators, and time, which helps to identify the effects of charter switching on ratings. Fees are typically a concave function of bank assets. However, the schedules of fees that many regulators use to determine banks' fees include minimum values for fees and kinks at certain asset thresholds. Also, for a few state regulators, the schedule is discontinuous or includes only a flat fee plus a percentage of assets. Moreover, the OCC adjusts its fees every year, but most often not proportionally throughout the whole support of bank assets. Thus, the proxies of fees that I calculate based on these schedules vary across banks, regulators, and time in ways that cannot be described by a parsimonious function of assets. This helps to identify the effects of fees on charter switching and, in particular, helps to separate these effects from the effects of bank assets on switching.

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 regulators than banks that do not. This result is robust to different empirical strategies. The main results of the paper, in particular, imply that banks in-

crease their odds of being rated fundamentally safe and sound to almost 100 percent by switching charters.

Moreover, I show that, controlling for bank ratings, banks that change charters are more likely to fail than others, which suggests that, for a given rating, banks that changed charters in the past are actually riskier. Together, these results indicate that banks can arbitrage ratings by switching charters in either direction, and the results are consistent with the view that regulators compete for banks by rating incoming banks better than similar banks that regulators already supervise.

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

2 Related Literature

This paper examines the effects of bank charter switching on supervisory ratings, and therefore is related to empirical papers that investigate the effects of bank regulator switching and what determines regulators' ratings. These two questions, however, have never been examined together. Rosen [2003, 2005] studies the first question by investigating whether regulator switching affects bank risk, performance, and failure rates, but does not examine supervisory ratings. Besides studying the effects of switching on ratings, I use a novel empirical strategy to account for the endogeneity of switching. Many papers analyze the second question, namely what determines supervisory ratings. These papers study whether ratings vary with economic conditions or over time [Berger, Kyle, and Scalise, 2001; Curry, Fissel, and Hanweck, 2008; Krainer and Lopez, 2009; Bassett, Lee, and Spiller, 2012], with ratings' disclosure rules [Feldman, Jagtiani, and Schmidt, 2003], and between regulators that alternate examinations of state banks [Agarwal, Lucca, Seru, and Trebbi, 2013]. Although these papers account for potential differences in regulators' standards, they do not examine whether banks that decide to switch regulators are rated differently. Thus, I contribute to the literature by showing that regulator switching affects supervisory standards.[4]

More broadly, this paper is related to research on the effects of competition among bank regulators on their standards. In fact, the effects of charter switching on ratings that I estimate exemplify the general result from that literature, that regulation and supervision are weakened by competition among regulators. This result can be traced back to Stigler [1971] and Peltzman [1976], who argue that firms influence their regulators, and it is emphasized by others who discuss specifically why competition among bank regulators drives their objectives away from the social optimum, such as Kane [2000], Calomiris [2006], and White [2013].

Theoretical research on the effects of competition among bank regulators on their standards

[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.

shows that these effects depend on how banks react to changes in those standards.[5] Weinberg [2002] shows that regulators may supervise banks loosely to attract a larger share of banks, and that their effort depends on how much banks care about examinations and assessment fees when choosing their regulators. Acharya [2003] and Dell'Ariccia and Marquez [2006] show that national regulators may lower their regulatory standards relative to the social optimum to help their banks compete internationally, and that this difference in standards depends on how domestic banks respond to standards when they compete internationally. However, Morrison and White [2009] show that regulators may increase their auditing standards to attract banks because depositors trust better regulated banks, which allows these banks to pay less for deposits and to hold less capital. Once again, this change in standards depends on how banks weigh stricter standards against higher costs of deposits and capital when choosing their regulators. Taken together, these papers imply that the effects of regulator competition on standards can only be properly estimated if one accounts for the simultaneity between bank behavior and regulatory standards. I do this using an empirical strategy that breaks the endogeneity between charter switching and ratings.

This paper also 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 (see, for example, Scott [1977] and Greenspan [1998]): First, if banks choose regulators to maximize profits, then banks can profit more with more choices of regulators than with only one, which can improve efficiency, as in Tiebout [1956]. Second, regulation and supervision may improve when regulators compete, becoming less burdensome, more flexible, and more innovative. Third, as discussed above, competition may cause the opposite effect, making regulators that want to attract banks excessively permissive and therefore endangering the system. This paper supports this third argument by showing that regulators rate incoming banks better than similar banks that regulators already supervise.

The question of whether competition among regulators affects supervisory ratings is analogous to the question of whether competition among credit rating agencies affects security ratings. Indeed, the effects of regulator switching on supervisory ratings can be explained by the theoretical result that competition among rating agencies inflates ratings. Competition can inflate ratings because issuers can then shop from a bigger pool of ratings and because competition increases the incentives for agencies to cater to issuers by inflating ratings [Faure-Grimaud, Peyrache, and Quesada, 2009; Sangiorgi, Sokobin, and Spatt, 2009; Skreta and Veldkamp, 2009; Bolton, Freixas, and Shapiro, 2012]. My empirical framework includes both of these effects to explain an increase in a bank's CAMELS rating after it switches charters: banks may choose the regulators that rate them better and banks may also be rewarded with good ratings for switching. Thus, my evidence that charter switching affects supervisory ratings can be explained by reasons analogous to those that explain the

[5]See also Kahn and Santos [2005], Holthausen and Rönde [2005], and Colliard [2013], who study how to optimize banking supervision with multiple regulators. In these papers, banks are supervised by multiple regulators, but they cannot choose their regulators, and thus regulators do not compete with each other.

evidence that competition among rating agencies affects security ratings [Benmelech and Dlugosz, 2010; Kisgen and Strahan, 2010; Becker and Milbourn, 2011; Bongaerts, Cremers, and Goetzmann, 2012; Doherty, Kartasheva, and Phillips, 2012; Cohen and Manuszak, 2013; Griffin, Nickerson, and Tang, 2013]. Moreover, I separate the effect on ratings of banks choosing the regulators that rate them better from the effect of regulators rating incoming banks better than other banks that they already supervise, similarly to Griffin, Nickerson, and Tang [2013], who separate the effects of rating shopping by issuers from the effects of rating catering by rating agencies.

3 Charter Choice, Assessment Fees, and Supervisory Ratings

3.1 Bank Charter 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 be members of the Fed. Banks in all of these categories are necessarily insured by the FDIC.[6] 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.

In this paper, I study effects of charter changes. Thus, I separate banks into national and state banks, grouping state member and nonmember banks in a single category. Three reasons justify this approach. First, banks with national and state charters are supervised by mutually exclusive sets of regulators: the OCC for national banks, and states and the Fed or the FDIC for state banks. 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, regulators have been very concerned with regulatory arbitrage by banks that switch charters [Federal Financial Institutions Examination Council, 2009].[7]

Banks have the right to switch regulators and face no difficulties in doing so if they are safe and sound. Banks do not need the approval of their current chartering authority to switch to another authority. Similarly, state-chartered banks can give up Fed membership without the Fed's

[6] 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.

[7] This approach also has two practical advantages. First, 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 decreasing the number of parameters to be estimated. Second, 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.

approval. Regulators are expected, however, to deny charters and Fed membership to applicants they consider unsafe and unsound, and applicants with serious pending supervisory actions [Federal Financial Institutions Examination Council, 2009].

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, supervision, and membership costs. Regulation can differ across regulators, which may affect banks' choices. Moreover, even when different regulators follow the same regulation, they may differ in how they interpret it or how they use the discretion allowed by it, thereby having a similar effect as differences in regulation.

Supervision also affects charter choices. Banks may find their relation with regulators especially attractive because of better support or a lower supervisory burden. Regulators may be particularly 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, regulators may reduce this burden by examining banks jointly with other supervisors or, in the case of the Fed, which is responsible for the regulation and supervision of bank holding companies and financial holding companies, by examining these companies and the banks affiliated to such companies together.[8]

Although regulators should use the same criteria to assess the safety and soundness of banks, different regulators may rate similar banks differently, thereby giving banks opportunities to arbitrage their ratings by changing regulators. Indeed, some banks reportedly have switched charters to improve the odds of keeping or receiving good ratings. Colonial Bank exemplifies this case: It switched from a state nonmember bank to a state member bank in 1997, to a national bank in 2003, back to a state nonmember bank in 2008, and failed in 2009. In 2007, the OCC assigned Colonial a rating of 2, but in 2008, when Colonial switched to a state charter, the OCC was pursuing a rating downgrade based on findings from recent examinations. According to Federal Deposit Insurance Corporation [2010], in the OCC's view, these findings motivated Colonial to switch to a state charter.[9]

Membership costs also affect the relative value of regulators. These costs include requirements to hold Federal Reserve Bank stock and fees charged by chartering authorities. The Federal Reserve Act requires that Fed member banks hold stock of their respective regional Federal Reserve Bank, yielding a fixed annual dividend of six percent. This restriction on asset allocation favors state nonmember banks as opposed to state member banks and national banks. Chartering authorities also charge different fees for mergers, acquisitions, charter applications and conversions, assessments,

[8]See Rezende [2011] for an analysis of what determines whether federal and state supervisors examine state banks independently or together.

[9]The Federal Deposit Insurance Corporation [2010] argues that "[A]ccording to the OCC, in response to examiners' findings, bank management became argumentative and recalcitrant and, unbeknownst to the OCC, bank management also sought out a charter change." Although this charter switch prevented the OCC from downgrading Colonial, the FDIC and the Alabama State Banking Department downgraded it to 3 only three months after it switched charters.

and other activities. Among those fees, assessment fees are typically the largest and can be large enough to induce banks to switch charters. I discuss these fees in detail in the next subsection.

3.2 Assessment Fees

Fees vary with bank charter, assets, and time. The OCC charges fees to national banks and state banking departments charge fees to state banks, but the Fed and the FDIC do not charge fees to any commercial banks, even though the Fed and the FDIC also supervise state banks.[10] In general, state banks pay lower fees than national banks both because the Fed and the FDIC do not charge assessment fees and because the fees that national banks pay to the OCC almost completely fund the OCC's budget.

Fees are typically increasing and concave functions of assets. In addition, the OCC's and most states' fees are kinked or discontinuous functions of assets. Some of these kinks and discontinuities cause large differences in fees for banks of similar sizes with the same charter.

Figure 1 presents examples of how fees vary with bank charter and assets. This figure shows how the 2012 annual assessment fees as a percentage of assets vary with assets for banks with at most $100 million of assets chartered by the OCC, the California Department of Financial Institutions, and the New York State Department of Financial Services. The OCC's fees are larger than states' fees for most of the interval of assets shown in this figure. California's schedule of fees is kinked close to $5 million and at $20 million. The OCC's schedule is kinked at $2 million (not shown) and $20 million, although these kinks are not pronounced. New York's fees jump substantially at $50 million.

Kinks and discontinuities can help separate the effects of fees, which are a function of assets, from other effects of assets on charter switching, as long as banks respond to these kinks and discontinuities by choosing different charters depending on whether their assets are below or above the value where a kink or discontinuity is located. If the effects of fees on charter choice can be distinguished from the effects of bank assets, then fees can be considered a relevant instrument to identify the effects of charter switching on ratings.

Indeed, bank managers and regulators argue that differences in assessment fees across chartering authorities motivate banks to switch charters [Blair and Kushmeider, 2006]. Managers from banks that have switched from national to state charters often claim that differences in fees between the OCC and state banking departments mattered in their decisions.[11] Also, many states advertise lower assessment fees as an advantage of a state charter.[12] Accordingly, the OCC argues that differences in fees also motivate banks to switch from national to state charters [Hawke, 2002].

[10] Since 2013, the Fed charges assessment fees to some nonbank financial companies and to large bank holding companies and savings and loan holding companies.

[11] Examples include banks from Alabama [Moyer and Elis, 2009], Kansas [Siebenmark, 2012; Silver-Greenberg, 2012], and Pennsylvania [Blumenthal, 2011], among others.

[12] For example, Florida [Florida Office of Financial Regulation, 2013], Kansas [Office of the State Bank Commissioner, 2013], and Texas [Texas Department of Banking, 2013].

In addition to varying with banks' charters and assets, fees also vary over time. In 1993, the beginning of our sample, the OCC's schedule did not include a minimum fee, which was introduced in 2000 at $5,000. Between 1993 and 2009, fees were adjusted proportionally for the whole support of bank assets: fees increased in 1994, decreased between 1994 and 2000, and increased again between 2000 and 2008. In 2009, fees decreased and a new bracket of rates, for $250 billion or higher, was introduced. Between 2009 and 2013, the fees for the first $20 billion of assets were adjusted to account for inflation, while the fees corresponding to assets above this value remained constant.[13] These changes over time in the OCC's fees also help to identify the effects of fees on charter switching.

3.3 Supervisory Ratings

Supervisors assign CAMELS ratings based on off-site analysis and on-site bank safety and soundness examinations. Supervisors evaluate six main characteristics and assign a rating to each one. The characteristics are Capital Adequacy, Asset Quality, Management, Earnings, Liquidity, and Sensitivity to Market Risk, and the respective ratings are called component ratings.[14] Based on the evaluation of these six characteristics, a composite CAMELS rating is also assigned. In the exit meeting of each examination, supervisors disclose to bank management the CAMELS ratings assigned. After that, supervisors send the bank a report of the findings, describing the bank's overall condition and justifying the ratings assigned.[15] The six component ratings and the composite rating range 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.

The CAMELS ratings assigned to a bank has a substantial impact on its profits because they affect the examination burden, assessment fees, and potential supervisory actions. Banks are subject to more frequent examinations—and therefore a heavier burden—the higher their ratings.[16] Banks with higher ratings also often pay higher assessment fees, either because some supervisors' fees depend directly on ratings or because the fees depend on the frequency of examinations, which in turn depends on ratings. Supervisory actions are also more likely to be imposed and are increasingly severe the worse the ratings are. Informal actions—the least severe—are usually taken when a bank's condition deteriorates and it reaches a CAMELS 3 rating, while formal actions—

[13] Besides these changes, the OCC also introduced a discount and a surcharge over time. Starting in 1997, nonlead national banks received a 12 percent discount on their fees. Also, starting in 1998, banks with a CAMELS rating of 3 or worse received a surcharge on their fees. The surcharge applies to the fees corresponding to the first $20 billion of assets. The surcharge was equal to 25 percent between 1998 and 2001 and, since 2001, is equal to 50 percent for CAMELS 3 banks and 100 percent for CAMELS 4 and 5 banks.

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

[15] 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, supervisors started communicating components ratings. See Feldman, Jagtiani, and Schmidt [2003] for details.

[16] The Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA), which became effective in December 1992, requires that federal supervisors examine banks every 12 to 18 months, depending on banks' size and risk profile. See Rezende and Wu [2013] for evidence of the effects of frequency of examinations on bank performance.

the most severe—are taken when it reaches a CAMELS 4 or 5 rating [Federal Deposit Insurance Corporation, 1997]. Because the composite rating is intended to summarize the component ratings and because I refer to it more often than to the component ratings in this paper, henceforth I will generally refer to the composite rating as the CAMELS rating, unless otherwise noted.

3.4 Charter Switching and CAMELS Ratings

The main question of this paper is whether banks can increase the odds that they receive good ratings, of 1 or 2, by switching charters. Figure 2 presents some evidence of positive effects of charter switching on ratings. This figure shows how ratings change between examinations, depending on whether banks switch charters. The unit of observation is a bank examination. In each chart, the horizontal axis indicates the ratings assigned in examinations and the vertical axis shows the cumulative probability of these ratings conditional on banks' charters one year before the examination and on their ratings in the previous examination. Thus, the two columns of charts correspond to banks that held national and state charters one year before an examination, and the four rows refer to banks that were rated 1, 2, 3, and 4 or 5 in the previous examination. Banks previously rated 4 or 5 are grouped together because there are only a few of those banks and only a small fraction of them change charters. For example, the chart in the upper-left corner of the figure shows the distribution of ratings for national and state banks that were national banks one year before the respective examination and that were rated 1 in their previous examination.

These graphs show two clear facts about examinations: good ratings persist over time and bad ratings are more likely to improve after banks switch charters. The graphs in the top two rows show that banks that were previously well rated tend to keep good ratings in future examinations, for any combination of charters as of the examination date and one year before. The first row shows that more than 99 percent of banks rated 1 in the previous examination are rated 1 or 2 in the current examination; the second row shows that more than 90 percent of banks rated 2 in the previous examination are rated 1 or 2 in the current examination. Still, the charts in the top row show that the odds that banks rated 1 keep these ratings if they switch charters are actually lower than if they do not switch. In particular, the top-right chart shows that these odds are twice as large for banks that held state charters one year before the examination and kept their charters as opposed to banks that switched to a national charter. This suggests that ratings tend to revert toward 2—the median and the mode of the distribution—when banks switch charters.

