PRELIMINARY VERSION

Switches of primary federal banking regulators *

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Abstract: Banks are able to switch among three options for a primary federal regulator: the FDIC, the Federal Reserve, and the OCC. I examine the impact of switching regulators on bank return and risk using switches from 1977-2003. I find that return increases and risk changes little for switches from 1992-2003, but no significant change in return or risk for earlier switches. The absence of an increase in risk, including failure risk, is evidence against a race for the bottom among regulators. The change in performance at banks switching between 1992 and 2003 is evidence in favor of beneficial competition, at least during that period. There is also some evidence of specialization among regulators during the 1992-2003 period. Note that the rate of switching is highest at the same time as beneficial competition is most likely.

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* The views expressed in this paper are those of the author, and do not necessarily represent the views of the Federal Reserve Bank of Chicago or the Federal Reserve System.

Switches of primary federal banking regulators

Commercial banking in the United States is unique in that there are three primary federal regulators, and banks are able to select among them. A bank chooses a chartering agency and whether it is a Federal Reserve System ("Fed") member, thereby selecting its regulatory authority. A nationally-chartered bank is regulated by the Office of the Comptroller of the Currency (the "OCC"). A state-chartered bank has the Fed as its primary federal regulator if it is a Fed member and the Federal Deposit Insurance Company (the "FDIC") otherwise.[1] By choosing its charter and whether to be a Fed member, a bank effectively chooses its regulator.

This paper explores how banks use the option to select their regulator. Specifically, I examine which banks switch from one regulator to another. One reason to examine banks that switch regulators is the shed light on debates about how regulators behave and the efficacy of the current system of multiple regulators. There has been debate about whether regulators, when setting policies, act in the public interest or not. This paper builds on Rosen (2003), where I focus on the question of whether the regulatory competition is beneficial or destructive. Competition could beneficially spur useful innovation or flexibility. It could also be a race for the bottom, or a "competition for laxity" to use former Federal Reserve Chairman Arthur Burns' term, if regulators try to attract banks by easing restrictions on unsafe or unsound practices. The evidence presented here is not consistent with a race for the bottom, while there is some evidence of beneficial competition. In general, a bank's return either stays the same or increases after it switches regulators, while its risk of failure does not rise.

While most banks never switch regulators, the aggregate number of switchers is not small. Over ten percent of banks switched regulators at least once during the period 1977-2003. The percentage of banks switching varies during this period, rising in the late 1970s, then falling to a lower rate in the 1980s, before rising again in the 1990s (see Figure 1). In this paper, I explore whether the characteristics of banks that switch regulators vary over time, perhaps indicating changing motivations for switching. When I divide the 1977-2003 period into three subperiods, I find differences in the performance of banks that switch. Switches in the latter part of the sample, specifically, 1992-2003, have the largest impact on performance. Banks that switch in this period show a significant increase in return without a commensurate increase in risk. Prior to 1992, switch regulators has little impact on risk and return.

There are many reasons that banks switch regulators, some of which may explain part of the pattern of switching over time. A switch may be prompted by changes in the structure of a

[1] Regulatory authority for state-chartered banks is shared with the appropriate state chartering agencies.

banking organization, by issues relating to the interaction between the banking organization and its regulators, or because a bank wants to change strategy. The sample period I explore, 1977-2003, was a period of major changes in banking, both in the structure of the industry and in the regulatory framework it operates under.

There has been a massive consolidation in banking in the last several decades. A record number of bank mergers occurred in the 1980s, followed by an even larger merger wave in the 1990s. Mergers are an opportune time for banks to make decisions about their primary federal regulators (by choosing chartering agencies and whether to be a Fed member), especially when two banks with different regulators combine. Because of this, switches of regulators following mergers could have different root causes than other shifts. For example, when a nationally chartered bank acquires a state non-member bank, it has to decide whether to remain with the OCC or shift to the FDIC.[2] It is possible that a decision to change regulators to the FDIC would reflect different factors than those leading a bank that did not merge to switch from the OCC to the FDIC. For this reason, I separately examine the impact of switching regulators for banks with and without surrounding mergers. There are some differences between the pre-switch performance for two types of switches, but these may be associated with the reasons for merging. The effect of switches on performance is similar for the two types of switchers, with return increasing in the post-1991 period, but not earlier, and risk not increasing.

The three regulators may differ in whether they attempt to attract banks by offering beneficial innovations or by racing for the bottom. I examine switches by the regulator a bank is leaving and by the regulator a bank is going to examine how regulator policies might differ. For each regulator, I find support for beneficial competition in the post-1991 period, but no evidence of a race for the bottom at any time. I also find evidence of regulatory specialization. In the post-1991 period, banks that switch move to a better risk-return tradeoff, but the change varies by regulator. Banks shifting to the OCC or to the Fed increase return while leaving risk relatively unchanged. Banks shifting to the FDIC, on the other hand, reduce risk while leaving return relatively unchanged.

The plan of the paper is as follows. I first provide an overview of when banks switch primary regulators. Then, in the next section, I review the arguments for and against a system when banks can choose from among multiple regulators. Section III examines the characteristics of banks that switch primary regulators. The next section provides the analysis of how switches affect performance. In Section V, I examine differences among the regulatory agencies. I briefly

[2] We say that a bank switches regulators following a merger if the bank with the surviving charter has a different regulator after the merger.

discuss several robustness checks in Section VI. Finally, some conclusions are presented in Section VII.

I. The pattern of banks switching primary regulators

Banks have been switching primary regulatory agencies for many years (Scott 1977, documents switches from 1950 to 1974). I examine switches the occurred from 1977–2003, a period that covers major changes in banking and bank regulation. I identify the year a bank changes primary regulators from the Call Reports of Income and Condition that banks are required to file. Table 1 gives an overview of the banks that switched primary regulators. As the second column shows, there were 2,298 switches during the sample period, an average of 85 per year. Over the sample period, 10.8% of banks left their regulator at least once (0.7% of banks switched more than once). Table 1 also gives a breakdown of switches by the size of the bank. The smallest banks were the least likely to switch.

Merger activity, and switches associated with mergers, varied significantly over the sample period. Figure 2 gives the number of merger-related and other switches by year. I define a bank as having switched because of a merger if it switches primary regulator in the year of its merger or the year following its merger. As noted earlier, if banks with different primary regulators merge, they have to choose one of the two regulators. If they choose the regulator of the bank that is not the one with the surviving charter, then I record this as a change of primary regulators. A total of 779 banks switched regulators following a merger, one-third of all switches.

The pattern of regulatory switches can be partially explained by regulatory changes. In 1980, the Depository Institutions Deregulation and Monetary Control Act (DIDMCA) was passed. Prior to DIDMCA, there were important differences across regulators. For example, reserve requirements depended on whether a bank was a member of the Federal Reserve System. DIDMCA leveled the playing field for banks that were and were not members of the Federal Reserve System. It is possible that many of the regulatory switches that occurred prior to and immediately after passage of DIDMCA were related to major differences in regulations rather than any actions of the regulations.

During the 1980s, states gradually reduced their restrictions on interstate and intrastate expansion (Amel, 1991; Amel and Starr-McCleur, 2002). This may have prompted the merger wave in the 1980s, and could have led to some of the switches of primary regulator during the 1980s. In addition, the Riegle-Neal Act of 1994 essentially removed the restrictions on interstate banking. This act was phased in over the next few years, as states gradually adopted its provisions (Dick, 2006). This may help explain the peak of merger-related switches in 1995 and the continued high rate in the next few years.

Bank mergers affecting not just the merging banks, but also other banks. The bank merger waves in the 1980s and the 1990s increased the average size of a bank dramatically. However, it had a much smaller effect on local market competition, with the average market concentration index essentially unchanged. These changes affected competition in local markets (see, e.g., Berger, et. al., 2005). Some switches of regulators may have been partially in response to these impacts of bank consolidation.

DIDMCA and the merger wave may have induced some of the changes in my sample period. However, there are many switches that cannot be explained purely by regulatory changes or industry consolidation. In the next section, I examine additional possible explanations for switches of primary regulators.

II. Are multiple regulators beneficial?

There has been a debate over the best regulatory structure for a long time (see Rosen, 2003, for some examples). This section briefly reviews the arguments against and for having multiple regulators.

When bank managers are asked why they change primary regulators, they generally respond in one of three ways. They claim that the switch either allows them additional powers (as Chase Manhattan Bank did when it changed the primary regulator of its Delaware bank in 1990), saves on regulatory compliance costs (as Chase did after its merger with Chemical Bank in 1995), or makes national expansion easier (as HSBC USA did when it changed its charter in 2004). Broadly speaking, regulation at the three agencies (and the states, for state-chartered banks) is similar.[3] But for some banks and some issues, the differences might be important enough to induce a switch. During part of the sample period, for example, the insurance powers granted to banks varied across regulators. To conduct certain insurance activities, a bank may have needed to switch regulators. Thus, Chase Manhattan switched the regulator of its Delaware bank to allow the bank to sell insurance.

Some switches might be prompted because of the costs of regulation. The costs of regulation are both indirect and direct. The indirect costs include managerial and legal costs involved in meeting with bank examiners and making required reports as well as the opportunity costs of restrictions on portfolio choices imposed by regulators such as reserve requirements and expedited funds availability.[4] There is no reason to believe that there are systematic differences

[3] Butler and Macey (1988) point out that one reason that differences across regulators are not very large is the use of federal supremacy laws. In essence, federal regulators impose their rules on state-chartered banks through direct regulation or by making federal deposit insurance conditional on accepting certain rules.

[4] Elliehausen (1998) gives estimates of the cost of regulation that range between 5 and 15 percent of

in the indirect costs that banks would face at the different agencies. However, there is a difference in direct costs. Nationally-chartered banks and state-chartered banks that are not members of the Federal Reserve must pay for bank examinations while state-chartered Fed member banks do not have to. A bank that switches its primary regulator to the Fed thus will save on exam costs. This may induce some switches if the OCC or some states change the cost of exams (or if, because of competition in banking, a bank feels it has to squeeze out additional cost savings). Cost considerations may have also prompted some holding companies to simplify their regulatory structure.

From a social perspective, some question whether having multiple regulators is a good idea. There are several potential drawbacks to the current regulatory system. At a minimum, having multiple regulators introduces complications. When J.P. Morgan Chase decided to merge with Bank One in 2004, Morgan had a state charter and Bank One had a national charter. As part of the merger process, Morgan had to decide which charter to adopt (and if it chose a state charter, whether to be a Fed member). This took time and resources that would not have been necessary if there were only a single bank regulator. Moreover, when Morgan selected a national charter, its former state regulator had to shift its personnel and pricing to account for the loss of a major bank. These costs may not be large, but they are certainly present.

A potentially more serious issue is that regulators might not always act in the social interest. Stigler (1971) points out that regulators can be captured by the industries they regulate because firms in the industry care a lot more about the regulators' decisions than outsiders do. If regulators are captured, they may choose policies that benefit banks rather than the public.