The graphs in the bottom two rows show the second fact: bad ratings are more likely to improve after banks switch charters. Ratings of banks that switch charters first-order stochastically dominate ratings of banks that do not switch for any previous charter and have either a previous rating of 3 (third-row charts) or 4 or 5 (fourth-row charts). In fact, the cumulative distributions of ratings strongly favor banks that switch charters compared to banks that do not. About one third of the CAMELS 3 national banks that keep their charters are upgraded in the next examination,

but roughly two thirds of those that switch charters are upgraded. Similarly, around one third of the CAMELS 3 state banks that keep their charters are upgraded in the next examination, but half of those that switch are upgraded. For banks previously rated 4 or 5, these differences are even larger. This evidence suggests that banks can improve their ratings by switching charters in either direction.

This evidence can be explained by regulators assigning better ratings to incoming banks compared to similar banks that they already supervise. However, in the U.S. supervisory framework, regulators are expected to apply equal standards to all banks. In fact, regulators are expected to reject poorly-rated banks that apply for a charter change and are expected not to upgrade banks after charter changes. Chartering authorities should reject applications from banks subject to serious or material enforcement actions by their current regulators. These authorities should also consult with the FDIC (the deposit insurer and the receiver for failed banks) and the Fed (the holding company supervisor, for banks that belong to one) before accepting applications from banks whose current supervisors have rated them or plan to rate them 3, 4 or 5, or have imposed or plan to impose serious or material corrective programs on those banks. Moreover, for banks that succeed in switching charters, it is expected that their current ratings "will remain in place" [Federal Financial Institutions Examination Council, 2009]. Thus, banks rated 3, 4 or 5 should rarely switch charters and, if allowed to, should rarely be upgraded.

Still, this evidence does not necessarily imply that regulators rate incoming banks better than equally safe banks that these regulators already supervise. Banks that change regulators can be better rated than banks that do not change for two other reasons. First, regulators should deny conversion by banks that seriously concern them, selecting only the safest banks. Second, regulators may differ in the ratings they would assign to the same bank, even if they do not treat incoming banks better, which would cause banks to change over time to the regulators that rate them best. These two reasons can explain the differences in probabilities of ratings between banks that do and do not switch charters shown in Figure 2.

Moreover, even though regulators may rate incoming banks better, this does not imply that they do this intentionally. Vineyard Bank is reportedly an example of this. It was established as a national bank in 1981, became a state non-member bank in 2001, switched back to a national charter in 2006, and failed in 2009. An audit report from the Department of the Treasury [2010b] indicates that its last change in regulators affected its ratings positively: Before switching charters in 2006, Vineyard was examined by the OCC, which then assigned Vineyard a rating of 2. However, according to an OCC official cited in this report, the OCC was not aware of some measures taken by Vineyard's previous regulators to address problems at the bank during this pre-conversion examination. This OCC official argued that knowledge of those measures would have affected the ratings assigned to Vineyard. Still, this report does not indicate that the OCC intentionally

overlooked Vineyard's weaknesses.[17]

Moreover, banks can increase the odds of receiving good ratings by switching charters, not only because their new regulators can rate them better, but also because their new regulators may take longer to revise incoming banks' ratings than banks' previous regulators would. One such example is Silverton Bank, which was a state member bank that switched to a national charter in 2007 and failed in 2009. Silverton was rated 2 by its previous regulators, a rating maintained by the OCC in a pre-conversion examination in May 2007, right before the bank's conversion in August 2007, despite "significant weaknesses identified by OCC examiners" during this examination [Department of the Treasury, 2010a]. This rating was kept constant until June 2008, when the OCC conducted its first full-scope examination on Silverton and assigned the bank a rating of 5. However, this examination occurred 17 months after the bank's last full-scope examination by the Fed, contrary to the requirement that a bank with Silverton's characteristics be subject to a full-scope examination at most 12 months after its last full-scope examination. An audit report from the Department of the Treasury [2010a] argues that this 17-month interval between full-time examinations was excessive and that the OCC should have deferred approval of this charter conversion until weaknesses identified in the pre-conversion examination were addressed.

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 examinations of commercial banks with a valid CAMELS rating from 1993 to 2012.[18] 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 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 from previous examinations, I match each examination with the previous one of the

[17] In 2007, in the first full-scope examination after the 2006 conversion, the OCC also assigned a composite CAMELS rating of 2 to Vineyard, based on a positive assessment of the bank's risk management controls. However, the Department of the Treasury [2010b] suggests that the OCC should not have assigned Vineyard such a good rating, arguing that the OCC "should have reached a different conclusion" about those risk management controls. Moreover, the report argues that the "OCC's process to approve Vineyards 2006 conversion to a national bank charter was flawed."

[18] I restrict the data to examinations from 1993 or after to ensure that all examinations in the sample were subject to the changes introduced by the 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.

same bank.[19]

I identify banks' charters, entity types (national, state nonmember or state member), and changes in charters and entity types using the Call Reports that banks submit quarterly. I assign to each examination the charter and the entity type of each bank reported in the last Call Report before the respective exit meeting date. To identify charter and entity type changes, I compare that information with the charter and entity type reported one year before.[20]

Data on examinations are complemented with the bank balance sheet and income data from Call Reports that regulators would consider when rating a bank. Following Bassett, Lee, and Spiller [2012], for the six components of the CAMELS rating, I use the following data:[21]

- Capital adequacy: Total risk-based capital ratio, the leverage ratio, and the ratio of delinquencies to loan-loss reserves
- Asset quality: Noncurrent loan ratio, the ratio of private security holdings (which excludes Treasuries, agency securities, and agency MBS) to total assets, the ratio of loans secured by commercial real estate (CRE) to total assets, the ratio of loans secured by residential real estate (RRE) to total assets, and the ratio of other loans (not secured by real estate) to total assets
- Management quality: Noninterest expense to revenue (net interest income plus noninterest income)
- Earnings: Return on assets (ROA) and net interest margin (NIM)
- Liquidity: The ratio of core deposits to total assets and the "volatile liability dependence ratio," which measures the extent to which a bank is funding long-term investments with short-term liabilities[22]

[19] I eliminate examinations taking place fewer than 180 or more than 600 days after the previous examination. 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 because of delays in examination schedules or simply because of errors in the data, the examination supposed to be the last one—and whose CAMELS rating will prevail—appears in the data as the first one. Examinations within intervals longer than 600 days are also eliminated, because they are likely to be cases in which an examination performed within the interval was not registered in the data or cases in which supervisors did not obey the minimum frequency requirements for examinations.

[20] I use a fixed interval of time to determine whether banks switch charters to ensure that the length of this interval—and therefore the odds of switching during this interval—are exogenous to ratings. In fact, banks are subject to more frequent examinations the higher their ratings. However, by choosing a one-year interval, I assume that only charter changes over the past year affect ratings. Thus, to evaluate this assumption, in Appendix A, I present results using a two-year interval instead.

[21] I eliminate observations with return on assets lower than -20 percent or higher than 15 percent.

[22] The core deposits ratio is defined as the sum of transactions deposits, savings deposits, and small-denomination time deposits divided by total assets. The volatile liability dependence ratio is defined as: (interest-bearing foreign liabilities + large time deposits + federal funds borrowed and repos + demand notes issued to the U.S. Treasury and other borrowed money - federal funds lent and reverse repos - assets held in the trading account) divided by total assets.

- Sensitivity to market risk: Return on risky assets defined as noninterest income net of deposit fees and fiduciary income divided by average total assets

I also include data on banks' total assets to account for the effects of bank size on ratings and charter choice. These data also help to separate the effects of assets from the effects of assessment fees on charter choice. To ensure that the effects of assets and fees are separated, I include a flexible polynomial of the natural logarithm of assets in the econometric specifications. I discuss the role of this polynomial in more detail in Subsection 5.2. These data are collected from year-end Call Reports.

The data are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. By limiting bank size, I ensure that assessment fees are strong instruments for charter switching. Banks with at most $20 million in assets often change their characteristics substantially, which normally prevents them from switching charters. For bank with more than $500 million in assets, assessment fees are weaker instruments because, as discussed in Subsection 3.2, these fees decrease as a proportion of assets as bank size increases, which implies that these fees should not affect the charter choices of larger banks.

For all balance sheet items except total assets, I use the average value of the four quarters in the calendar year before the year of the examination's exit meeting. For the income and flow items, I use four-quarter cumulative amounts scaled by relevant balance sheet or income items when necessary. All the financial ratios based on flow items are normalized by Schedule K balance sheet items, that is, they reflect the average outstandings in that item during the quarter or year, as appropriate. The financial ratios based solely on balance sheet items are based on end-of-period values, except for the volatile liability dependence ratio, which is more subject to quarter-end window dressing and therefore based on Schedule K values.

I also use data on bank holding company affiliation and merger activity. Data on bank holding company affiliation indicate whether a bank belongs to a bank holding company and, if it does, the data identify the company and the other banks affiliated with it. 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 examination.

Data on the assessment fees that the OCC and the states would charge each bank if it were a national or a state bank are calculated using regulators' schedules of assessment fees. For the fees charged by the OCC, I use the schedules of assessment fees that the OCC publishes in bulletins from 1992 to present. The OCC's fees depend on current CAMELS ratings and on whether the bank is affiliated with a bank holding company that contains other national banks. To create a proxy of the OCC's fees for each bank-year pair that is independent of ratings and of other banks in the same holding company, I assume that all banks are national banks rated 1 or 2 and are not affiliated with a bank holding company. Then, I use the total assets reported in year-end Call Reports of each bank-year pair and apply those numbers to the OCC's General Assessment Fee

schedule valid in the respective year.

For fees charged by state banking departments, I use the schedules of assessment fees from these departments.[23] These data, however, are not available for all states. I restrict the sample to states with schedules of fees that depend only on total assets and CAMELS ratings.[24] Moreover, in contrast to the OCC's schedules, states' schedules are not available for every year in the 1993 to 2012 period. Thus, I calculate states' fees for each year from 1993 to 2012, using the schedules of assessment fees collected in 2013. This imposes the assumption that none of these schedules have changed throughout the time period, which is not true. Thus, the state assessment fees that I calculate include some measurement error.

Table 1 summarizes the data. The four columns separate examinations by whether the respective bank held a national charter one year before and at the examination date, a national charter one year before and a state charter at the examination date, a state charter one year before and at the examination date, or a state charter one year before and a national charter at the examination date, respectively. Thus, columns 1 and 3 correspond to examinations of banks that did not switch charters for the past year and columns 2 and 4 correspond to examinations of banks that switched. Banks that did and did not switch charters over the past year differ in important characteristics. First, the percentage of ratings of 3 to 5 assigned to banks that switched charters in the past year is lower: 6.3 percent for banks that switched from a national to a state charter compared to 11.8 percent for national banks that kept their charters, and 3.1 percent for banks that switched from a state to a national charter compared to 13.0 percent for state banks that kept their charters. In addition, banks that merged with another bank or bank holding company over the past three years or banks that belong to a bank holding company that merged with another bank or bank holding company over the past three years are more likely to have changed their charters over the past year. This is consistent with the fact that many charter changes are driven by mergers. Finally, within this sample of examinations, of banks with at least $20 million and at most $500 million of assets, banks that switched charters are bigger than those that did not, especially for banks that held a state charter one year before the examination. This is consistent with the fact that larger banks are more likely than smaller banks to hold national charters.

[23]The sources for the schedules of assessment fees are mainly these departments' websites, accessed during February and March 2013. For departments that do not post this information online, the source is the online service "A Profile of State-Chartered Banking," available from www.csbs.org, also accessed during February and March 2013.

[24]The states for which data on assessment fees are available are AK, AL, AR, CA, DC, DE, FL, GA, ID, IL, IN, KY, MA, MD, ME, MI, MO, MT, NC, ND, NE, NM, NV, NY, OK, OR, PA, SD, TX, UT, VA, WA, WI, WV, and WY.

5 Evidence

5.1 Univariate Probit Analysis

5.1.1 Empirical Strategy

In this section, I estimate the effect of changing charters on ratings. I first present results using a univariate probit model:

$$r_i = X_i\beta + I_{si}\gamma + \xi_i + \varphi_i + \eta_{ri}. \tag{1}$$

For bank examination i, r_i is the latent value for the respective bank of being assigned a rating of 3, 4, or 5; X_i is a vector of bank characteristics, which mostly vary between examinations of the same bank; and β is the respective vector of coefficients, which, for convenience, I assume is the same for both charters. $I_{si} = 1$ if the bank changed its charter during the one-year period ending at the start of the quarter of the examination and $I_{si} = 0$ otherwise. γ is the mean effect of switching charters and thus the sign of this coefficient should be negative if charter switching improves ratings. ξ_i and φ_i are state and year fixed effects. η_{ri} is an unobservable effect that has a standard normal distribution and mean 0 given X_i and that accounts for the match between the bank and the charter. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. Still, standard errors are only slightly larger in this case than if they were clustered at the bank level.

According to (1), a bank cannot directly determine its own ratings, but if γ is different than zero, the bank can affect the odds of obtaining a good rating by choosing charters. A bank's charter choice, represented by I_{si}, together with the characteristics and the effects included in (1), determine the latent value of its rating, r_i. The bank is assigned a CAMELS of 3, 4, or 5 if r_i is positive.

We do not observe r_i. Instead, we observe an indicator variable I_{ri} for a CAMELS rating of 3, 4, or 5, such that $I_{ri} = 1$ if $r_i \geq 0$ and $I_{ri} = 0$ otherwise. I_{ri} depends on whether the bank is assigned a rating higher than 2 for three reasons. First, a rating of 3 is much costlier for a bank than a rating of 2: as discussed in Section 3, 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. Second, 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. Third, most national and state banks that switch and that do not switch charters are rated 2, as shown in Table 1.

The other ratings boundaries are not as relevant to my analysis. The boundary between 1 and 2 is not as relevant to banks' profits because banks rated 1 or 2 are examined with similar frequencies, they generally pay the same assessment fees, and they are not typically subject to severe supervisory

actions. From a supervisor's viewpoint, banks rated 1 or 2 are considered fundamentally sound. Banks rated 4 or 5, in contrast, 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 changes, and the fact that there are fewer banks rated 4 or 5 together than any other rating, imply that there are only a few charter changes by these banks. Still, in the next subsection I investigate how the results change if I use CAMELS ratings instead of I_{ri} as the dependent variable.

5.1.2 Results

The estimates imply that the effect of charter changes on ratings is large for banks switching to state and to national charters. Table 2 shows the results for banks that switch from national to state charters. Column 1 shows the probit results from a sample of examinations of banks that held national charters as of the Call Report submitted one year before the exit meeting date of the examination. The dependent variable is a dummy that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. The -0.430 estimate of γ implies that the odds that a representative national bank obtains a rating of 3 to 5 decrease by 7 percent—the number inside brackets in column 1—if it switches to a state charter: from 12 percent—the percentage of these ratings in examinations of national banks that did not switch charters in a year, as shown in Table 1—to 5 percent.[25] Column 2 shows that this coefficient is also negative and significant if I estimate it using ordinary least squares (OLS) instead of probit. The -0.046 estimate implies that the odds that a representative national bank obtains a rating of 3 to 5 decrease by 5 percent if it switches to a state charter. Both the probit and the OLS coefficient estimates imply odds of receiving ratings of 1 or 2 for switchers, equal to 95 and 93 percent, that are close to the fraction of these ratings assigned to national banks that switched charters over the past year, equal to 94 percent, as shown in Table 1.

The specifications in Table 2 rely on an assumption that I impose throughout the paper, but which can potentially bias the estimates of the effects of charter switching on ratings. I assume that the coefficients of banks' characteristics—the vector β—are the same for both national and state banks. I impose this assumption to identify these effects with a simple empirical framework. This assumption, however, can bias the estimates if banks' characteristics affect national and state banks' ratings differently. More specifically, in the first two columns, I select the sample based on bank charters one year before the examination. Because the large majority of banks do not change

[25] Throughout the article, I estimate the effect of transferring from a national to a state charter using a representative national bank as a reference. This national bank is representative in the sense that its predicted probability of obtaining a CAMELS rating of 3, 4, or 5 equals the fraction of these ratings assigned to national banks that did not switch charters for one year. Thus, the average treatment effect is $\Phi(X\beta^* + \gamma^*) - \Phi(X\beta^*)$ where $X\beta^*$ is chosen so that $\Phi(X\beta^*)$ equals that probability and where a charter change during this one-year period is the treatment. I use the same method, but reverse the roles of state and national banks, to estimate the average treatment effect of switching from a state to a national charter.

charters during one year, this implies that the coefficients of banks' characteristics in these columns are mostly determined by observations of national bank examinations.

To investigate whether the coefficient of the charter switch dummy depends on this assumption, I now estimate it with a different sample from the first two columns. In column 3, I use data on all examinations of state banks as of the exit meeting date. Thus, I now estimate the effects of switching from a national to a state charter using a sample of examinations of banks that were mostly state banks one year before the examination. The coefficient of this change is now equal to -0.443 and it implies that the odds that a representative national bank obtains a rating of 3 to 5 decrease by 7 percent if it switches to a state charter, which is the same effect implied by the estimate in column 1. This result suggests that the assumption that the coefficients of bank characteristics are the same for both national and state banks does not affect the estimates of the effects of charter flipping on ratings.