Related to this, one focus of the existing literature on regulatory structure is whether there is a "race for the bottom" among regulatory agencies. In the 1970s, then-Fed Chairman Arthur Burns commented that he feared a destructive regulatory competition for banks (their customers, in a sense). He brought up the possibility of what he called a "competition for laxity" where banks would relax regulation to capture market share (see Scott, 1977). Since the budget of an agency depends in part on the number and size of the firms it regulates, regulators might compete against each other by offering lenient treatment in order to attract firms. When Chase Manhattan Bank elected to have a state charter rather than a national one subsequent to its merger with Chemical Bank in 1995, the OCC lost fees amounting to 2% of its budget. Similarly, when its successor, J.P. Morgan Chase, returned to a national charter after in merger with Bank One in 2004, the New York Banking Department (the state regulatory agency) lost 27% of its revenues. If either agency

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noninterest expense, or between 2 and 6 percentage points of return on equity.

was concerned with maximizing its budget, it would have an incentive to remove burdens on banks (or bank managers) to keep them from switching.[5]

A race for the bottom could allow banks to game the system. That is, banks may choose their primary federal regulator (and, potentially, their state of incorporation and thereby their state regulator) to take actions that benefit the bank but are not in the public interest. An example of this would be a bank that switched regulators in order to adopt a new, risky strategy (or to hide risks it was already taking). The risk could increase the exposure of the deposit insurance fund. It is important to note that a bank can only switch to a new regulator if that regulator approves, and thus regulators have the ability to block switches of this kind.

On the other hand, having multiple regulators offers potential benefits. A single regulator might have less incentive to allow banks to undertake new powers or to use new products. There is a natural tendency for regulators to be risk averse since they get blamed for anything that goes wrong, but may not get rewarded for permitting beneficial changes. Multiple regulators mean that potentially beneficial changes which one regulator views as too risky might be adopted by another regulator. In addition, having multiple regulators allows some specialization. Tiebout (1956) presents a model of public good provision by local communities that has often been modified to examine other issues of regulation. The Tiebout framework can be used to show that under certain conditions (including no externalities and costless mobility), regulatory competition leads to optimal standards setting. Different localities can offer a menu of public goods, with each individual choosing the menu that is best for her or him (we call this Tiebout sorting). This model underlies the arguments for local control of securities regulation (Romano 1998), antitrust enforcement (Easterbrook and Fischel 1991), and environmental policy (Revesz 2000). These papers also claim that the benefits of competition among local agencies mean that there is (or should be) no race for the bottom.

Related to Tiebout sorting, another reason that banks might switch is that regulatory enforcement may differ across agencies. There may be an explicit policy shift at a particular agency. For example, in 1991 Federal Reserve Chairman Alan Greenspan was worried that examiners were contributing to a "credit crunch" by requiring banks to hold too much capital against loans. This was interpreted by some as a signal for examiners to relax enforcement. This could have encouraged banks to switch to the Fed from the other agencies.[6]

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[5] Another potential drawback of having multiple regulatory agencies from which to choose is that the agencies may respond to their constituencies but ignore externalities. When externalities are important, control by local agencies may lead to too little regulation (Baumol and Oates 1988; Stewart 1992). As an example, for many years Britain did not control sulfur emissions from its power plants because prevailing winds blew them offshore, with most of the damage being felt in continental Europe (Lomas 1988). I do not examine this here, since this sort of externality is not a big problem in banking.

[6] Greenspan spoke in October 1991. Later that year, Treasury Secretary Nicholas Brady made similar

An additional complication is that a bank regulatory agency is essentially a collection of examiners. Unlike regulators in many other areas, examiners in banking frequently make subjective decisions about the banks they visit.[7] Berger, *et. al.* (2000) reviews examiner and regulatory agency discretion when monitoring banks. Examiners go in a bank to evaluate its risk. Based on this assessment, the examiners decide whether the bank's reserve for loan losses is sufficient and then assign a strength rating to the bank (the CAMELS rating). If a bank wants to change its portfolio, its examiner must decide how to react. The examiner can either accede or make the change costly for the bank by requesting a higher loan loss reserve (resulting in a charge against income) or by giving the bank a lower CAMELS rating (resulting in more regulatory costs for the bank). Thus, to an extent, examiners can decide how costly it is for a bank to add risk.

Examiners can exploit the discretion they have when examining a bank to maximize their own utilities. One interest of some examiners may be to lead a "quiet life" (Rosen, 2003).[8] That is, they may want to get by with as little work and as little career risk as possible. To get a quiet life, an examiner might want the banks she regulates to have as simple a portfolio to evaluate as possible.

There is another reason why examiners may put up roadblocks to change by banks. Regulatory behavior also may be influenced by a desire to avoid criticism from groups other than the firms they regulate. Importantly, Congress and public interest groups may criticize *ex post* actions that were proper *ex ante* (as Kane 1989, argues was done early in the savings and loan crisis in the 1980s). This gives regulatory agencies, and by extension examiners, an incentive to avoid actions that the regulator thinks could increase the risk of bank failure. Fear of criticism may induce risk aversion on the part of examiners who want a quiet life.

The question of whether having the ability to switch regulators leads to beneficial competition or a race for the bottom can be tested by examining which banks switch and how switching affects the performance of banks. The key here is to decide which switches are "beneficial" and which are bad. A beneficial switch allows a bank to move to a better risk-return tradeoff without increasing societal risk. I proxy for societal risk using the risk of bank failure. Banks are regulated for many reasons, including the value of having a smoothly operating payments system and the fact that deposits are insured. Both of these imply that regulators want to limit excessive risk taking by banks, which should limit bank failures. One way a race for the

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remarks. The OCC is part of the Treasury Department.

[7] In other industries, interpretation of regulations most frequently comes at the agency level. There is a literature that looks at whether regulatory agencies act as Congress wants them to. Libecap (1996) contains a number of articles addressing this question.

[8] Berger and Hannan (1998) talk about the desire by bankers for a quiet life.

bottom could work is that regulators could allow banks that switch to increase societal risk without a compensating increase in return. Bank managers or shareholders could benefit, but only by taking advantage of the deposit insurance system. Beneficial competition, on the other hand, allows banks to move to a better risk-return tradeoff without increasing failure probabilities.[9] Note that these tests are sufficient to indicate beneficial competition or a race for the bottom, but there are other factors that may be missed. Beneficial competition can help all banks, not just those that switch. We can not directly test for this, but the increase in bank profit and decrease in bank failures over the last fifteen years is consistent with beneficial competition but not a race for the bottom. Still, since these trends are also a function of macroeconomic factors, this is at best weak evidence.

III. Characteristics of banks that switch regulators.

This section examines the characteristics of banks that switch regulators. To evaluate banks that switch regulators, I need measures of return and risk. Return is easy to measure. I use the return on assets (ROA), but results are similar with other measures such as the return on equity. There is no simple inclusive measure of risk, however. I use direct and indirect risk evaluations. The direct measure of risk I use is a failure prediction model. As noted above, bank failures can reduce the smooth operating of the payments system and increase losses to the deposit insurance fund. Thus, if a regulator allows banks that switch to it to take actions that increase the banks' failure probabilities, it is evidence of a race for the bottom. To provide a second estimate of failure probability and to determine whether banks are moving to a better risk-return tradeoff, I use three accounting ratios that capture different aspects of risk. The equity-to-asset ratio (EQUITY/ASSETS) is a measure of leverage, with higher values indicating lower risk since equity offers a cushion against failure. The loan-to-asset ratio (LOAN/ASSETS) is likely to be correlated with risk as well. Loans are among the riskiest assets on bank balance sheets. A bank with more loans, all else equal, is more likely to fail. However, loans can vary significantly in risk. To measure the riskiness of a loan portfolio, I use the chargeoff-to-loan ratio (CHRG/LOAN).[10] This ratio reflects expected losses on loans made in the past. A riskier loan portfolio, all else equal, has higher chargeoffs. Chargeoffs can also reflect bad luck, bad management, or investments in risky but predictable loans (such as some credit card loans). Therefore results based on an analysis of chargeoffs should be viewed with caution.

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[9] It is also possible to test the source of beneficial competition, but this is beyond the scope of this paper. See Rosen (2003).

[10] Results using the ratio of nonperforming loans to total loans are more likely to indicate a reduction of risk after a switch than those using the chargeoff-to-loan ratio. Nonetheless, I use chargeoffs rather than nonperforming loans since data on nonperforming loans are not available for the entire sample period.

We can also view the loan-to-asset ratio and the chargeoff-to-loan ratio as proxies for the workload of bank examiners. Examiners have to spend more effort reviewing loans than other assets and nonperforming loans than other loans. If examiners desire a quiet life, they would prefer banks to have nonloan assets such as cash and government securities and they would like the banks not to issue loans with a high probability of becoming nonperforming.

To assess whether a switch of primary federal regulators is beneficial, it is useful to know the quality of the banks that switch. To do this, I examine the banks at the end of the year prior to when they switch. When analyzing the return and risk data, I drop banks in any year that they are in the top or bottom one percent of ROA, EQUITY/ASSETS, or LOAN/ASSETS.

Panel A of Table 2 reports summary statistics for the risk and return variables of banks that switch regulators for the year prior to the switch, both for the entire sample and broken down into merger-related and other switches. Banks switching after mergers have similar average return and risk characteristics to other switchers. To evaluate whether these averages are high or low, I compare them to otherwise similar banks that never switch. Specifically, as in Table 1, I divide banks into three size classes based on total assets (using 2003 dollars). Small banks are those with less than $1 billion in assets, the middle group has banks with between $1 billion and $10 billion in assets, and large banks are those with over $10 billion in assets. To find the mean net ROA, I calculate the mean ROA in each year for each size class, including only banks that never switch regulators. For each switcher, define the net ROA is the switcher's ROA minus that of the appropriate size class in the same year. The mean over the sample period of the net ROA is reported as the mean value of the net ROA in Panel B of Table 2. For the median net ROA, I use the median of the difference between the ROA of a switching bank and the median ROA of non-switching banks of the same size class in the same year. The net risk variables are defined analogously.

As shown in Panel B of Table 2, banks that switch regulators tend to have lower return and be riskier than other banks.[11] The mean ROA of a switching bank is a statistically-significant 0.10 percentage points lower than that of similar non-switching banks. Two risk measures point to higher risk, with the equity-to-asset ratio 0.77 percentage points smaller and the loan-to-asset ratio is 2.29 percentage points larger in switchers than in non-switchers. Both ratios also indicate more risk at merger-related switchers than at other switchers. Although chargeoffs are higher at banks that switch, the difference from chargeoffs at other banks is not significant and is similar at merger-related and other switchers.

[11] This is consistent with Whalen (2002), which examines banks that change charters.