In columns 4 and 5, I investigate whether results change if CAMELS ratings, instead of a dummy for ratings of 3, 4, or 5, are used as the dependent variable. In column 4, I use an ordered probit model. In column 5, I use OLS, but in this case the estimates must be interpreted with more caution, because CAMELS ratings are an ordinal measure and thus are not adequate dependent variables for linear models. Still, OLS results may be useful as an additional robustness check. The coefficient estimates in these columns also indicate that charter switching improves the odds of obtaining good ratings: the ordered probit estimate of -0.436 in Column 4 and the OLS estimate of -0.137 in Column 5 are both negative and significant. Thus, the results in this table suggest that switching from a national to a state charter improves the odds of receiving good ratings.

Table 3 shows the results for banks that switch from state to national charters. The specifications and the respective columns in this table are analogous to those in Table 2. In Table 3, column 1 shows the probit results for examinations of banks that held state charters one year before the examination. The -0.619 coefficient estimate of the charter switch dummy implies that the odds that a representative state bank obtains a rating of 3 to 5 decrease by 9 percent if it switches to a national charter, that is, from 13 percent to 4 percent. Column 2 shows that the OLS estimate of this coefficient is also negative and significant. The -0.039 estimate implies that these odds decrease by 4 percent if it switches to a state charter. Thus, the probit coefficient estimate implies odds of receiving good ratings for switchers, equal to 96 percent, that are closer to the fraction of these ratings assigned to state banks that switched charters over the past year, equal to 97 percent, as shown in Table 1.

In column 3, I estimate the effects of switching from a state to a national charter using a different subsample: I use data on all examinations of national banks as of the examination exit meeting. Thus, I now estimate the effects of switching to a national charter using mostly examinations of banks that held national charters one year before the examination. The coefficient of this change is now equal to -0.599 and it implies that the odds that a representative national bank that switched

from a state charter obtains a rating of 3 to 5 would decrease by 8 percent if it remained a national bank, which is close to the effect implied by the estimate in column 1. This result corroborates the finding from column 3 in Table 2 that the assumption that the coefficients of bank characteristics are the same for both national and state banks does not affect the estimates of the effects of switching on ratings.

Columns 4 and 5 show that, contrary to the estimates of the effects of switching from a national to a state charter, estimates of the effects of switching from a state to a national charter differ substantially if CAMELS ratings, instead of a dummy for ratings above 2, are used as the dependent variable. The coefficient estimates in these columns provide some evidence that switching worsens ratings: the ordered probit estimate of 0.278 in column 4 and the OLS estimate of 0.080 column 5 are positive, although only the ordered probit estimate is statistically significant. These positive coefficients suggest that ratings are more likely to worsen for state banks that switch charters than for those that do not. These results can be explained to some extent by the distribution of ratings of banks that were rated 1 and held state charters one year before the examination. These banks, which account for more than one third of the state-bank examinations in the sample, have much lower odds of keeping their ratings if they switch charters than if they keep their charters, as shown in the top-right chart in Figure 2. However, as that figure also shows, the odds that switchers and non-switchers obtain a rating of 1 or 2 is almost the same, above 99 percent. Thus, the results from these two columns are consistent with those from the first three columns, which indicate that switching from a state to a national charter increases the odds of receiving a rating of 1 or 2.

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

5.2 Bivariate Probit Analysis

5.2.1 Empirical Strategy

The potential selection on unobservable characteristics suggests that the results in Tables 2 and 3 do not necessarily represent a causal effect. In Appendix B, I present a model that shows how selection can bias estimates of the effects of charter switching on ratings. Thus, to properly estimate these effects, I use an empirical strategy that can eliminate such bias. Based on the model in Appendix B, I use a bivariate probit model composed of (1) and

$$s_i = Z_i\alpha + \psi_i + \phi_i + \eta_{si}. \tag{2}$$

For bank examination i, s_i is the latent value of switching charters and I_{si} is now such that we observe $I_{si} = 1$ if $s_i \geq 0$ and $I_{si} = 0$ otherwise. Z_i contains X_i and instruments for charter switching, and α is the respective vector of coefficients. ψ_i and ϕ_i are state and year fixed effects. I now assume

that η_{ri} and η_{si} are unobservable effects that have a bivariate standard normal distribution and mean 0 given X_i and Z_i.

The instruments in Z_i are proxies of the OCC's and of the states' assessment fees divided by total assets. In equation (2), the coefficient of these two ratios should have a positive and a negative sign, respectively, when I_{si} indicates whether banks switch from a national to a state charter and a negative and a positive sign, respectively, when I_{si} indicates whether banks switch from a state to a national charter, because higher fees make the respective charter less attractive. By the same token, the coefficient of the difference between the OCC's fees and the states' fees divided by total assets should have a positive sign when I_{si} indicates whether banks switch from a national to a state charter and a negative sign when I_{si} indicates whether banks switch from a state to a national charter. These ratios, however, are not valid instruments if fees are correlated with the error term in (1). As shown in Appendix B, this error term can be divided into two components: for all banks it is composed of ν_i, an unobserved bank-specific effect, and for banks that change charters it is also composed of ϵ_i, an idiosyncratic match between bank i and the charter to which it switches. Thus,

$$\eta_{ri} \equiv I_{si}\epsilon_i + \nu_i. \tag{3}$$

By assuming that assessment fees are uncorrelated with η_{ri}, I am thus assuming that neither ϵ_i nor ν_i are correlated with these instruments. To better understand this assumption, notice that a bank's assessment fees can, in principle, provide some information about its comparative advantage between two charters, even if fees are uncorrelated with unobservable characteristics that equally affect the ratings under the two charters. In this case, $E(\nu_i|Z_i) = 0$ and $E(\epsilon_i|Z_i) \neq 0$, and the estimates of the impact of regulator changes from the bivariate probit model would be biased away from those obtained from a random sample of banks that were exogenously assigned to charters.

However, the instruments are constructed in a way to ensure that Z_i is not correlated with either ϵ_i or ν_i. As discussed in Section 4, assessment fees depend on assets, CAMELS ratings, and characteristics of other banks in the same holding company, but I construct proxies of these fees that are independent of ratings and of other banks in the same holding company, leaving assets as the only variable that determines the fees that each regulator charges. Thus, these proxies of the OCC's and of the states' assessment fees divided by total assets are not correlated with those error terms and therefore are valid instruments for charter switching.

In addition, to separate the effects of fees and of assets on charter changes, X_i contains a fourth-order polynomial of the natural logarithm of total assets.[26] This flexible polynomial is intended to capture any effects of assets on charter changes other than through fees. If this polynomial does this, then any effects of fees on charter changes that I estimate will not be driven by the effects

[26] A higher order polynomial does not change the results significantly. In fact, a fifth-order term is often collinear with other regressors.

of assets on charter changes. In this case, the variation in fees as a function of assets that this polynomial cannot replicate will determine the estimates of the effects of fees on charter changes. As discussed in Section 4, this variation includes discontinuities, kinks, and heterogeneity across states and (for the OCC's fees only) over time, which this polynomial cannot replicate because it is continuous, differentiable, and—up to a constant—homogeneous across states and over time.

5.2.2 Results

In Table 4, I estimate the bivariate probit model described in equations (1) and (2) for examinations of banks that held national charters one year before the examination. Panel A shows the coefficient estimates of the second stage equation (1) and Panel B shows the estimates of the first stage equation (2). The five columns in this table use different instruments and samples.

In all columns of Panel A, the coefficient of charter switching is negative, statistically significant, and implies that national banks almost surely receive good ratings after they switch charters. In column 1, the instrument used is the difference between the OCC's and the states' fees divided by total assets and the sample is the same as in the first column of Table 2, but now many observations are dropped because of missing data on assessment fees for some states. The -1.406 estimate implies that the odds that a representative national bank obtains a rating of 3 to 5 decrease from 12 percent to almost zero if it flips to a state charter.[27] This estimate is about three times larger than the univariate probit estimate of -0.430 in column 1 of Table 2. However, bivariate and univariate probit estimates imply closer effects of charter switching on the odds of getting a good rating: The univariate probit estimates imply that these odds decrease by 7 percent for national banks that switch to a state charter, while the bivariate probit estimates imply that these odds decrease by 11 percent.[28]

In column 2, the instrument is the OCC's fees to assets ratio and the sample is now the same as in column 1 of Table 2, because this column does not use data on states' fees and thus no observations are lost due to missing data on states' fees. The -1.549 coefficient estimate for charter switch and the implied effect of -12 percent on the odds of receiving a rating of 3 to 5 are very close to those from column 1 of Table 4. In column 3 of Table 4, the instrument is again the OCC's fees to assets ratio, but the sample is restricted to examinations with data on states' fees. The -1.559 coefficient estimate and the implied effect of -12 percent are about the same as in column 2, indicating that differences in the samples do not affect the results. In column 4, the instrument is the ratio of the states' fees to assets. The -1.363 coefficient estimate and the implied effect of -11 percent are the smallest in this table, but still close to others. In column 5, both the ratios

[27] In the sample used in column 1 of Table 4, the fraction of ratings of 3 to 5 assigned to national banks that did not switch charters for one year is equal to 12 percent.

[28] I emphasize the effects of charter switching on ratings implied by the coefficient estimates, as opposed to the coefficient estimates themselves, following Angrist and Pischke [2009, page 201], who argue that researchers using nonlinear latent index models should give attention to estimates of causal effects, instead of the coefficient estimates that imply those effects.

of the OCC's fees to assets and of the states' fees to assets are used as instruments. The -1.522 coefficient estimate and the implied effect of -11 percent are also in line with those from the rest of the table.[29]

Panel B shows the coefficient estimates of the first stage equation (2). In column 1, the instrument used is the difference between the OCC's and the states' fees divided by total assets. The coefficient of the fee difference ratio in the first stage equation is statistically significant and has the expected sign, implying that national banks switch charters to avoid higher fees. The 0.939 coefficient estimate implies that if this ratio increased by 0.15 (equal to one standard deviation of this ratio for the sample in this column), the annual charter conversion rate of national banks to state charters would increase from 1.59 to 2.22 percent.[30] However, the estimates in columns 2 to 5 indicate that charter switching by national banks does not depend equally on the OCC's and the states' fees. In these columns, the OCC's and the states' fees enter equation (2) separately and their coefficients have the expected signs: the OCC's fees' coefficients are positive and the states' fees' coefficients are negative. Still, only the coefficients of the OCC's fees are statistically significant, suggesting that national banks care more about the OCC's fees than the states' fees when deciding whether or not to switch charters.

In Table 5, I estimate the bivariate probit model for examinations of banks that held state charters one year before the examination. The samples and the specifications used in this table are analogous to those used in Table 4 for examinations of banks that previously held national charters. In all columns of Table 5, the coefficient of charter switching in equation (1) is negative, statistically significant, and implies that state banks almost surely receive good ratings after they switch charters. Column 1 uses the difference between the OCC's and the states' fees divided by total assets as an instrument and uses the same sample as the first column of Table 3, although many observations are dropped because of missing data on the states' fees. The -2.755 estimate implies that the odds that a representative state bank obtains a rating of 3 to 5 decrease from 14 percent to almost zero if it switches to a national charter.[31] Columns 2 to 5 show that these results are robust to changes in the sample and in the instruments used. Column 2 includes observations of examinations from banks with missing data on the states' fees, columns 2 and 3 use the OCC's fees only as an instrument, column 4 use the states' fees only as an instrument, and column 5 uses both the OCC's fees and the states' fees as instruments. The coefficient estimate for charter switching, ranging between -2.718 and -2.989, and the implied effect on the odds of receiving a rating of 3 to 5, of -14 percent, remain close to those from column 1. Thus, the coefficient estimates

[29]The larger coefficient in column 5 implies similar effects to the coefficient in column 1 because the odds that national banks that switch charters are rated 3 to 5 implied by the coefficient in column 1 is already below 1 percent. Thus, the larger coefficients in column 5 cannot reduce those odds substantially.

[30]The fee difference ratio is measured in dollars of fees at year-end 2012 levels divided by thousands of dollars of assets at year-end 2012 levels.

[31]In the sample used in column 1 of Table 5, the fraction of ratings of 3 to 5 assigned to state banks that did not switch charters for one year is equal to 14 percent.

and the implied effects of charter switching on ratings from this table are all larger than those from the univariate probit model in column 1 of Table 3. This is the same conclusion that was reached based on the comparison between Tables 2 and 4, in which samples of examinations of banks that previously held national charters are used. For this reason, in the next subsection I examine why the bivariate probit model implies larger effects of switching on ratings than the univariate model.

The coefficient estimates of the first stage equation (2) in Panel B of Table 5 follow a similar pattern of those in Table 4 for examinations of banks that previously held national charters. In column 1, where the instrument used is the difference between the OCC's and the states' fees divided by total assets, the coefficient of the fee difference ratio is statistically significant and has a negative sign, as expected. This result implies that state banks, similarly to national banks, switch charters to avoid higher fees. The -2.536 coefficient estimate implies that if this ratio increased by 0.17 (equal to one standard deviation of this ratio for the sample in this column), the annual charter conversion rate of state banks to national charters would increase from 0.26 to 0.89 percent. In columns 2 to 5, the OCC's and the states' fees enter the equation (2) separately. The OCC's fees' coefficients are always positive, contrary to what is expected, but they are never significant. However, the states' fees' coefficients are positive, as expected, and always significant. Note that these results are similar to those in Panel B of Table 4 for examinations of banks that previously held national charters: in columns 2 to 5 of both tables, only the coefficients of the fees of the original chartering authority are significant. Thus, when deciding whether to switch charters, banks apparently put a higher weight on the fees charged by their chartering authorities than on the fees that they would be charged by the alternative chartering authority if they switched.

The correlation coefficients in Tables 4 and 5 indicate that the estimates of γ are driven by a causal effect of charter switching on ratings, instead of by the selection of superior banks into new charters. For examinations of banks that held either national or state charters one year before, the estimated correlation between the errors in the first and second stage equations is positive and large.[32] Thus, for both samples, the unobservable characteristics that induce banks to switch charters are correlated with those that worsen their ratings. These results contradict the hypothesis that banks that switch charters are better rated due to their superior unobservable characteristics. Moreover, the estimates from the bivariate models, which are intended to account for this endogeneity, imply stronger effects of charter changes on ratings than the estimates from the univariate models. In summary, the results show that the odds of receiving good ratings increase for banks that switch charters, and the results do not support the hypothesis that this happens only because the banks that switch charters have superior unobservable characteristics.

[32]These tables do not include tests of statistical significance of the correlation coefficients because these coefficients are constrained to the interval between -1 and 1.

5.2.3 Discussion about Results and Identification

I now discuss why the bivariate probit model implies larger effects of switching on ratings than the univariate model. More specifically, I investigate how much of the differences between the effects of the bivariate and univariate models can be attributed to differences in the samples used, the functional forms of the two models, and the instrument included in the first stage of the bivariate model.

To start, differences between samples cannot explain much of the differences in the effects implied by these models. As mentioned in Subsection 5.2.2, the differences between samples of univariate and bivariate probit models are caused by missing data on the states' fees. Thus, I can avoid losing observations by using the OCC's fees as the only instrument in the bivariate probit models. The results of this specification for banks that previously held national and state charters are shown in column 2 of Tables 4 and 5, respectively. Note that these results are very similar to those in column 3 of the respective tables, in which the OCC's fees are also used as the only instrument, but in which the samples are restricted to examinations with data on the states' fees. Therefore, these results indicate that differences between samples do not cause the differences observed between univariate and bivariate probit results.

Next, I investigate how much of the difference in the effects implied by the univariate and the bivariate models can be attributed to the functional forms of these models rather than the instruments used in the bivariate probit. Also, I investigate how much the functional form and the instruments contribute to identify the effects of charter switching on ratings in the bivariate probit model. In general, instruments help to identify parameters in limited dependent variable models, but the linearity and the normality assumptions of probit models suffice, and thus instruments are not necessary for probit models. Therefore, these assumptions are possibly identifying the effects of charter switching on ratings alone, without any contribution from the fees.

To investigate what causes the difference in the effects of charter switching implied by the univariate and the bivariate models and what is identifying these effects in the bivariate probit models, I first examine how much the implied effects change as I change the instruments from the bivariate models. As discussed in Subsection 5.2.2, the coefficients in Tables 4 and 5 imply effects of charter switching on the odds of receiving a rating of 3 to 5 that vary very little with the choice of instruments: these odds decrease by 11 to 12 percent for banks that switch from a national to a state charter and by 14 percent for banks that switch from a state to a national charter across the different choices of instruments shown in the five columns of those tables. Thus, the implied effects of charter switching on ratings are robust to changes in the instruments used. This indicates that the differences in the effects implied by the univariate and the bivariate probit models are mostly due to differences in their functional forms. Indeed, this conclusion is consistent with the fact that the coefficient of correlation between η_{ri} and η_{si} is large in the bivariate models. This parameter does not exist in the univariate probit model, and the fact that it is large in the bivariate models

suggests that it affects the estimates of the effects of charter switching on ratings.