Over the entire sample period, the evidence in Table 2 implies banks that switch have lower return and higher accounting measures of risk (I examine failure risk in the next section). However, as Figure 1 and Table 1 show, the proportion of banks that switch regulators varies over time. It is possible that the strength of banks varies along with the switching intensity. To test this, I divide the sample period into three subperiods. The early subperiod includes all switches from 1977-1981. This roughly corresponds with the implementation of DIDMCA and it is a period with a moderate amount of switching. The middle subperiod includes all switches from 1982-1991. This is the period with the lowest switching intensity. The late subperiod includes all switches from 1992-2003. This includes the peak of bank consolidation, and it is the subperiod where the largest proportion of banks switched.

Panel C of Table 2 presents the net return and risk for banks that switch, broken down by subperiods and by whether a switch is merger related or not. For merger-related switchers, the net return is highest when merger-related switches are most common (the late subperiod). This is a different pattern for the non-merger-related switchers, where the net return is lower in the periods of higher activity (the early and late subperiods) but higher in the period of low activity (the middle subperiod). The risk measures also vary over time, with the most distinct pattern being the increase in the loan-to-asset ratio over time.

The results suggest that banks that switch are different from other banks and that these differences depend on when the banks switch and whether the switch follows a merger. These findings do not help determine whether there is a race for the bottom or beneficial competition, but they point out the importance of controlling for why and when banks switch, as well as other bank characteristics.

IV. Performance of banks that switch regulators.

In this section, I examine the change in performance at banks that switch regulators, comparing return and risk before and after a switch. Beneficial competition implies that banks can benefit from switching while the probability of bank failure (our proxy for social welfare) does not increase. If switching allows banks to take actions that increase the risk of bank failure, then that is evidence consistent with a race for the bottom. The section is divided into two parts. I examine the accounting measures of performance in the first part and then a failure prediction model in the section part.

A. Accounting measures of performance

Return is higher in the year following a change of regulators than in the year prior to a change of regulators. Table 3 presents data on the difference in the net return of banks in the year after a

switch and the net return in the year prior to a switch.[12] The ROA increases by an average of 0.08 percentage points, or 10 percent of its pre-switch level. There is some evidence of a little increase in risk surrounding a switch, with the equity-to-asset falling 3 percent and loan-to-asset ratios rising by about the same percentage. The chargeoff-to-loan ratio signals a small decrease in risk. The changes are roughly the same for merger-related and other switches. A large increase in return with at most a small change in risk is consistent with improved bank performance after a regulatory switch. But these performance changes may not be the result of the switch. To control for other factors that can explain return and risk, I use the following model:

Performance = *f*(Pre-change indicators, Post-change indicators, Control Variables), (1)

where the model is estimated for the return variable and the three risk variables over the entire sample (not just banks that switched). Definitions of the variables are presented below and summarized for reference in the Appendix.

A priori, there is no reason to believe that the changes induced by a switch of regulators should be immediately reflected in performance. For this reason, I look over five-year periods before and after a switch. This allows a long enough time before a switch to see whether there was some change in a bank's performance that might prompt a switch. It also allows a long enough time after a switch to ensure that all the changes that result from it are reflected in the accounting data we examine. For banks that switch regulators, I use dummy variables for pre- and post-switch periods as well as a trend variable. Let DUMMY PRE, the pre-switch dummy, equal 1 for each of the five years prior to a switch (year t-5 to t-1 for a switch in year t) and equal 0 otherwise. Similarly, let DUMMY POST, the post-switch dummy, equal 1 for each of the five years following to a switch and equal 0 otherwise. For banks that never switch, both DUMMY PRE and DUMMY POST equal 0. I set the trend variables so that they are increasing in time. For banks that switch in year t, let TREND PRE take the value 1 in year t-5, 2 in year t-4, and so on until it has the value 5 in year t-1. For other years and other banks, it equals 0. Similarly, define TREND POST as taking the value 1 in year t+1, 2 in year t+1, and so on until it has the value 5 in year t+5 for switchers, and the value 0 otherwise.

The risk choices a bank makes affect its return and vice versa. Thus, I include risk and return variables as controls (excluding the performance measure being estimated). Results are qualitatively similar without these controls.

I also to control for factors that can affect bank performance. We want to control for reasons unrelated to risk and return that may lead a bank to shift its primary regulator. First, I include

[12] This includes only banks that have data for both the year before and the year following a switch.

variables to indicate the structural characteristics of a bank. These controls include merger, a dummy for merger activity. The dummy has a value of one if the bank or its holding company has been involved in a merger with a banking organization in year t or year t-1. Breaking down mergers by type, such as mergers between banks within a holding company versus acquisitions of outside banks, does not change the qualitative results. We also control for holding company status using dummies for whether the bank is the lead bank in a holding company (LEADBANK HC), or whether it is a non-lead bank within a holding company that has the same (NONLEAD SREG) or a different charter than the lead bank (NONLEAD DREG), with banks not in a holding company as the excluded category. This allows us to test for switches to unify the regulators a holding company reports to. The holding company status variables are all as of the end of year t - 1.

There may also be other differences across primary regulators. To control for this, we include dummies for whether a bank is regulated by the Federal Reserve or the FDIC at the end of year t - 1 (the OCC is the omitted category).

Finally, I use the log of total assets (LOG ASSETS) as a control, since larger banks are more diversified, all else equal, and year dummies to control for systemic changes such as changes in the banking economy.

Table 4 presents the results of regressions using (1) for the risk and return measures. Panel A gives the regression coefficients. These show that ROA is declining prior to a switch and increasing afterwards. To get an idea how important these changes are, it is necessary to combine the trend and dummy variables. For example, five years prior to a switch, the average bank has a ROA that is 0.036 percentage points above that of an otherwise similar bank that never switches ($0.036 = 0.052 - 0.016 \times 1$). By the year before the switch, ROA is 0.029 percentage points below that of an otherwise similar bank that never switches ($-0.029 = 0.052 - 0.016 \times 5$ with rounding), indicating a decrease of 0.065 percentage points in ROA in the four years before a bank switches. The increasing return after a switch is such that five years after a switch,the average bank has a ROA that is 0.067 percentage points above that of an otherwise similar bank that never switches ($0.067 = -0.028 + 0.019 \times 5$ with rounding). Panel B of Table 4 presents the estimated changes for the years before and after a switch. The results in the table show that return rises significantly in the five years following a switch.

The results in Table 4 also provide evidence on the accounting risk measures. Overall, the picture on risk changes before and after a switch is mixed, with the equity-to-asset ratio and the loan-to-asset ratio decreasing and no significant change in the chargeoffs-to-loan ratio. In the univariate statistics, we saw that switchers were riskier than other banks. Here, we see this is

partially due to increases in leverage. Of course, since return is falling, it is possible that the increases in leverage are due to poor performance rather than a strategy of increasing risk.

To get an idea of how the risk-return tradeoff changes after a switch, I use the data in Panel B of Table 4 to compare the percentage change in the equity-to-asset ratio (the risk measure that increases) to the percentage change in ROA. The percentage change is measured by dividing the change by the pre-switch mean, and is given in the final row of the table. From the year prior to a switch to five years after the switch, ROA is estimated to increase by 0.096 percentage points, 12 percent of the average ROA prior to the switch. Over a similar period, the equity-to-asset ratio is estimated to decrease by 0.356 percentage points, 4 percent of the average ratio prior to a switch. Thus, return increases by a larger fraction than the equity-to-asset ratio increases indicating a better risk-return tradeoff following a switch than before it.

Recall that Panel C of Table 2 shows that the quality of the banks that switch has changed over time. It makes sense, then, to see whether the performance of banks surrounding a switch differs across time. To do this, let EARLY be a dummy variable that takes the value 1 if a bank switches regulators between 1977 and 1981, let MID be a dummy variable that takes the value 1 if a bank switches regulators between 1982 and 1991, and let LATE be a dummy variable that takes the value 1 if a bank switches regulators between 1992 and 2003. I then interact these three dummies with the switching trends and dummies. Using these variables, I run the regression (1). Rather than present the entire regression results, Table 5 gives the estimated changes relative to otherwise similar banks in the accounting return and risk measures for the three periods, mirroring Panel B of Table 4.[13] It is clear from the table that switching had little impact on risk or return for banks in the middle period. In the other two periods, the equity-to-asset ratio and the loan-to-asset ratio both decreased, giving the same mixed picture on risk as in the full sample. However, it is only in the late period that return increases following a switch. Finally, note that the chargeoff-to-loan ratio falls insignificantly in the first two periods, but rises significantly in the late period. A deeper examination of the data (not shown) indicates that the increase in the chargeoff-to-loan ratio mainly reflects large decline in chargeoffs at non-switching banks rather than an increase at banks that switch.

The results in Table 5 allow characterizations of switchers and switching in the three subperiods. Heading into a switch, return is decreasing in every time period, although the changes are not always significant. The changes in risk are generally not significant once I split the data into the three time periods. The one exception is the increase in the loan-to-asset ratio in the middle time period. Still, there is not much significant difference across the three time

[13] Recall that these are calculated by considering changes to the pre- and post-switch trend and dummy variables only.

periods in the pre-switch trends for the banks, however as we see below this is because the results in Table 5 combine merger-related and other switches.

There are some differences across the time periods in the post-switch performance of banks. Specifically, there is very little evidence that switching made a big difference in the first two subperiods. While banks that switched reallocated their portfolios in the early period, there was little impact on return. In the middle period, not much at all happened as a result of switching. The increase in return in the full sample results comes entirely from the late period. Thus, there is no evidence of either beneficial competition or a race to the bottom prior to the mid-1990s. After that point, it appears that there is beneficial competition. There are two caveats to this conclusion. First, the accounting measures of risk are indicative but not proof of changes in failure risk. We return to this with the prediction model in the next section. Second, these results pool banks that switch following a merger with other switchers, and the effect of switching on performance may be different for the two groups. We address this next.

The regressions generating Tables 4 and 5 include data on both banks that switch after a merger and other banks. Since the decisions to merge and to switch regulators after a merger might be a function of performance, the pattern of returns might be different for merger-related switchers than for other switchers. To test this, let DUMMY MRG be a dummy variable that takes the value 1 if a switch is merger related and is 0 otherwise. Similarly, let DUMMY NO MRG be a dummy variable that takes the value 1 if a switch is not merger related and is 0 otherwise. Then, interact these two dummies with the other dummies and the trend variables (the precise definitions are given in the appendix).

Table 6 presents the estimated changes relative to otherwise similar banks derived from the regression (1) with the merger-related switch dummies. The most interesting finding for the pre-switch period is that the decline in return is only for merger-related switchers, and then only in the last two time periods. Note that these two time periods correspond with the two biggest merger waves in U.S. banking history. Thus, the decline in return may be associated with the decision to merge.

The broad patterns of return and risk after switches are similar for the two types of switchers. The main qualitative difference between merger-related and other switches is in the loan-to-asset ratio. Still, the overall pattern is that post-switching return rises in the late period only, and the risk indicators are mixed.

The evidence using the accounting data is consistent with beneficial competition, but only in the post-1991 period. For both types of switches, in the late period, return increases after a switch and any increase in risk is much smaller than the increase in return, suggesting that these banks move to a better risk-return tradeoff after a switch. In the other two time periods, there is little

change in risk or return. However, before drawing strong conclusions, we need to examine the direct measure of failure probabilities.