However, Tables 4 and 5 also show that the instruments used in the bivariate probit models help to identify the effects of charter switching on ratings. When I substitute the fees difference ratio (the instrument in column 1 of these tables) with the OCC's fees ratio and the states' fees ratio (the instrument in column 5 of these tables), the accuracy of the coefficient estimates of the charter switch variable improves substantially: The standard error of this coefficient drops from 0.501 to 0.402 for banks that held a national charter one year before the examination (in columns 1 and 5 of Table 4, respectively) and from 0.430 to 0.383 for banks that held a state charter (in columns 1 and 5 of Table 5, respectively). This suggests that the OCC's and the states' fees together contain more information about banks' decision to switch charters than the difference between those fees alone. Indeed, this hypothesis is consistent with the fact that, in Panel B of Tables 4 and 5, only the coefficient of the fees of the original chartering authority is significant. The importance of fees in identifying the effects of switching on ratings can also be seen when I include only the weakest instrument in each specification. Column 4 of Table 4 shows the results for banks that previously held a national charter using the ratio of states' fees to assets as the only instrument. The standard error of the charter switch coefficient now increases to 0.566, compared to 0.402 when both the OCC's and the states' fees are used. Conversely, column 3 of Table 5 shows the results for banks that previously held a state charter using the ratio of the OCC's fees to assets as the only instrument. The standard error of the charter switch coefficient now jumps to 0.842, compared to 0.383 when both the OCC's and the states' fees are used. Thus, these results show that assessment fees, together with the functional form of the bivariate probit model, identify the effects of charter switching on ratings.

5.3 Evidence from Bank Failures

So far, I have shown estimates of the effect of charter changes on the odds that banks receive good ratings. I now provide further evidence of this effect by testing an implication of it: If banks that change charters are better rated than equally safe banks that do not, then banks that change charters should fail more often than equally rated banks that do not change charters.

Figure 3 evaluates this implication by comparing failure rates of banks that changed charters in recent years to failure rates of equally rated banks that did not change charters. This figure uses data on all existing commercial banks established before 2003 that remained open at least until the end of 2006. Both panels show the cumulative failure rates, from 2007 to 2012, of banks that switched and that did not switch charters between 2003 and 2006. The left and the right panels show the rates of banks that were rated 1 and 2 as of the end of 2006, respectively. This figure does not include panels for banks rated 3 or worse, because only a few of those banks switched charters between 2003 and 2006.

I analyze failures from 2007 to 2012 because many banks failed during this period. I also separate

banks by whether they had switched charters during the last four years before 2007, because a longer interval might capture a spurious relation between charter changes in a distant past and failures in recent years. However, because all banks in this figure are considered fundamentally safe and sound, this interval must also be long enough to allow some of these banks to reach a condition such that failure becomes a likely event.

Figure 3 supports the implication that I test. For banks rated 1 in 2006, the cumulative failure rates from 2007 to 2012 are roughly three times larger for banks that switched charters between 2003 and 2006 compared to banks that did not switch; for banks rated 2, these rates are about 50 percent larger for banks that switched charters compared to banks that did not switch. Thus, a larger fraction of banks that changed charters failed compared to equally rated banks that did not change, which indicates that banks that change charters are better rated than equally safe banks that do not.

To test this implication econometrically, I estimate a duration model using annual observations from banks, where the failure event is whether the bank failed or received assistance from the FDIC. The time-varying covariates in the model are mostly the same independent variables used before, but they now also include dummies for each of the six CAMELS component ratings.[33] I assign to each bank-year pair the CAMELS ratings that the respective bank received in its most recent examination. I assume that the hazard rate has an exponential distribution, but the estimates remain roughly unchanged if I assume that it has a Weibull distribution. All specifications use observations from both national and state banks. The sample now also includes banks with less than $20 million or more than $500 million in total assets deflated to year-end 2012 levels.

In this model, the covariate that I am mainly interested is a dummy that equals one if the bank changed its charter in the last four years, and equals zero otherwise. I use the last four years relative to each bank-year observation to construct this variable for the same reasons that I used the 2003 to 2006 interval in Figure 3: A longer interval might capture a spurious relation between charter changes in a distant past and failures in recent years. However, because most banks that switch charters are considered fundamentally safe and sound, this interval must again be long enough to allow some of these banks to be at risk of failing. Note, however, that the four-year window that defines this variable varies over time together with every bank-year observation, which is different from Figure 3, where banks were separated depending on charter changes during the fixed period of 2003 to 2006.[34]

Because the data start in 1993, the first year the dummy for charter change in the last four years can be computed is 1997. Moreover, the Sensitivity to Market Risk component of the CAMELS rating was also introduced in 1997. For these two reasons, these models use year-end observations

[33]For each of the six CAMELS components, I now include four dummies, corresponding to ratings of 1 to 4, leaving a rating of 5 as the reference case. Thus, together with the four dummies previously included for CAMELS composite ratings, these specifications now contain 28 dummies for CAMELS composite and component ratings.

[34]This dummy variable is similar to those used by Rosen [2005], who investigates whether banks that switched primary federal regulators in the last three and five years are more likely to fail.

of bank characteristics from 1997 to 2011. The dependent variables are indicators of whether the bank failed or received assistance from the FDIC in the following year, which are constructed based on bank failure and assistance data from the FDIC from 1998 to 2012.[35]

Table 6 shows the results. Column 1 does not include any dummies for CAMELS ratings among its covariates. The coefficient of the charter switch variable is equal to 2.170, but it is not statistically significant. Column 2 includes the dummies for composite and component CAMELS ratings; the coefficient of the charter switching variable is now larger and statistically significant. The 2.725 coefficient implies that banks that switched charters in the past four years are 173 percent more likely to fail than those that did not switch.[36] Given that 0.27 percent of the banks that do not switch charters for four years fail in one year, this implies that the probability that a bank that switched its charter in the last four years fails in one year is equal to 0.74 percent. Thus, according to the coefficient estimate in column 2, controlling for bank ratings, banks that switch charters are riskier than banks that do not. This confirms the implication that I test in this subsection, namely that banks that switch charters are better rated than equally safe banks that do not switch.

A comparison between the results in columns 1 and 2 gives further support to this implication. Based on the coefficient estimate in column 1, I cannot reject the hypothesis that banks that switch charters are as safe as banks that do not. However, in column 2—when I control for ratings—the charter switch variable becomes a stronger predictor of failures and I can reject the hypothesis. The evidence that banks that switch charters are riskier than banks that do not becomes stronger when I account for their ratings, which is consistent with this implication. In summary, the results from Table 6 indicate that banks that change charters are better rated than equally safe banks that do not change.

Note, however, that although a positive correlation between charter changes and failures is consistent with a positive effect of switching on ratings, that correlation does not necessarily imply this effect. CAMELS ratings were developed to help supervisors evaluate the safety and soundness of financial institutions and to identify the institutions that require special attention. Thus, CAMELS ratings are not designed to predict failures, implying that one should not expect CAMELS ratings to incorporate all of the correlation between charter switching and failures. Still, the results suggest that, among banks with the same ratings, banks that switched charters in the recent past are riskier than those that did not switch.

Note also that the results do not imply that switching causes failure. Rosen [2005] also argues against this causal effect, based on similar results. He uses a sample of commercial banks from 1977 to 2003 and finds that banks that switched regulators after 1991 were more likely to fail. He argues that this result does not necessarily imply a causal effect of switching on failures, because

[35] In Appendix A, I show that the results are about the same if I use as the dependent variable an indicator of whether the bank failed in the following year. The small difference between the estimates is not surprising, given the small number of banks that receive assistance but do not fail.

[36] This coefficient is lower, but still large and statistically significant, if I use an interval of five years instead.

banks that switch regulators may differ from those that do not in characteristics that determine the odds that they will fail. Still, the results from Table 6 corroborate the hypothesis that charter switching improves the odds of receiving good ratings.

6 Conclusion

Can commercial banks improve their ratings by switching charters? In this paper I find a substantial effect of charter switching on ratings. Banks are more likely to be considered fundamentally safe and sound after they change charters, an effect that is large for both national and state charters. Also, controlling for their ratings, banks that change charters are more likely to fail than others. These results suggest that banks can arbitrage ratings by switching charters.

This possible arbitrage opportunity can hypothetically be explained by competition among bank regulators, but more research is needed to answer whether competition actually creates this opportunity. Moreover, if competition among regulators creates this arbitrage opportunity, then the results in this paper still leave some important questions open. The results show how competition among regulators affects the standards applied to banks that switch charters, but more research is necessary to determine the overall impact of competition on supervisory standards. If banks can improve their ratings by changing charters, then regulators should be concerned with losing banks that they already supervise and could possibly lower the standards that they apply to these banks to induce them to retain their charters. Thus, competition among regulators most likely affects the standards that they apply to all banks, including those that do not change charters. Therefore, to determine the overall effect of competition on standards, researchers must first learn more about 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 the odds of receiving good ratings by switching charters favors a single charter system. However, to evaluate properly which system would be optimal, researchers must also consider the positive effects of the dual banking system, such as the fact that more choices of regulators may help banks find the regulators that are more adequate to their characteristics, and the fact that competition among regulators may reduce the burden imposed on banks and make regulation more flexible and innovative. Answering this question is left to future research.

Appendix A Robustness Results

In this appendix, I analyze whether the results from Subsections 5.2 and 5.3 are robust to changes in the variables used.

A.1 Robustness of Bivariate Probit Model Estimates

In this subsection, I investigate how the results in Subsection 5.2 change if I use a longer interval of time to determine charter changes. In the paper, I identify charter changes by comparing the charter reported in the last Call Report before the respective examination exit meeting date with the charter reported one year before. I now extend the interval between Call Reports to two years. Columns 1 and 2 of Table A.1 show the results using this two-year interval and the specifications from column 1 of Tables 4 and 5, respectively.

The coefficient estimates of charter switching in Panel A of Table A.1 are statistically significant, albeit smaller than those in Tables 4 and 5. Still, the implied effects of switching on the odds of receiving a rating of 3 to 5, equal to -11 and -14 percent, are about the same. However, the coefficients of the fee difference ratio in Panel B of Table A.1 are now smaller than those in Tables 4 and 5 and not significant. This suggests that the difference between the OCC's and the states' fees divided by assets becomes a weaker instrument for longer intervals. This is indeed expected, given that both the numerator and the denominator of this ratio are measured with data from a date close to the examination exit meeting. Thus, this fee difference ratio may differ from the actual ratio for a bank during the two-year period if the bank grows or decreases substantially over this period. Given that this ratio affects a bank's charter choice, if this ratio is not measured correctly, then the correlation between charter switching and the measured ratio should be weaker. In any case, the results from Table A.1 indicate that the choice of a one-year period to determine charter changes is more adequate than a longer interval.

A.2 Robustness of Duration Model Estimates

In this subsection, I investigate whether the results in Subsection 5.3 change if I use as the dependent variable a dummy variable that is equal to 1 if the bank failed in the following year and is equal to zero otherwise, instead of a dummy variable that is equal to 1 if the bank failed or received assistance from the FDIC in the following year and is equal to zero otherwise. Columns 1 and 2 of Table A.2 show the results using this alternative dependent variable and the specifications from columns 1 and 2 of Table 6, respectively. Columns 3 and 4 of Table A.2 reproduce the estimates in columns 1 and 2 of Table 6, but this table also shows the estimates of the coefficients of the CAMELS ratings dummies.

The results in Table A.2 show that the estimates of the duration model are robust to those changes in the dependent variable. The coefficient estimates of charter switching in columns 1 and 3 are similar and not statistically significant. In addition, the coefficient estimates in columns 2 and 4 are similar and statistically significant.

Appendix B An Empirical Model of Charter Choice

In this appendix, I present a model that helps to understand the challenges in estimating the effects of charter choice on supervisory ratings, and on which the bivariate probit model of Subsection 5.2 is based.[37] Consider the following model: Each bank i has a profit function strictly monotonically increasing over two variables,

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

The variable r_i is the bank's supervisory rating and W_i is the unobserved return, which is determined by the regulator that the bank chooses and may be unrelated to this rating. For example, a regulator may allow certain activities that affect its banks' revenues, even if these activities do not directly affect their ratings. There are two regulators, A and B, which are also chartering authorities. 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. Because A and B are mutually exclusive, choosing a regulator is equivalent to choosing a charter.

Consistent with (1) and (3), the rating r_i is determined by

$$r_i = X_i\beta + I_{si}\gamma + \xi_i + \varphi_i + I_{si}\epsilon_i + \nu_i \tag{B.2}$$

and the variables and parameters in this equation are the same as defined in Section 5 for (1) and (3).

Given this framework, the change in profits associated with switching to regulator B is given by

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

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

$$r_{iA} = X_i\beta + \xi_i + \varphi_i + \nu_i \tag{B.4}$$

and

$$r_i = X_i\beta + \gamma + \xi_i + \varphi_i + \epsilon_i + \nu_i \tag{B.5}$$

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

Equation (B.3) states that the change in profits is a function of supervisory ratings and of returns under the two alternative regulators, and it highlights the challenge imposed by selection bias. Suppose that I want to estimate the effect of switching charters on ratings γ given data

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

on ratings, regulator choice, and bank 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 $E(\epsilon_i|X_i, I_{si} = 1) > 0$, 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, $E(\nu_i|X_i, I_{si} = 1) > 0$.

Appendix C Complete Tables

In this appendix, I present tables with estimates of all coefficients from the bivariate probit models discussed in Section 5. Table A.3 in this appendix contains the results that are summarized in Table 2, Table A.4 contains the results in Table 3, and Tables A.5 to A.9 contain the results in Tables 4 and 5. Table A.2 in Appendix A contains the results in Table 6 from the duration models.

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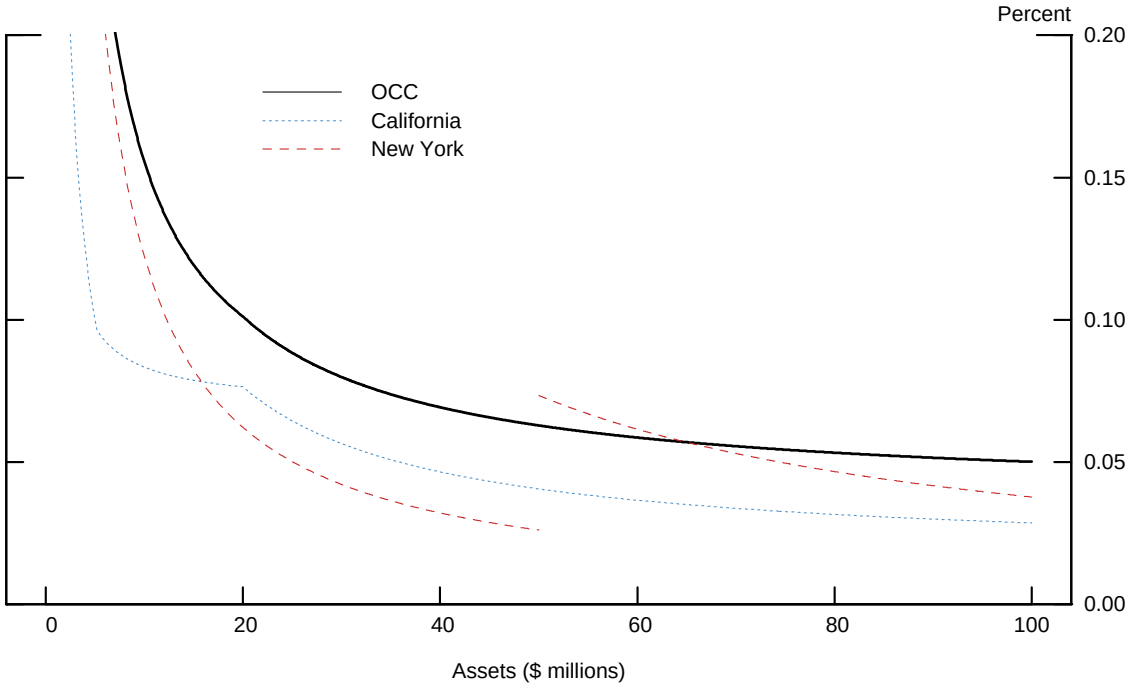
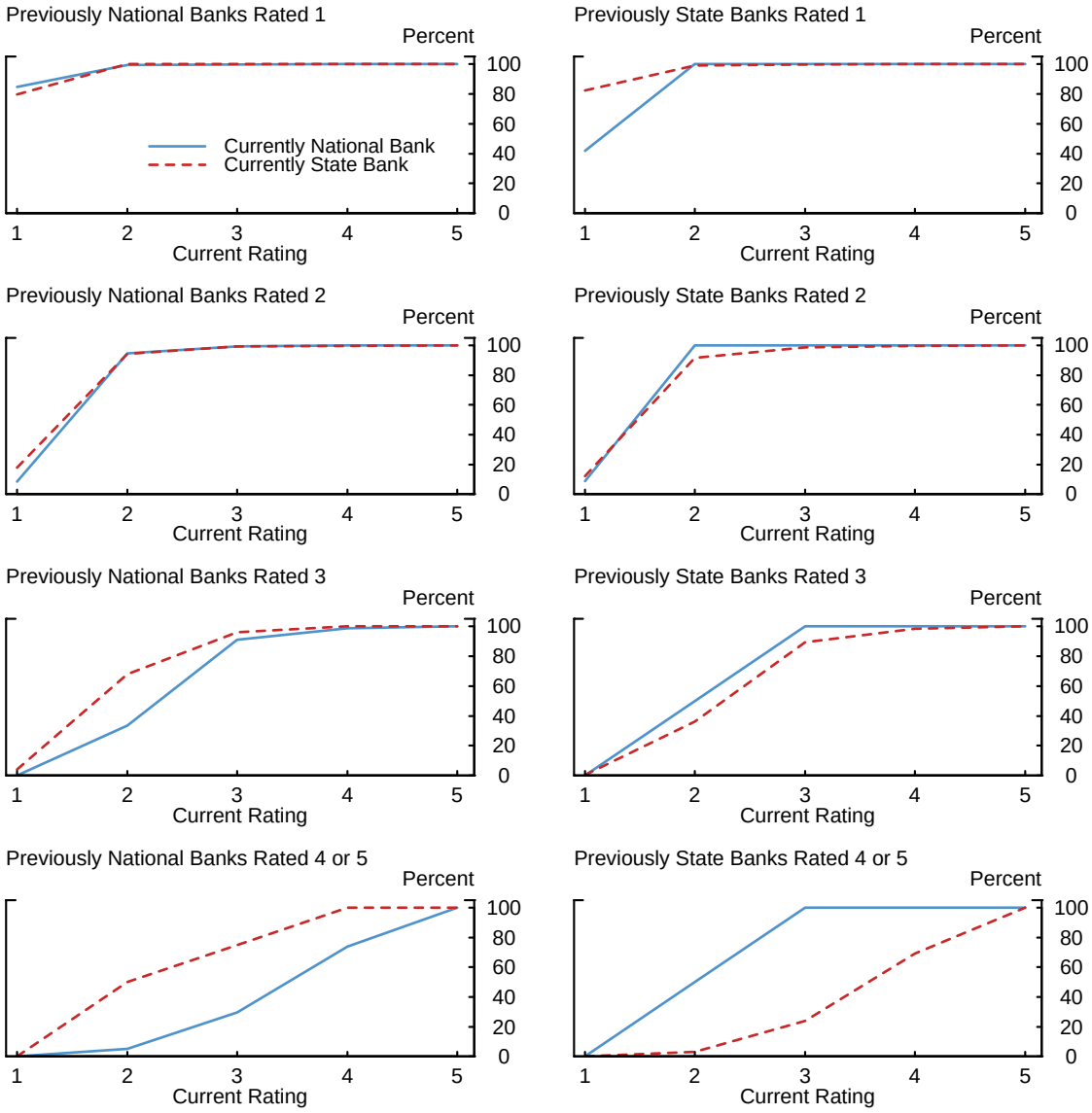
Figure 1: Examples of Assessment Fee Schedules for Small Banks



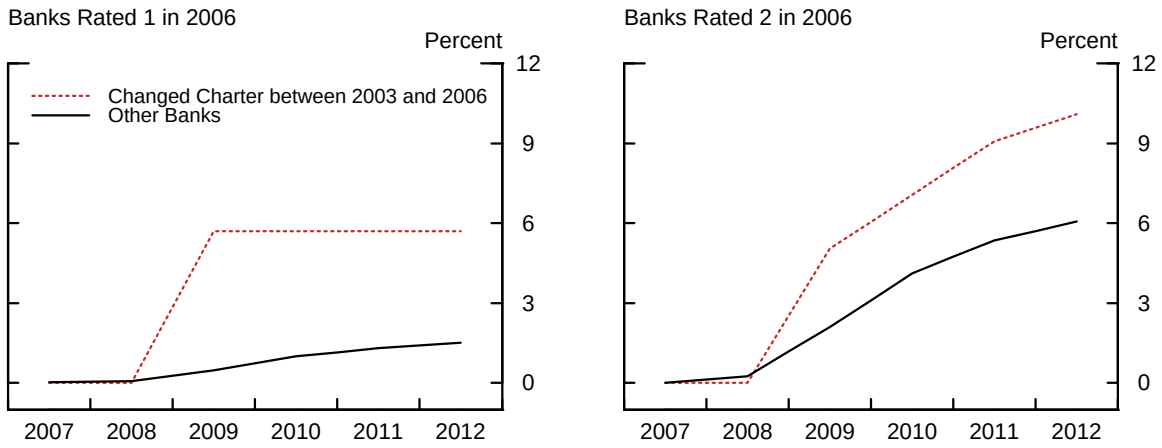
NOTE: This figure shows how the 2012 annual assessment fees as a percentage of assets vary with assets for small banks chartered by the OCC, the California Department of Financial Institutions, and the New York State Department of Financial Services. For banks with at most $100 million of assets, California's schedule is kinked close to $5 million and at $20 million, the OCC's is kinked at $2 million (not shown) and $20 million, and New York's is discontinuous at $50 million.

Figure 2: Distribution of CAMELS Ratings Conditional on Previous Charter and Rating



NOTE: This figure shows how ratings of banks change between examinations depending on whether banks switch charters. The unit of observation is a bank examination. In each chart, the horizontal axis indicates the ratings assigned in examinations, which I refer to as the current ratings, and the vertical axis shows the cumulative probability of these ratings conditional on banks' charters one year before the examination and on their ratings in the previous examination. The two columns of charts correspond to banks that held national and state charters one year before the reference examination, respectively, and the four rows refer to banks that were rated 1, 2, 3, and 4 or 5 in the previous examination, respectively. For example, the chart in the upper-left corner of the figure shows the distribution of ratings for national and state banks that were national banks one year before the respective examination and that were rated 1 in their previous examination. The two rows of charts in the bottom show that ratings of banks that switch charters first-order stochastically dominate ratings of banks that do not switch for any previous charter and have either a previous rating of 3 or 4 or 5.

Figure 3: Cumulative Failure Rates of Commercial Banks after 2006



NOTE: This figure shows the cumulative failure rates from 2007 to 2012 of all existing commercial banks established before 2003 that remained open at least until the end of 2006. The left panel shows the cumulative failure rates of banks rated 1 as of the end of 2006, while the right panel shows the cumulative failure rates of banks rated 2 as of the end of 2006. In both panels, the dotted line depicts banks that switched charters between 2003 and 2006, while the solid line depicts banks that did not switch charters between 2003 and 2006. Data from the FDIC indicate the dates of bank failures.

Table 1: Summary Statistics of Bank Examinations

	from National to		from State to	
	National	State	State	National
CAMELS of 1	29.59	31.25	35.76	16.33*
CAMELS of 2	58.61	62.50	51.26	80.61*
CAMELS of 3	8.63	5.90	9.06	3.06*
CAMELS of 4	2.29	0.35*	2.81	0.00
CAMELS of 5	0.88	0.00	1.12	0.00
Was a SMB one year before			15.09	13.27
Belongs to a BHC	80.40	85.76*	78.68	83.67
Bank merged past 3 years	14.10	23.61*	11.07	30.61*
BHC merged past 3 years	12.68	17.01*	9.13	34.69*
Total assets[a]	155,283	161,270	130,763	172,242*
	(116,095)	(115,427)	(107,105)	(118,147)
OCC's fees[b]	55,752	57,913	49,844	58,158*
	(27,675)	(27,333)	(26,272)	(26,771)
States' fees[bc]	30,110	32,667	23,917	31,664
	(20,853)	(27,779)	(19,644)	(18,936)
Return on assets	3.78	3.55	3.72	4.13
	(3.55)	(3.60)	(3.79)	(2.61)
Volatile liability dependence ratio	10.87	11.15	11.88	9.57*
	(11.13)	(11.35)	(11.54)	(8.84)
Net interest margin	17.66	17.92	17.43	18.51*
	(4.00)	(3.90)	(3.73)	(2.96)
Leverage ratio	9.78	9.79	10.44	8.87*
	(46.95)	(3.90)	(4.08)	(2.51)
Noncurrent loan ratio	2.96	2.47*	2.89	2.46
	(2.73)	(1.93)	(2.62)	(1.81)
Other loans to assets ratio	22.50	20.36*	23.48	26.38*
	(11.73)	(10.56)	(11.77)	(10.45)
CRE loans to assets ratio	15.73	18.47*	16.76	16.31
	(13.03)	(12.80)	(14.49)	(10.95)
RRE loans to assets ratio	19.63	20.68	21.03	19.67
	(11.10)	(10.21)	(10.84)	(9.98)
Efficiency ratio	280.38	292.54*	275.22	266.45
	(89.47)	(88.20)	(108.92)	(65.76)
Return on risky assets	1.63	1.64	1.35	1.83
	(4.75)	(2.13)	(3.17)	(2.09)
Private securities to assets ratio	5.81	5.66	5.91	5.30
	(5.86)	(6.69)	(5.99)	(5.11)
Core deposits to assets ratio	73.92	73.95	72.81	75.47*
	(10.00)	(10.26)	(10.37)	(8.41)

Continued.

Table 1: Summary Statistics of Bank Examinations (continued)

	from National to		from State to	
	National	State	State	National
Delinq. to loan loss reserves ratio	202.80	176.50*	196.97	163.70
	(171.53)	(138.43)	(229.96)	(105.93)
Total risk-based capital ratio	18.29	17.56	17.90	14.84*
	(10.65)	(13.23)	(10.35)	(4.81)
Number of observations	18,264	288	67,549	98

NOTE: The unit of observation in the data is a commercial bank examination. Data on examinations, bank holding company affiliation, and merger activity come from the National Information Center (NIC) of the Federal Reserve System. Banks' charters and entity types are identified using the last Call Report before the respective examination's exit meeting. Banks' total assets are collected from the last year-end Call Report before the exit meeting. For all other balance sheet items, the table shows the average value of the four quarters in the calendar year before the exit meeting, while for the income and flow items, the table shows the four-quarter cumulative amounts scaled by relevant balance sheet or income items when necessary. Assessment fees are calculated using banks' total assets collected from year-end Call Reports and regulators' schedules of assessment fees obtained from state banking departments' websites and from www.csbs.org. All variables are measured in percentage points, except when stated otherwise. The sample is restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. * indicates that a two-sided t-test rejects the hypothesis that the mean in the column is the same as the mean in the column on the left at the 5 percent level. Standard deviations are in parentheses.

[a] Measured in thousands of dollars at year-end 2012 levels.

[b] Measured in dollars at year-end 2012 levels.

[c] Data on the states' fees are not available for all observations. Thus, in the four columns, the mean and the standard deviation of states' fees are calculated using only 13,142; 212; 45,576; and 59 observations, respectively.

Table 2: Effects of Switching from National to State Charter

	Dummy CAMELS 3 to 5			CAMELS rating	
	Probit[a]	OLS[a]	Probit[b]	Ord. Prob.[a]	OLS[a]
	(1)	(2)	(3)	(4)	(5)
Switched charters	−0.430*	−0.046**	−0.443*	−0.436**	−0.137**
	(0.200)	(0.015)	(0.186)	(0.100)	(0.028)
	[−0.065]	[−0.046]	[−0.072]		
R-squared	0.557	0.533	0.525	0.517	0.696
Number of observations	18,531	18,552	67,805	18,552	18,552

NOTE: The unit of observation is a bank examination. The dependent variable in the first three columns is a dummy variable that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. The dependent variable in the other two columns is the CAMELS rating assigned in the examination. The independent variables in all columns are a dummy for whether the bank switched charters in the past year, a dummy for whether the bank belongs to a bank holding company, a dummy for whether the bank merged with another bank or bank holding company in the past three years, a dummy for whether the bank belongs to a bank holding company that merged with another bank or bank holding company in the past three years, a fourth-order polynomial of the natural logarithm of assets, return on assets, volatile liability dependence ratio, net interest margin, leverage ratio, noncurrent loan ratio, other loans to assets ratio, commercial real estate loans to assets ratio, residential real estate to assets ratio, efficiency ratio, return on risky assets, private securities to assets ratio, core deposits to assets ratio, delinquencies to loan loss reserves ratio, total risk-based capital ratio, and four dummies for CAMELS ratings of 1 to 4 in the previous examination. Table A.3 in Appendix C presents the coefficient estimates for all independent variables. All specifications include state and year fixed effects. Standard errors are in parentheses and the effects of charter switching on the probability of receiving a rating of 3 to 5 implied by the coefficient estimates are in brackets. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. All samples are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. ** and * denote significance at the 1 and 5 percent level, respectively.

[a] This column uses a sample of examinations of banks that held national charters as of the Call Report from one year before the exit meeting of the examination.

[b] This column uses a sample of examinations of banks that held state charters as of the most recent Call Report until the exit meeting of the examination.

Table 3: Effects of Switching from State to National Charter

	Dummy CAMELS 3 to 5			CAMELS rating	
	Probit[a]	OLS[a]	Probit[b]	Ord. Prob.[a]	OLS[a]
	(1)	(2)	(3)	(4)	(5)
Switched charters	−0.619*	−0.039**	−0.599*	0.278*	0.080
	(0.292)	(0.011)	(0.275)	(0.131)	(0.043)
	[−0.090]	[−0.039]	[−0.081]		
R-squared	0.526	0.507	0.545	0.452	0.672
Number of observations	67,615	67,647	18,221	67,647	67,647

NOTE: The unit of observation is a bank examination. The dependent variable in the first three columns is a dummy variable that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. The dependent variable in the other two columns is the CAMELS rating assigned in the examination. The independent variables in all columns are a dummy for whether the bank switched charters in the past year, a dummy for whether the bank was a state member bank one year before the examination, a dummy for whether the bank belongs to a bank holding company, a dummy for whether the bank merged with another bank or bank holding company in the past three years, a dummy for whether the bank belongs to a bank holding company that merged with another bank or bank holding company in the past three years, a fourth-order polynomial of the natural logarithm of assets, return on assets, volatile liability dependence ratio, net interest margin, leverage ratio, noncurrent loan ratio, other loans to assets ratio, commercial real estate loans to assets ratio, residential real estate to assets ratio, efficiency ratio, return on risky assets, private securities to assets ratio, core deposits to assets ratio, delinquencies to loan loss reserves ratio, total risk-based capital ratio, and four dummies for CAMELS ratings of 1 to 4 in the previous examination. Table A.4 in Appendix C presents the coefficient estimates for all independent variables. All specifications include state and year fixed effects. Standard errors are in parentheses and the effects of charter switching on the probability of receiving a rating of 3 to 5 implied by the coefficient estimates are in brackets. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. All samples are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. ** and * denote significance at the 1 and 5 percent level, respectively.

[a] This column uses a sample of examinations of banks that held state charters as of the Call Report from one year before the exit meeting of the examination.

[b] This column uses a sample of examinations of banks that held national charters as of the most recent Call Report until the exit meeting of the examination.

Table 4: Bivariate Probit Estimates of Effects of Charter Switching for Previously National Banks

Panel A: Second stage (equation (1)) coefficient estimates					
Dep. var.: CAMELS 3 to 5	(1)	(2)	(3)	(4)	(5)
Switched charters	−1.406**	−1.549**	−1.559**	−1.363**	−1.522**
	(0.501)	(0.432)	(0.376)	(0.566)	(0.402)
	[−0.113]	[−0.115]	[−0.115]	[−0.112]	[−0.114]
Panel B: First stage (equation (2)) coefficient estimates					
Dep. var.: Switched charters					
Fee diff. to assets ratio	0.939*				
	(0.428)				
OCC's fees to assets ratio		2.731**	2.836**		2.775**
		(0.974)	(1.045)		(1.042)
States' fees to assets ratio				−0.658	−0.611
				(0.435)	(0.439)
Correlation coefficient	0.471	0.491	0.545	0.449	0.528
	(0.219)	(0.193)	(0.150)	(0.250)	(0.166)
Log pseudolikelihood	-3,087	-4,310	-3,086	-3,088	-3,085
Number of observations	13,354	18,552	13,354	13,354	13,354

NOTE: The unit of observation is a bank examination. The sample is restricted to examinations of banks that held national charters as of the Call Report from one year before the exit meeting of the examination. In panel A, the second stage equation, the dependent variable is a dummy variable that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. In panel B, the first stage equation, the dependent variable is a dummy that is equal to one if the bank switched charters in the past year and is equal to zero otherwise. The ratios of fees to assets are measured in dollars of fees at year-end 2012 levels divided by thousand of dollars of assets at year-end 2012 levels. The independent variables in all columns are a dummy for whether the bank switched charters in the past year, a dummy for whether the bank belongs to a bank holding company, a dummy for whether the bank merged with another bank or bank holding company in the past three years, a dummy for whether the bank belongs to a bank holding company that merged with another bank or bank holding company in the past three years, a fourth-order polynomial of the natural logarithm of assets, return on assets, volatile liability dependence ratio, net interest margin, leverage ratio, noncurrent loan ratio, other loans to assets ratio, commercial real estate loans to assets ratio, residential real estate to assets ratio, efficiency ratio, return on risky assets, private securities to assets ratio, core deposits to assets ratio, delinquencies to loan loss reserves ratio, total risk-based capital ratio, and four dummies for CAMELS ratings of 1 to 4 in the previous examination. Tables A.5 to A.9 in Appendix C present the coefficient estimates for all independent variables. All specifications include state and year fixed effects. Standard errors are in parentheses and the effects of charter switching on the probability of receiving a rating of 3 to 5 implied by the coefficient estimates are in brackets. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. All samples are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. ** and * denote significance at the 1 and 5 percent level, respectively.