B. Failure probability model

The accounting data present a mixed picture of how switching primary federal regulators affects risk. From a social perspective, the issue is whether the changes in risk affect what we care about, which is bank failure. To directly examine this, this section presents a failure prediction model.

I use two approaches to determine whether switching regulators makes a bank more likely to fail than if it had not switched. First, I estimate a failure prediction model with a dummy for whether a bank has recently switched regulators. Since so few banks fail in any given year (about 0.5 percent per year), I look at three- and five-year horizons to minimize noise in the model. Let FAIL DUMMY X be a variable that takes the value one in year t if a bank fails prior to the end of year t+x, where x is either 3 or 5 years. In my sample, an average of 1.5 percent of banks fail over a three-year horizon and 2.3 percent fail over a five-year horizon. For banks that switch regulators, I include just data for the years following the switch because we only observe a bank's decision to switch if it survives long enough to complete the switch. To include switches in the failure prediction model, let SWITCH be a dummy variable that takes the value one if a bank has switched regulators within the past three years and is zero otherwise.[14] Since merger-related switches may be different than others, let MRG SWITCH be a dummy that takes the value one if a bank has a merger-related switch within the past three years and is zero otherwise. These two variables are then interacted with the time period dummies.

For the prediction model, failure is assumed to depend on the accounting return and risk measures used earlier, as well as the log of total assets (since larger banks are more diversified) and year dummies to capture systemic movements in failure probabilities:

$$\text{FAIL DUMMY X} = f(\text{SWITCH, MRG SWITCH, LOG ASSETS, ROA, EQUITY/ASSETS, LOAN/ASSETS, CHRG/LOAN, year dummies}). \quad (2)$$

I estimate the model two ways. First, to establish a baseline, I only include observations for banks that never switch. Then, I include all banks. The model is estimated over the years 1977-1999 to allow five full years after a switch for banks to potentially fail (since I have failure data through 2004).

[14] I use the three years following a switch as the base years (and thus look at failures for either the first six or eight years after a switch). The reason to restrict how long after a switch I examine is that, eventually, one cannot attribute a failure to be the direct result of a switch. However, looking out further after a switch does not change the qualitative results.

In the analysis of the accounting data, I drop outliers because they often have a disproportionate effect on regression results. In this section, on the other hand, all observations are included. This is because it is precisely the outlier banks, at least those in the lower tail, which are most likely to fail in the near term. Excluding the outliers pushes the results more toward switches reducing the probability of failure, although for the most part, the differences are not statistically significant.

Table 7 presents the results of estimate (2) using a logistic regression. The signs of the coefficients on the control variables are consistent with expectations. Increasing either size and return decreases failure probability while increasing risk has the opposite effect. The coefficients on SWITCH and MRG SWITCH are both statistically insignificant. This is not consistent with the hypothesis that, all else equal, a bank that has recently switched regulators is more likely to fail than an otherwise similar bank that has never switched.

When we introduce the interaction terms with time dummies, there are two notable changes involving the late period. The coefficient on SWITCH LATE is positive and significant and the coefficient on MRG SWITCH LATE does not appear. Taking the second issue first, in the late period, there are no banks that switched regulators after merging and subsequently failed. Thus, those observations are fully determined by the dummy and are dropped from the regression. The positive coefficient on SWITCH LATE is consistent with the hypothesis that, all else equal, a bank that switched regulators in the late period is more likely to fail than an otherwise similar bank that has never switched.

The careful wording in the last sentences of the previous two paragraphs reflects an assumption implicit in the failure prediction model (2). The model assumes that a switching bank would have the same risk-return profile whether or not it had switched. In essence, it rules out the possibility that a bank is able to, or chooses to, change its portfolio precisely because it has switched regulators. For example, a regulator involved in a race for the bottom might attract new banks by allowing those banks to greatly increase leverage (i.e., decrease their equity-to-asset ratio) after they switched to being regulated by it. If banks that switched increased leverage, they would be more likely to fail. However, if these banks failed at the rate that otherwise similar banks *with their new level of leverage* failed, then the coefficients on the switch dummies in (2) would not be significantly positive. On the flip side, if regulatory specialization allows banks that switch regulators to increase return and reduce their failure rate, but the failure rate is still above that at otherwise similar banks *with their new ROA*, then the coefficients on the switch dummies in (2) would be significantly positive. Since ROA increases for banks that switch regulators in the late period, this means that the significant positive coefficient on SWITCH LATE does not imply that there is a race for the bottom in that period.

A second approach is to assume that a bank would have kept its pre-switch risk-return profile had it not changed regulators. I can then examine whether the switching bank has a higher failure rate after its change than banks with its pre-switching profile do. To do this, I compare the predicted failure probability of the bank in the year it switches to the actual failure rate. To get the predicted failure probability, I use the five-year failure rate model estimated over banks that never switch regulators (that is, the model with coefficients reported in column (3) of Table 7). Table 8 gives the predicted and actual failure rates for all switches, and broken down by the time of the switch and the type of switch. There is no statistically or economically significant difference between the predicted and actual failure rates. Specifically, the failure rate is not higher for banks that switch regulators in the late period, even if the switches do not follow a merger. This is consistent with the positive coefficient on SWITCH LATE in Table 7 arising because banks that switch in the late period have lower failure rates than if they had not switched, but not as low as banks with their new level of return do.