Table 5: Bivariate Probit Estimates of Effects of Charter Switching for Previously State Banks

Panel A: Second stage (equation (1)) coefficient estimates					
Dep. var.: CAMELS 3 to 5	(1)	(2)	(3)	(4)	(5)
Switched charters	−2.755**	−2.718**	−2.989**	−2.811**	−2.857**
	(0.430)	(0.401)	(0.842)	(0.448)	(0.383)
	[−0.137]	[−0.137]	[−0.137]	[−0.137]	[−0.137]
Panel B: First stage (equation (2)) coefficient estimates					
Dep. var.: Switched charters					
Fee diff. to assets ratio	−2.536**				
	(0.816)				
OCC's fees to assets ratio		0.968	1.631		1.180
		(1.712)	(2.558)		(3.082)
States' fees to assets ratio				1.644*	2.432*
				(0.803)	(0.976)
Correlation coefficient	0.940	0.842	0.967	0.950	1.000
	(0.127)	(0.096)	(0.415)	(0.138)	(0.000)
Log pseudolikelihood	-8,961	-12.949	-8,966	-8,963	-8,961
Number of observations	45,635	67,647	45,635	45,635	45,635

NOTE: The unit of observation is a bank examination. The sample is restricted to examinations of banks that held state charters as of the Call Report from one year before the exit meeting of the examination. In panel A, the second stage equation, the dependent variable is a dummy variable that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. In panel B, the first stage equation, the dependent variable is a dummy that is equal to one if the bank switched charters in the past year and is equal to zero otherwise. The ratios of fees to assets are measured in dollars of fees at year-end 2012 levels divided by thousand of dollars of assets at year-end 2012 levels. The independent variables in all columns are a dummy for whether the bank switched charters in the past year, a dummy for whether the bank was a state member bank one year before the examination, a dummy for whether the bank belongs to a bank holding company, a dummy for whether the bank merged with another bank or bank holding company in the past three years, a dummy for whether the bank belongs to a bank holding company that merged with another bank or bank holding company in the past three years, a fourth-order polynomial of the natural logarithm of assets, return on assets, volatile liability dependence ratio, net interest margin, leverage ratio, noncurrent loan ratio, other loans to assets ratio, commercial real estate loans to assets ratio, residential real estate to assets ratio, efficiency ratio, return on risky assets, private securities to assets ratio, core deposits to assets ratio, delinquencies to loan loss reserves ratio, total risk-based capital ratio, and four dummies for CAMELS ratings of 1 to 4 in the previous examination. Tables A.5 to A.9 in Appendix C present the coefficient estimates for all independent variables. All specifications include state and year fixed effects. Standard errors are in parentheses and the effects of charter switching on the probability of receiving a rating of 3 to 5 implied by the coefficient estimates are in brackets. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. All samples are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. ** and * denote significance at the 1 and 5 percent level, respectively.

Table 6: Duration Analysis of Bank Failures

Dependent Variable:	Bank failure or assistance	Bank failure or assistance
	(1)	(2)
Switched charters past 4 years	2.170	2.725*
	(0.877)	(1.126)
CAMELS dummies included	No	Yes
Log likelihood	1,441	1,477
Number of observations	103,903	103,903
Number of banks	10,352	10,352
Number of failed or assisted banks	289	289

NOTE: The unit of observation is a bank-year pair. The dependent variable is a dummy variable that is equal to 1 if the bank failed or received assistance from the FDIC in the following year and is equal to zero otherwise. The covariates in both columns are a dummy for whether the bank switched charters in the past four years, a dummy for whether the bank is a national bank, a dummy for whether the bank is a state nonmember bank, a dummy for whether the bank belongs to a bank holding company, a dummy for whether the bank merged with another bank or bank holding company in the past three years, a dummy for whether the bank belongs to a bank holding company that merged with another bank or bank holding company in the past three years, a fourth-order polynomial of the natural logarithm of assets, return on assets, volatile liability dependence ratio, net interest margin, leverage ratio, noncurrent loan ratio, other loans to assets ratio, commercial real estate loans to assets ratio, residential real estate to assets ratio, efficiency ratio, return on risky assets, private securities to assets ratio, core deposits to assets ratio, delinquencies to loan loss reserves ratio, and total risk-based capital ratio. Column 2 also includes, among its covariates, four dummies for ratings of 1 to 4 for each of the six CAMELS components and for the CAMELS composite rating in the most recent examination. Table A.2 in Appendix A presents the coefficient estimates for all covariates. All specifications include state and year fixed effects. Standard errors are in parentheses. ** and * denote significance at the 1 and 5 percent level, respectively.

Table A.1: Bivariate Probit Estimates of Effects of Charter Switching Using Two-Year Interval to Determine Charter Changes

Panel A: Second stage (equation (1)) coefficient estimates		
	Previously National Banks	Previously State Banks
Dep. var.: CAMELS 3 to 5	(1)	(2)
Switched charters	−1.204**	−2.138**
	(0.364)	(0.326)
	[−0.110]	[−0.137]
Panel B: First stage (equation (2)) coefficient estimates		
Dep. var.: Switched charters		
Fee diff. to assets ratio	0.790	−1.280
	(0.412)	(0.669)
Correlation coefficient	0.494	0.871
	(0.180)	(0.098)
Log pseudolikelihood	-3,869	-9,159
Number of observations	13,428	44,948

NOTE: The unit of observation is a bank examination. In columns 1 and 2, respectively, the samples are restricted to examinations of banks that held national and state charters as of the Call Report from two years before the exit meeting of the examination. In panel A, the second stage equation, the dependent variable is a dummy variable that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. In panel B, the first stage equation, the dependent variable is a dummy that is equal to one if the bank switched charters in the past year and is equal to zero otherwise. The ratios of fees to assets are measured in dollars of fees at year-end 2012 levels divided by thousand of dollars of assets at year-end 2012 levels. The independent variables in all columns are a dummy for whether the bank switched charters in the past year, a dummy for whether the bank belongs to a bank holding company, a dummy for whether the bank merged with another bank or bank holding company in the past three years, a dummy for whether the bank belongs to a bank holding company that merged with another bank or bank holding company in the past three years, a fourth-order polynomial of the natural logarithm of assets, return on assets, volatile liability dependence ratio, net interest margin, leverage ratio, noncurrent loan ratio, other loans to assets ratio, commercial real estate loans to assets ratio, residential real estate to assets ratio, efficiency ratio, return on risky assets, private securities to assets ratio, core deposits to assets ratio, delinquencies to loan loss reserves ratio, total risk-based capital ratio, and four dummies for CAMELS ratings of 1 to 4 in the previous examination. Column 2 also includes as an independent variable a dummy for whether the bank was a state member bank one year before the examination. All specifications include state and year fixed effects. Standard errors are in parentheses and the effects of charter switching on the probability of receiving a rating of 3 to 5 implied by the coefficient estimates are in brackets. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. All samples are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. ** and * denote significance at the 1 and 5 percent level, respectively.

Table A.2: Duration Analysis of Bank Failures

Dependent Variable:	Bank failure	Bank failure	Bank failure or assistance	Bank failure or assistance
	(1)	(2)	(3)	(4)
Switched charters past 4 years	1.951	2.472*	2.170	2.725*
	(0.854)	(1.106)	(0.877)	(1.126)
Was a NAT one year before	0.945	1.031	0.983	1.108
	(0.218)	(0.258)	(0.220)	(0.266)
Was a SMB one year before	0.769	0.860	0.773	0.852
	(0.148)	(0.171)	(0.146)	(0.166)
Belongs to a BHC	0.743	0.804	0.734	0.784
	(0.136)	(0.152)	(0.133)	(0.145)
Bank merged past 3 years	128.941**	119.294**	58.131**	53.877**
	(59.034)	(54.756)	(18.387)	(17.119)
BHC merged past 3 years	0.056**	0.058**	0.101**	0.101**
	(0.033)	(0.034)	(0.043)	(0.044)
Ln(assets)	$4.44e+18$	$4.07e+19$	0.000	0.000
	$(2.14e+20)$	$(1.99e+21)$	(0.000)	(0.000)
$(\text{Ln(assets)})^2$	0.006	0.005	5.401	4.962
	(0.033)	(0.028)	(8.550)	(8.467)
$(\text{Ln(assets)})^3$	1.307	1.316	0.920	0.924
	(0.373)	(0.375)	(0.067)	(0.073)
$(\text{Ln(assets)})^4$	0.995	0.995	1.002	1.001
	(0.005)	(0.005)	(0.001)	(0.001)
Return on Assets	0.900**	0.931**	0.900**	0.932**
	(0.010)	(0.013)	(0.010)	(0.013)
Volatile liability dep. ratio	1.010	1.005	1.020	1.017
	(0.019)	(0.020)	(0.018)	(0.019)
Net interest margin	1.008	1.005	0.995	0.994
	(0.027)	(0.027)	(0.023)	(0.023)
Leverage ratio	0.863	0.973	0.852	0.952
	(0.078)	(0.092)	(0.072)	(0.084)
Noncurrent loan ratio	1.063**	1.033*	1.065**	1.034*
	(0.013)	(0.014)	(0.013)	(0.014)
Other loans to assets ratio	1.022	1.014	1.026*	1.017
	(0.013)	(0.014)	(0.012)	(0.013)
CRE loans to assets ratio	1.026*	1.013	1.026*	1.012
	(0.011)	(0.012)	(0.011)	(0.011)
RRE loans to assets ratio	1.002	1.000	1.001	0.998
	(0.012)	(0.012)	(0.011)	(0.012)
Efficiency ratio	1.000	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)	(0.000)
Return on risky assets	1.005	1.011	1.018	1.020
	(0.022)	(0.022)	(0.016)	(0.015)
Private sec. to assets ratio	1.012	1.020	1.007	1.009
	(0.024)	(0.024)	(0.023)	(0.023)

Continued.

Table A.2: Duration Analysis of Bank Failures (continued)

Dependent Variable:	Bank failure	Bank failure	Bank failure or assistance	Bank failure or assistance
	(1)	(2)	(3)	(4)
Core deposits to assets ratio	0.985	0.981	0.995	0.994
	(0.020)	(0.020)	(0.019)	(0.020)
Delinq. to loan loss res. ratio	1.000	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)	(0.000)
Total risk-based capital ratio	0.899	0.861*	0.923	0.892
	(0.062)	(0.063)	(0.059)	(0.060)
Previously CAMELS of 1		0.259		0.272
		(0.326)		(0.326)
Previously CAMELS of 2		0.340		0.366
		(0.328)		(0.347)
Previously CAMELS of 3		0.851		0.940
		(0.597)		(0.652)
Previously CAMELS of 4		0.854		0.916
		(0.353)		(0.377)
Previously C component of 1		1.951		2.172
		(1.539)		(1.649)
Previously C component of 2		1.570		1.526
		(1.028)		(0.986)
Previously C component of 3		0.970		0.951
		(0.471)		(0.454)
Previously C component of 4		0.858		0.826
		(0.291)		(0.276)
Previously A component of 1		0.241*		0.228*
		(0.171)		(0.156)
Previously A component of 2		0.367		0.355
		(0.225)		(0.214)
Previously A component of 3		0.355*		0.350*
		(0.176)		(0.170)
Previously A component of 4		0.871		0.871
		(0.265)		(0.262)
Previously M component of 1		0.256		0.322
		(0.234)		(0.278)
Previously M component of 2		0.392		0.423
		(0.256)		(0.271)
Previously M component of 3		0.284**		0.288**
		(0.133)		(0.132)
Previously M component of 4		0.770		0.780
		(0.161)		(0.163)

Continued.

Table A.2: Duration Analysis of Bank Failures (continued)

Dependent Variable:	Bank failure	Bank failure	Bank failure or assistance	Bank failure or assistance
	(1)	(2)	(3)	(4)
Previously E component of 1		2.743		3.109
		(1.739)		(1.878)
Previously E component of 2		2.126		2.168
		(1.068)		(1.077)
Previously E component of 3		2.122		2.240*
		(0.871)		(0.911)
Previously E component of 4		1.505		1.486
		(0.436)		(0.424)
Previously L component of 1		0.974		0.902
		(0.550)		(0.492)
Previously L component of 2		0.931		0.866
		(0.406)		(0.373)
Previously L component of 3		0.899		0.867
		(0.311)		(0.295)
Previously L component of 4		0.943		0.938
		(0.209)		(0.206)
Previously S component of 1		0.941		0.811
		(0.542)		(0.449)
Previously S component of 2		1.191		1.016
		(0.488)		(0.409)
Previously S component of 3		1.073		0.995
		(0.364)		(0.332)
Previously S component of 4		1.199		1.142
		(0.316)		(0.297)
Log likelihood	1,451	1,486	1,441	1,477
Number of observations	103,960	103,960	103,903	103,903
Number of banks	10,352	10,352	10,352	10,352
Number of failures	281	281	289[a]	289[a]

NOTE: The unit of observation is a bank-year pair. The dependent variable in columns 1 and 2 is a dummy variable that is equal to 1 if the bank failed in the following year and is equal to zero otherwise. The dependent variable in columns 3 and 4 is a dummy variable that is equal to 1 if the bank failed or received assistance from the FDIC in the following year and is equal to zero otherwise. All specifications include state and year fixed effects. Standard errors are in parentheses. ** and * denote significance at the 1 and 5 percent level, respectively.

[a] Also includes banks that received assistance from the FDIC but did not fail.

Table A.3: Effects of Switching from National to State Charter

	Dummy CAMELS 3 to 5			CAMELS rating	
	Probit[a]	OLS[a]	Probit[b]	Ord. Prob.[a]	OLS[a]
Switched charters	-0.430^{*}	-0.046^{**}	-0.443^{*}	-0.436^{**}	-0.137^{**}
	(0.200)	(0.015)	(0.186)	(0.100)	(0.028)
	[−0.065]	[−0.046]	[−0.072]		
Belongs to a BHC	-0.103^{*}	−0.001	-0.074^{**}	-0.085^{**}	−0.013
	(0.052)	(0.005)	(0.026)	(0.033)	(0.009)
Bank merged past 3 years	0.095	0.007	0.062^{*}	0.124^{**}	0.041^{**}
	(0.056)	(0.005)	(0.032)	(0.036)	(0.011)
BHC merged past 3 years	-0.197^{**}	-0.013^{*}	-0.146^{**}	-0.160^{**}	-0.045^{**}
	(0.071)	(0.005)	(0.043)	(0.039)	(0.010)
Ln(assets)	−3.640	36.307	−22.840	−1.809	28.603
	(10.608)	(18.892)	(89.214)	(6.883)	(35.509)
$(\text{Ln(assets)})^2$	0.296	−4.827	3.133	0.120	−3.798
	(0.934)	(2.514)	(11.862)	(0.607)	(4.728)
$(\text{Ln(assets)})^3$	−0.008	0.284	−0.193	−0.003	0.223
	(0.027)	(0.148)	(0.699)	(0.018)	(0.279)
$(\text{Ln(assets)})^4$		−0.006	0.004		−0.005
		(0.003)	(0.015)		(0.006)
Return on Assets	-0.059^{**}	-0.010^{**}	-0.055^{**}	-0.074^{**}	-0.028^{**}
	(0.007)	(0.001)	(0.004)	(0.005)	(0.002)
Volatile liability dep. ratio	0.016^{**}	0.002^{**}	0.006^{*}	0.016^{**}	0.005^{**}
	(0.008)	(0.000)	(0.002)	(0.002)	(0.001)
Net interest margin	0.008	0.001	0.003	0.003	0.001
	(0.005)	(0.001)	(0.003)	(0.004)	(0.001)
Leverage ratio	−0.000	−0.000	-0.036^{**}	−0.000	−0.000
	(0.000)	(0.000)	(0.008)	(0.000)	(0.000)
Noncurrent loan ratio	0.055^{**}	0.006^{**}	0.079^{**}	0.041^{**}	0.016^{**}
	(0.010)	(0.001)	(0.008)	(0.007)	(0.002)
Other loans to assets ratio	0.007^{**}	0.000	0.013^{**}	0.007^{**}	0.002^{**}
	(0.003)	(0.000)	(0.002)	(0.002)	(0.001)
CRE loans to assets ratio	0.010^{**}	0.001^{**}	0.017^{**}	0.010^{**}	0.004^{**}
	(0.002)	(0.000)	(0.002)	(0.002)	(0.000)
RRE loans to assets ratio	0.000	−0.000	0.004^{*}	−0.000	0.000
	(0.002)	(0.000)	(0.002)	(0.002)	(0.000)
Efficiency ratio	-0.000^{*}	-0.000^{*}	0.000	−0.000	-0.000^{*}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Return on risky assets	0.004	0.001	0.007^{**}	0.005	0.002
	(0.003)	(0.001)	(0.003)	(0.004)	(0.001)
Private sec. to assets ratio	−0.002	−0.000	0.002	−0.004	−0.001
	(0.004)	(0.000)	(0.002)	(0.002)	(0.001)

Continued.

Table A.3: Effects of Switching from National to State Charter (continued)

	Dummy CAMELS 3 to 5			CAMELS rating	
	Probit[a]	OLS[a]	Probit[b]	Ord. Prob.[a]	OLS[a]
Core deposits to assets ratio	0.004	0.000	−0.005	0.007**	0.002**
	(0.006)	(0.000)	(0.003)	(0.003)	(0.001)
Delinq. to loan loss res. ratio	0.001**	0.000**	0.001**	0.001**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Total risk-based capital ratio	−0.014	−0.000	0.001	−0.009**	−0.001*
	(0.009)	(0.000)	(0.005)	(0.003)	(0.000)
Previously CAMELS of 1	−3.719**	−0.692**	−2.883**	−5.793**	−2.710**
	(0.425)	(0.022)	(0.226)	(0.193)	(0.070)
Previously CAMELS of 2	−3.103**	−0.690**	−2.163**	−3.569**	−2.018**
	(0.417)	(0.021)	(0.224)	(0.186)	(0.068)
Previously CAMELS of 3	−1.307**	−0.171**	−0.731**	−2.021**	−1.436**
	(0.415)	(0.021)	(0.223)	(0.179)	(0.066)
Previously CAMELS of 4	−0.583	0.016	0.356	−1.155**	−0.748**
	(0.422)	(0.019)	(0.234)	(0.168)	(0.066)
R-squared	0.557	0.533	0.525	0.517	0.696
Number of observations	18,531	18,552	67,805	18,552	18,552

NOTE: The unit of observation is a bank examination. The dependent variable in the first three columns is a dummy variable that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. The dependent variable in the other two columns is the CAMELS rating assigned in the examination. All specifications include state and year fixed effects. Standard errors are in parentheses and the effects of charter switching on the probability of receiving a rating of 3 to 5 implied by the coefficient estimates are in brackets. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. All samples are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. ** and * denote significance at the 1 and 5 percent level, respectively.

[a] This column uses a sample of examinations of banks that held national charters as of the Call Report from one year before the exit meeting of the examination.

[b] This column uses a sample of examinations of banks that held state charters as of the most recent Call Report until the exit meeting of the examination.

Table A.4: Effects of Switching from State to National Charter

	Dummy CAMELS 3 to 5			CAMELS rating	
	Probit[a]	OLS[a]	Probit[b]	Ord. Prob.[a]	OLS[a]
Switched charters	−0.619*	−0.039**	−0.599*	0.278*	0.080
	(0.292)	(0.011)	(0.275)	(0.131)	(0.043)
	[−0.090]	[−0.039]	[−0.081]		
Was a SMB one year before	0.090**	0.007*		0.106**	0.033**
	(0.027)	(0.003)		(0.018)	(0.006)
Belongs to a BHC	−0.073**	−0.006*	−0.086	−0.071**	−0.022**
	(0.026)	(0.003)	(0.052)	(0.016)	(0.006)
Bank merged past 3 years	0.062	0.005	0.105	0.145**	0.060**
	(0.032)	(0.003)	(0.057)	(0.021)	(0.008)
BHC merged past 3 years	−0.152**	−0.012**	−0.216**	−0.128**	−0.048**
	(0.044)	(0.004)	(0.072)	(0.028)	(0.010)
Ln(assets)	−17.692	−4.352	−3.360	−31.983	−16.382
	(89.177)	(9.999)	(10.679)	(52.991)	(18.869)
$(\text{Ln(assets)})^2$	2.441	0.614	0.263	4.512	2.298
	(11.857)	(1.338)	(0.941)	(7.062)	(2.522)
$(\text{Ln(assets)})^3$	−0.152	−0.039	−0.007	−0.284	−0.143
	(0.699)	(0.079)	(0.028)	(0.417)	(0.149)
$(\text{Ln(assets)})^4$	0.004	0.001		0.007	0.003
	(0.015)	(0.002)		(0.009)	(0.003)
Return on Assets	−0.055**	−0.010**	−0.060**	−0.063**	−0.028**
	(0.004)	(0.001)	(0.009)	(0.003)	(0.001)
Volatile liability dep. ratio	0.006*	0.001**	0.016**	0.006**	0.002**
	(0.002)	(0.000)	(0.005)	(0.001)	(0.000)
Net interest margin	0.003	0.000	0.008	−0.003	−0.002
	(0.003)	(0.000)	(0.005)	(0.003)	(0.001)
Leverage ratio	−0.035**	−0.005**	−0.000	−0.041**	−0.016**
	(0.008)	(0.001)	(0.000)	(0.004)	(0.001)
Noncurrent loan ratio	0.080**	0.014**	0.054**	0.088**	0.036**
	(0.008)	(0.002)	(0.010)	(0.005)	(0.004)
Other loans to assets ratio	0.013**	0.002**	0.007*	0.015**	0.005**
	(0.002)	(0.000)	(0.003)	(0.001)	(0.000)
CRE loans to assets ratio	0.018**	0.003**	0.011**	0.018**	0.007**
	(0.002)	(0.000)	(0.002)	(0.001)	(0.000)
RRE loans to assets ratio	0.004*	0.001**	−0.000	0.006**	0.002**
	(0.002)	(0.000)	(0.002)	(0.001)	(0.000)
Efficiency ratio	0.000	−0.000*	−0.001	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Return on risky assets	0.007*	0.001*	0.004	0.006*	0.002*
	(0.003)	(0.001)	(0.003)	(0.002)	(0.001)
Private sec. to assets ratio	0.002	0.001**	−0.002	−0.000	0.001
	(0.002)	(0.000)	(0.004)	(0.001)	(0.000)

Continued.

Table A.4: Effects of Switching from State to National Charter (continued)

	Dummy CAMELS 3 to 5			CAMELS rating	
	Probit[a]	OLS[a]	Probit[b]	Ord. Prob.[a]	OLS[a]
Core deposits to assets ratio	−0.004	−0.000	0.004	−0.005**	−0.002**
	(0.003)	(0.000)	(0.006)	(0.001)	(0.001)
Delinq. to loan loss res. ratio	0.001**	0.000	0.001**	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Total risk-based capital ratio	0.001	0.001**	−0.013	0.002	0.002**
	(0.005)	(0.000)	(0.008)	(0.002)	(0.001)
Previously CAMELS of 1	−2.931**	−0.584**	−3.178**	−4.560**	−2.389**
	(0.239)	(0.017)	(0.142)	(0.119)	(0.046)
Previously CAMELS of 2	−2.215**	−0.569**	−2.567**	−2.778**	−1.774**
	(0.237)	(0.016)	(0.116)	(0.117)	(0.045)
Previously CAMELS of 3	−0.781**	−0.111**	−0.757**	−1.640**	−1.250**
	(0.237)	(0.015)	(0.111)	(0.113)	(0.042)
Previously CAMELS of 4	0.319	0.110**		−0.750**	−0.460**
	(0.248)	(0.012)		(0.109)	(0.040)
R-squared	0.526	0.507	0.545	0.452	0.672
Number of observations	67,615	67,647	18,221	67,647	67,647

NOTE: The unit of observation is a bank examination. The dependent variable in the first three columns is a dummy variable that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. The dependent variable in the other two columns is the CAMELS rating assigned in the examination. All specifications include state and year fixed effects. Standard errors are in parentheses and the effects of charter switching on the probability of receiving a rating of 3 to 5 implied by the coefficient estimates are in brackets. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. All samples are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. ** and * denote significance at the 1 and 5 percent level, respectively.

[a] This column uses a sample of examinations of banks that held state charters as of the Call Report from one year before the exit meeting of the examination.

[b] This column uses a sample of examinations of banks that held national charters as of the most recent Call Report until the exit meeting of the examination.

Table A.5: Bivariate Probit Estimates of the Effects of Charter Switching

	Previously National		Previously State	
	Charter change	CAMELS 3 to 5	Charter change	CAMELS 3 to 5
Switched charters		−1.406**		−2.755**
		(0.501)		(0.430)
		[−0.113]		[−0.137]
Fee diff. to assets ratio	0.939*		−2.536**	
	(0.428)		(0.816)	
Was a SMB one year before			−0.027	0.099**
			(0.123)	(0.032)
Belongs to a BHC	0.123	−0.014	−0.305*	−0.056
	(0.093)	(0.059)	(0.130)	(0.030)
Bank merged past 3 years	0.195*	0.114	0.034	0.051
	(0.095)	(0.066)	(0.115)	(0.038)
BHC merged past 3 years	0.128	−0.209*	0.592**	−0.113*
	(0.112)	(0.084)	(0.167)	(0.053)
Ln(assets)	−7.798	3.851	369.208**	−14.011
	(19.669)	(12.454)	(9.975)	(110.643)
$(\text{Ln(assets)})^2$	0.650	−0.386	−49.800**	2.079
	(1.734)	(1.096)	(2.657)	(14.690)
$(\text{Ln(assets)})^3$	−0.018	0.012	2.979**	−0.138
	(0.051)	(0.032)	(0.236)	(0.865)
$(\text{Ln(assets)})^4$			−0.067**	0.003
			(0.007)	(0.019)
Return on Assets	−0.007	−0.057**	0.024	−0.055**
	(0.011)	(0.008)	(0.023)	(0.005)
Volatile liability dep. ratio	−0.003	0.016**	−0.024**	0.003
	(0.005)	(0.005)	(0.008)	(0.003)
Net interest margin	0.016**	0.009	0.005	0.002
	(0.005)	(0.006)	(0.004)	(0.004)
Leverage ratio	0.000	−0.000	−0.086	−0.046**
	(0.000)	(0.000)	(0.044)	(0.007)
Noncurrent loan ratio	−0.025	0.048**	0.008	0.086**
	(0.022)	(0.011)	(0.026)	(0.009)
Other loans to assets ratio	−0.008*	0.008*	0.014	0.014**
	(0.004)	(0.003)	(0.007)	(0.002)
CRE loans to assets ratio	0.001	0.011**	0.005	0.019**
	(0.003)	(0.003)	(0.009)	(0.002)
RRE loans to assets ratio	0.000	0.002	0.008	0.005**
	(0.003)	(0.003)	(0.006)	(0.002)
Efficiency ratio	0.000	−0.000*	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Return on risky assets	−0.010	0.004	0.002	0.008**
	(0.008)	(0.004)	(0.007)	(0.003)
Private sec. to assets ratio	−0.012	−0.001	0.001	0.000
	(0.008)	(0.005)	(0.012)	(0.003)

Continued.

Table A.5: Bivariate Probit Estimates of the Effects of Charter Switching (continued)

	Previously National		Previously State	
	Charter change	CAMELS 3 to 5	Charter change	CAMELS 3 to 5
Core deposits to assets ratio	−0.004	0.003	−0.021*	−0.007*
	(0.005)	(0.006)	(0.010)	(0.003)
Delinq. to loan loss res. ratio	−0.000	0.001**	−0.000	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)
Total risk-based capital ratio	0.000	−0.012	0.002	0.008*
	(0.004)	(0.009)	(0.020)	(0.004)
Previously CAMELS of 1	−0.329	−3.489**	−0.073	−2.819**
	(0.493)	(0.417)	(0.374)	(0.284)
Previously CAMELS of 2	−0.083	−2.847**	0.344	−2.129**
	(0.472)	(0.403)	(0.307)	(0.281)
Previously CAMELS of 3	−0.201	−1.073**	0.199	−0.727**
	(0.463)	(0.393)	(0.303)	(0.282)
Previously CAMELS of 4	−0.232	−0.362	0.315	0.354
	(0.524)	(0.399)	(0.384)	(0.296)
Correlation coefficient	0.471		0.940	
	(0.219)		(0.127)	
Log pseudolikelihood	-3,087		-8,961	
Number of observations	13,354		45,635	

NOTE: The unit of observation is a bank examination. Columns 1 and 2 show the bivariate probit estimates using a sample of examinations of banks that held national charters as of the Call Report from one year before the exit meeting of the examination, and columns 3 and 4 show the estimates using a sample of examinations of banks that held state charters as of the Call Report from one year before the exit meeting of the examination. In columns 1 and 3, the dependent variable is a dummy that is equal to one if the banks switched charters in the past year and equal to zero otherwise and, in columns 2 and 4, it is a dummy variable that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. The fee difference ratio, which is included only in columns 1 and 3, is measured in dollars of fees at year-end 2012 levels divided by thousand of dollars of assets at year-end 2012 levels. All specifications include state and year fixed effects. Standard errors are in parentheses and the effects of charter switching on the probability of receiving a rating of 3 to 5 implied by the coefficient estimates are in brackets. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. All samples are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. ** and * denote significance at the 1 and 5 percent level, respectively.

Table A.6: Bivariate Probit Estimates with the OCC's Fees as Instruments and Broader Sample

	Previously National		Previously State	
	Charter change	CAMELS 3 to 5	Charter change	CAMELS 3 to 5
Switched charters		−1.549**		−2.718**
		(0.432)		(0.401)
		[−0.115]		[−0.137]
OCC's fees to assets ratio	2.731**		0.968	
	(0.974)		(1.712)	
Was a SMB one year before			−0.163	0.086**
			(0.111)	(0.027)
Belongs to a BHC	0.114	−0.098	−0.013	−0.075**
	(0.080)	(0.051)	(0.114)	(0.026)
Bank merged past 3 years	0.192*	0.108*	0.192*	0.070*
	(0.085)	(0.055)	(0.095)	(0.032)
BHC merged past 3 years	0.052	−0.186**	0.385**	−0.125**
	(0.099)	(0.071)	(0.133)	(0.044)
Ln(assets)	−7.830	−5.653	235.569**	−17.692
	(17.916)	(10.543)	(11.296)	(87.954)
$(\text{Ln(assets)})^2$	0.780	0.473	−31.517**	2.441
	(1.568)	(0.928)	(2.898)	(11.695)
$(\text{Ln(assets)})^3$	−0.024	−0.013	1.877**	−0.152
	(0.046)	(0.027)	(0.250)	(0.689)
$(\text{Ln(assets)})^4$			−0.042**	0.004
			(0.007)	(0.015)
Return on Assets	−0.010	−0.059**	−0.006	−0.055**
	(0.011)	(0.007)	(0.015)	(0.004)
Volatile liability dep. ratio	0.000	0.016**	−0.018**	0.006*
	(0.005)	(0.005)	(0.006)	(0.002)
Net interest margin	0.011*	0.009	0.007	0.003
	(0.006)	(0.005)	(0.004)	(0.003)
Leverage ratio	0.000	−0.000	−0.051*	−0.035**
	(0.000)	(0.000)	(0.026)	(0.008)
Noncurrent loan ratio	−0.028	0.053**	0.015	0.080**
	(0.019)	(0.010)	(0.023)	(0.008)
Other loans to assets ratio	−0.007*	0.007*	0.005	0.013**
	(0.003)	(0.003)	(0.005)	(0.002)
CRE loans to assets ratio	0.005	0.011**	0.003	0.017**
	(0.003)	(0.002)	(0.005)	(0.002)
RRE loans to assets ratio	0.002	0.001	0.003	0.004*
	(0.003)	(0.002)	(0.005)	(0.002)
Efficiency ratio	0.000	−0.000*	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Return on risky assets	−0.006	0.004	0.003	0.007**
	(0.007)	(0.003)	(0.005)	(0.003)
Private sec. to assets ratio	−0.001	−0.002	0.004	0.002
	(0.007)	(0.004)	(0.009)	(0.002)

Continued.

Table A.6: Bivariate Probit Estimates with the OCC's Fees as Instruments and Broader Sample (continued)

	Previously National		Previously State	
	Charter change	CAMELS 3 to 5	Charter change	CAMELS 3 to 5
Core deposits to assets ratio	−0.001	0.004	−0.017*	−0.004
	(0.006)	(0.006)	(0.007)	(0.003)
Delinq. to loan loss res. ratio	−0.000	0.001**	−0.001	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)
Total risk-based capital ratio	0.000	−0.014	−0.003	0.001
	(0.004)	(0.008)	(0.010)	(0.005)
Previously CAMELS of 1	−0.112	−3.549**	−0.067	−2.920**
	(0.487)	(0.390)	(0.311)	(0.239)
Previously CAMELS of 2	0.063	−2.937**	0.290	−2.212**
	(0.468)	(0.379)	(0.279)	(0.237)
Previously CAMELS of 3	−0.065	−1.171**	0.056	−0.788**
	(0.457)	(0.371)	(0.284)	(0.237)
Previously CAMELS of 4	0.117	−0.457	0.065	0.310
	(0.469)	(0.377)	(0.372)	(0.247)
Correlation coefficient	0.491		0.842	
	(0.193)		(0.096)	
Log pseudolikelihood	-4,310		-12,949	
Number of observations	18,552		67,647	

NOTE: The unit of observation is a bank examination. Columns 1 and 2 show the bivariate probit estimates using a sample of examinations of banks that held national charters as of the Call Report from one year before the exit meeting of the examination, and columns 3 and 4 show the estimates using a sample of examinations of banks that held state charters as of the Call Report from one year before the exit meeting of the examination. In columns 1 and 3, the dependent variable is a dummy that is equal to one if the banks switched charters in the past year and equal to zero otherwise and, in columns 2 and 4, it is a dummy variable that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. The fee difference ratio, which is included only in columns 1 and 3, is measured in dollars of fees at year-end 2012 levels divided by thousand of dollars of assets at year-end 2012 levels. All specifications include state and year fixed effects. Standard errors are in parentheses and the effects of charter switching on the probability of receiving a rating of 3 to 5 implied by the coefficient estimates are in brackets. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. All samples are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. ** and * denote significance at the 1 and 5 percent level, respectively.

Table A.7: Bivariate Probit Estimates with the OCC's Fees as Instruments

	Previously National		Previously State	
	Charter change	CAMELS 3 to 5	Charter change	CAMELS 3 to 5
Switched charters		−1.559**		−2.989**
		(0.376)		(0.842)
		[−0.115]		[−0.137]
OCC's fees to assets ratio	2.836**		1.631	
	(1.045)		(2.558)	
Was a SMB one year before			−0.010	0.098**
			(0.163)	(0.033)
Belongs to a BHC	0.134	−0.013	−0.295*	−0.059
	(0.092)	(0.059)	(0.122)	(0.031)
Bank merged past 3 years	0.186	0.116	0.012	0.051
	(0.095)	(0.065)	(0.182)	(0.040)
BHC merged past 3 years	0.117	−0.203*	0.578**	−0.107
	(0.111)	(0.083)	(0.168)	(0.080)
Ln(assets)	5.122	3.326	461.843**	−14.011
	(21.198)	(12.358)	(23.725)	(110.555)
$(\text{Ln(assets)})^2$	−0.390	−0.400	−61.141**	2.079
	(1.850)	(1.088)	(6.294)	(14.692)
$(\text{Ln(assets)})^3$	0.011	0.011	3.598**	−0.138
	(0.054)	(0.032)	(0.559)	(0.866)
$(\text{Ln(assets)})^4$			−0.079**	0.003
			(0.017)	(0.019)
Return on Assets	−0.005	−0.057**	0.020	−0.055**
	(0.011)	(0.008)	(0.022)	(0.005)
Volatile liability dep. ratio	−0.002	0.016**	−0.024*	0.003
	(0.005)	(0.005)	(0.011)	(0.003)
Net interest margin	0.015**	0.009	0.006	0.002
	(0.005)	(0.006)	(0.007)	(0.004)
Leverage ratio	−0.000	−0.000	−0.087	−0.046**
	(0.000)	(0.000)	(0.051)	(0.007)
Noncurrent loan ratio	−0.025	0.047**	0.018	0.086**
	(0.022)	(0.011)	(0.033)	(0.009)
Other loans to assets ratio	−0.008*	0.008*	0.015	0.014**
	(0.004)	(0.003)	(0.010)	(0.002)
CRE loans to assets ratio	0.002	0.011**	0.010	0.019**
	(0.003)	(0.003)	(0.014)	(0.002)
RRE loans to assets ratio	0.000	0.002	0.009	0.005**
	(0.004)	(0.003)	(0.006)	(0.002)
Efficiency ratio	0.000	−0.000*	0.001	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Return on risky assets	−0.012	0.004	0.002	0.008*
	(0.009)	(0.004)	(0.011)	(0.003)
Private sec. to assets ratio	−0.012	−0.002	0.003	0.000
	(0.008)	(0.005)	(0.014)	(0.003)

Continued.

Table A.7: Bivariate Probit Estimates with the OCC's Fees as Instruments (continued)

	Previously National		Previously State	
	Charter change	CAMELS 3 to 5	Charter change	CAMELS 3 to 5
Core deposits to assets ratio	−0.004	0.003	−0.021	−0.007*
	(0.005)	(0.006)	(0.018)	(0.003)
Delinq. to loan loss res. ratio	−0.000	0.001**	−0.001	0.001**
	(0.000)	(0.000)	(0.001)	(0.000)
Total risk-based capital ratio	0.000	−0.012	0.007	0.008*
	(0.004)	(0.009)	(0.019)	(0.004)
Previously CAMELS of 1	−0.345	−3.460**	−0.029	−2.818**
	(0.485)	(0.404)	(0.381)	(0.285)
Previously CAMELS of 2	−0.088	−2.821**	0.371	−2.130**
	(0.463)	(0.390)	(0.321)	(0.282)
Previously CAMELS of 3	−0.201	−1.058**	0.243	−0.728**
	(0.452)	(0.382)	(0.325)	(0.283)
Previously CAMELS of 4	−0.220	−0.348	0.385	0.352
	(0.511)	(0.389)	(0.411)	(0.296)
Correlation coefficient	0.545		0.967	
	(0.150)		(0.415)	
Log pseudolikelihood	-3,086		-8,966	
Number of observations	13,354		45,635	

NOTE: The unit of observation is a bank examination. Columns 1 and 2 show the bivariate probit estimates using a sample of examinations of banks that held national charters as of the Call Report from one year before the exit meeting of the examination, and columns 3 and 4 show the estimates using a sample of examinations of banks that held state charters as of the Call Report from one year before the exit meeting of the examination. In columns 1 and 3, the dependent variable is a dummy that is equal to one if the banks switched charters in the past year and equal to zero otherwise and, in columns 2 and 4, it is a dummy variable that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. The fee difference ratio, which is included only in columns 1 and 3, is measured in dollars of fees at year-end 2012 levels divided by thousand of dollars of assets at year-end 2012 levels. All specifications include state and year fixed effects. Standard errors are in parentheses and the effects of charter switching on the probability of receiving a rating of 3 to 5 implied by the coefficient estimates are in brackets. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. All samples are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. ** and * denote significance at the 1 and 5 percent level, respectively.

Table A.8: Bivariate Probit Estimates with the States' Fees as Instruments

	Previously National		Previously State	
	Charter change	CAMELS 3 to 5	Charter change	CAMELS 3 to 5
Switched charters		−1.363**		−2.811**
		(0.566)		(0.448)
		[−0.112]		[−0.137]
States' fees to assets ratio	−0.658		1.644*	
	(0.435)		(0.803)	
Was a SMB one year before			−0.029	0.099**
			(0.126)	(0.032)
Belongs to a BHC	0.125	−0.014	−0.303*	−0.057
	(0.094)	(0.059)	(0.126)	(0.030)
Bank merged past 3 years	0.198*	0.113	0.027	0.051
	(0.095)	(0.066)	(0.118)	(0.038)
BHC merged past 3 years	0.131	−0.210*	0.585**	−0.111*
	(0.112)	(0.084)	(0.165)	(0.053)
Ln(assets)	−14.526	3.968	376.509**	−14.011
	(19.048)	(12.484)	(10.287)	(110.290)
$(\text{Ln(assets)})^2$	1.209	−0.396	−50.659**	2.079
	(1.683)	(1.090)	(2.735)	(14.644)
$(\text{Ln(assets)})^3$	−0.034	0.013	3.026**	−0.138
	(0.049)	(0.032)	(0.243)	(0.862)
$(\text{Ln(assets)})^4$			−0.068**	0.003
			(0.007)	(0.019)
Return on Assets	−0.007	−0.057**	0.023	−0.055**
	(0.011)	(0.008)	(0.023)	(0.005)
Volatile liability dep. ratio	−0.003	0.016**	−0.025**	0.003
	(0.005)	(0.005)	(0.008)	(0.003)
Net interest margin	0.016**	0.009	0.005	0.002
	(0.005)	(0.006)	(0.005)	(0.004)
Leverage ratio	0.000	−0.000	−0.088	−0.046**
	(0.000)	(0.000)	(0.046)	(0.007)
Noncurrent loan ratio	−0.024	0.048**	0.008	0.086**
	(0.022)	(0.011)	(0.027)	(0.009)
Other loans to assets ratio	−0.008*	0.008*	0.013	0.014**
	(0.004)	(0.003)	(0.008)	(0.002)
CRE loans to assets ratio	0.001	0.011**	0.006	0.019**
	(0.003)	(0.003)	(0.009)	(0.002)
RRE loans to assets ratio	0.000	0.002	0.008	0.005**
	(0.003)	(0.003)	(0.006)	(0.002)
Efficiency ratio	0.000	−0.000*	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Return on risky assets	−0.010	0.004	0.002	0.008**
	(0.008)	(0.004)	(0.007)	(0.003)
Private sec. to assets ratio	−0.012	−0.001	0.002	0.000
	(0.008)	(0.005)	(0.012)	(0.003)

Continued.

Table A.8: Bivariate Probit Estimates with the States' Fees as Instruments (continued)

	Previously National		Previously State	
	Charter change	CAMELS 3 to 5	Charter change	CAMELS 3 to 5
Core deposits to assets ratio	−0.004	0.003	−0.023*	−0.007*
	(0.005)	(0.006)	(0.010)	(0.003)
Delinq. to loan loss res. ratio	−0.000	0.001**	−0.000	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)
Total risk-based capital ratio	0.000	−0.012	0.001	0.008*
	(0.004)	(0.009)	(0.021)	(0.004)
Previously CAMELS of 1	−0.315	−3.502**	−0.257	−2.819**
	(0.496)	(0.425)	(0.367)	(0.284)
Previously CAMELS of 2	−0.071	−2.859**	0.146	−2.129**
	(0.475)	(0.411)	(0.305)	(0.281)
Previously CAMELS of 3	−0.193	−1.083**	0.012	−0.727**
	(0.465)	(0.399)	(0.301)	(0.282)
Previously CAMELS of 4	−0.223	−0.371	0.130	0.354
	(0.525)	(0.405)	(0.383)	(0.296)
Correlation coefficient	0.449		0.950	
	(0.250)		(0.138)	
Log pseudolikelihood	-3,088		-8,963	
Number of observations	13,354		45,635	

NOTE: The unit of observation is a bank examination. Columns 1 and 2 show the bivariate probit estimates using a sample of examinations of banks that held national charters as of the Call Report from one year before the exit meeting of the examination, and columns 3 and 4 show the estimates using a sample of examinations of banks that held state charters as of the Call Report from one year before the exit meeting of the examination. In columns 1 and 3, the dependent variable is a dummy that is equal to one if the banks switched charters in the past year and equal to zero otherwise and, in columns 2 and 4, it is a dummy variable that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. The fee difference ratio, which is included only in columns 1 and 3, is measured in dollars of fees at year-end 2012 levels divided by thousand of dollars of assets at year-end 2012 levels. All specifications include state and year fixed effects. Standard errors are in parentheses and the effects of charter switching on the probability of receiving a rating of 3 to 5 implied by the coefficient estimates are in brackets. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. All samples are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. ** and * denote significance at the 1 and 5 percent level, respectively.

Table A.9: Bivariate Probit Estimates with the OCC's and the States' Fees as Instruments

	Previously National		Previously State	
	Charter change	CAMELS 3 to 5	Charter change	CAMELS 3 to 5
Switched charters		−1.522**		−2.857**
		(0.402)		(0.383)
		[−0.114]		[−0.137]
OCC's fees to assets ratio	2.775**		1.180	
	(1.042)		(3.082)	
States' fees to assets ratio	−0.611		2.432*	
	(0.439)		(0.976)	
Was a SMB one year before			−0.013	0.097**
			(0.134)	(0.032)
Belongs to a BHC	0.128	−0.013	−0.294*	−0.060*
	(0.092)	(0.059)	(0.142)	(0.030)
Bank merged past 3 years	0.188*	0.116	−0.004	0.051
	(0.095)	(0.065)	(0.146)	(0.038)
BHC merged past 3 years	0.120	−0.205*	0.583**	−0.102*
	(0.111)	(0.083)	(0.187)	(0.050)
Ln(assets)	4.828	3.469	451.983**	−14.010**
	(21.320)	(12.381)	(17.453)	(2.232)
$(\text{Ln(assets)})^2$	−0.379	−0.352	−59.877**	2.079**
	(1.861)	(1.090)	(2.140)	(0.590)
$(\text{Ln(assets)})^3$	0.011	0.011	3.528**	−0.138**
	(0.054)	(0.032)	(0.247)	(0.052)
$(\text{Ln(assets)})^4$			−0.078**	0.003*
			(0.008)	(0.002)
Return on Assets	−0.006	−0.057**	0.022	−0.055**
	(0.011)	(0.008)	(0.023)	(0.005)
Volatile liability dep. ratio	−0.002	0.016**	−0.023*	0.003
	(0.005)	(0.005)	(0.009)	(0.003)
Net interest margin	0.016**	0.009	0.007	0.002
	(0.005)	(0.006)	(0.004)	(0.004)
Leverage ratio	0.000	−0.000	−0.078	−0.046**
	(0.000)	(0.000)	(0.047)	(0.007)
Noncurrent loan ratio	−0.025	0.047**	0.012	0.086**
	(0.022)	(0.011)	(0.025)	(0.009)
Other loans to assets ratio	−0.008*	0.008*	0.013	0.014**
	(0.004)	(0.003)	(0.009)	(0.002)
CRE loans to assets ratio	0.002	0.011**	0.008	0.019**
	(0.003)	(0.003)	(0.009)	(0.002)
RRE loans to assets ratio	0.000	0.002	0.008	0.005**
	(0.003)	(0.003)	(0.007)	(0.002)
Efficiency ratio	0.000	−0.000*	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Return on risky assets	−0.011	0.003	0.003	0.008*
	(0.008)	(0.004)	(0.006)	(0.003)
Private sec. to assets ratio	−0.012	−0.002	0.005	0.000
	(0.008)	(0.005)	(0.012)	(0.003)

Continued.

Table A.9: Bivariate Probit Estimates with the OCC's and the States' Fees as Instruments (continued)

	Previously National		Previously State	
	Charter change	CAMELS 3 to 5	Charter change	CAMELS 3 to 5
Core deposits to assets ratio	−0.004	0.003	−0.019	−0.007*
	(0.005)	(0.006)	(0.010)	(0.003)
Delinq. to loan loss res. ratio	−0.000	0.001**	−0.001	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)
Total risk-based capital ratio	0.000	−0.012	0.001	0.008*
	(0.004)	(0.009)	(0.025)	(0.004)
Previously CAMELS of 1	−0.346	−3.464**	−0.149	−2.818**
	(0.488)	(0.408)	(0.391)	(0.284)
Previously CAMELS of 2	−0.092	−2.823**	0.278	−2.131**
	(0.467)	(0.394)	(0.317)	(0.281)
Previously CAMELS of 3	−0.206	−1.057**	0.121	−0.730**
	(0.456)	(0.385)	(0.315)	(0.282)
Previously CAMELS of 4	−0.231	−0.347	0.233	0.351
	(0.515)	(0.392)	(0.380)	(0.296)
Correlation coefficient	0.528		1.000	
	(0.166)		(0.000)	
Log pseudolikelihood	-3,085		-8,961	
Number of observations	13,354		45,635	

NOTE: The unit of observation is a bank examination. Columns 1 and 2 show the bivariate probit estimates using a sample of examinations of banks that held national charters as of the Call Report from one year before the exit meeting of the examination, and columns 3 and 4 show the estimates using a sample of examinations of banks that held state charters as of the Call Report from one year before the exit meeting of the examination. In columns 1 and 3, the dependent variable is a dummy that is equal to one if the banks switched charters in the past year and equal to zero otherwise and, in columns 2 and 4, it is a dummy variable that is equal to 1 if a CAMELS rating of 3, 4, or 5 was assigned in the examination and is equal to zero otherwise. The fee difference ratio, which is included only in columns 1 and 3, is measured in dollars of fees at year-end 2012 levels divided by thousand of dollars of assets at year-end 2012 levels. All specifications include state and year fixed effects. Standard errors are in parentheses and the effects of charter switching on the probability of receiving a rating of 3 to 5 implied by the coefficient estimates are in brackets. Standard errors are clustered at the top holder level, that is, at the bank holding company level for banks that belong to one and at the bank level otherwise. All samples are restricted to examinations of banks with at least $20 million and at most $500 million in total assets deflated to year-end 2012 levels. ** and * denote significance at the 1 and 5 percent level, respectively.