Switches do not appear to increase failure risk. Using a simple failure prediction model, I show that for most banks, their post-switch failure rate is the same as otherwise similar banks. The one exception is banks that switch regulators after 1991. These banks fail at a higher rate than otherwise similar banks. However, the failure prediction model does not compare switchers to banks that are otherwise similar to the switcher prior to its switch. In particular, in the late period, return increases for banks after a switch. Thus, the "higher failure rate" may be above that for banks with the new, high ROA but lower than banks with the pre-switch ROA. To test this, I compare the actual failure rate to the level predicted in the year of a switch. When I do this, I find that the actual failure rate is no higher than the predicted rate, even for switches after 1991. This is evidence that switches do not increase the level of bank failures.

V. Individual regulatory agencies

The three federal bank regulatory agencies – the OCC, the Fed, and the FDIC – might have different objectives. Although I find no evidence of a race for the bottom in the aggregate data, one or more of the agencies could have policies that allow banks to take excessive risk. Alternatively, one way that beneficial competition may manifest itself is by agency specialization (the Tiebout hypothesis). This section repeats the main results focussing on the individual regulatory agencies.

Table 9 presents evidence where banks that switch have been divided up by the regulator they switched to and the regulator they switched from. Changes in performance at banks that switch to different regulatory agencies could provide evidence for either a race for the bottom or specialization. I offer results only for the full sample (i.e., for both merger-related and other

switches and for all three time subperiods). The patterns when I break down the sample are similar to those described earlier, except as noted.

Panel A of Table 9 gives the estimated changes between one year before a switch to five years after the switch. It is based on a regression of (1) with interactions between the regulatory dummies and the pre- and post-switch trend and intercept variables. Based on the results, it appears as if banks that switch to the OCC or the Fed increase return and possibly accounting risk while banks that switch to the FDIC reduce accounting risk but do not increase return. The risk changes are confirmed in Panel B of Table 9. Panel B presents the predicted failure rates as of the year of the switch based the regression (2) run on all banks that never switch (as in Table 8). It also gives the actual failure rates and the p value of a test of the difference between the predicted and actual rates. Banks that switch to the FDIC have a statistically significant 50 percent lower failure rate (from 1.83% to 0.92%) than predicted. Banks that switch to the OCC and Fed have no significant change in failure rate. These results suggest the average bank moves to a better risk-return tradeoff, and that banks switching to the OCC and the Fed position themselves to earn higher return with the same risk while banks switching to the FDIC earn the same return with lower risk.

As with the earlier results, the shift to a better risk-return tradeoff is concentrated in the late period. The change in ROA is significantly positive for banks switching to the OCC and the Fed in the late period while the largest decrease in risk for banks switching to the FDIC is also in the late period. There is also evidence that banks switching to the OCC in the middle period had increased return, with some indications of higher risk. But, overall, there is little support for a race to the bottom in the pre-1992 period.

Examining the post-switch performance of banks as a function of the regulator they leave can provide a test for the presence of examiners desiring a quiet life.[15] Examiners at one regulator might prevent banks from taking return-increasing risk. By switching to either alternative agency, banks may be able to increase both return and risk. The evidence in Table 9 provides at most weak support for this hypothesis. Banks leaving the FDIC have higher return and higher risk after switching. This might be a sign of examiners wanting a quiet life, but it is more likely to be a sign of specialization since banks leaving the OCC and the Fed reduce their failure risk.

The major results of the paper – that there is evidence of beneficial competition, concentrated in the post-1991 period – are supported when I separate switches by which regulator a bank is switching from and which it is switching to. When I focus on the individual regulators, a possible mechanism for the beneficial competition becomes evident. Regulators may specialize in certain

[15] Tests looking at the composition provide support for the quiet life hypothesis. See Rosen (2003).

banking strategies, consistent with the Tiebout hypothesis. The OCC and the Fed seem to specialize in banks that are willing to add risk in order to add expected return while the FDIC seems to specialize in banks that want to keep risk low.

VI. Robustness

This paper focuses on changes of primary federal regulators. There are two potential objections to this. First, it may be the choice of a national versus a state charter that matters, and not the further choice of whether to be a Federal Reserve System member.[16] Using a switch of charters rather than a switch of primary federal regulators in the analysis does not change the qualitative results. When I replicate the performance regressions in Table 4 or the failure prediction model in Table 7 for charter changes rather than changes of primary federal regulator, the same coefficients are significant at the 5% confidence level.

A second issue for state-chartered banks is that regulation is shared between federal regulators and state regulators. To control for the effect of state regulators, I add state dummies for banks with a state charter. The qualitative results are unchanged. I also examined results on a state-by-state basis, but even for the largest states, there were not enough switches to obtain meaningful results.

The choice of time periods is motivated by changes in regulation and the pattern of banks that switch. To test the impact of the division, I run the regression (1) with a separate set of switching trends and dummies for each year that a bank might switch. I focus on the change in return between the year prior to a switch and five years after a switch. There is no strong pattern of return that suggests a particular break between the early and middle periods. If I change that break year, the results are qualitatively unchanged. However, there is a distinct break between 1991 and 1992, with the change in performance mixed for changes prior to 1992, but consistently positive thereafter. This suggests that the break between the middle and late periods is set correctly and is important.

VII. Concluding comments

This paper attempts to shed some light on the effects of having multiple regulatory agencies in banking. I study the performance of banks that their switch primary federal regulator as an indication of whether there is beneficial specialization by agencies or whether the agencies race for the bottom. The test I use for beneficial competition is whether banks are able to move to a

[16] Whalen (2002) also examines banks that change their charters, how that paper does not examine post-change performance indicators.

better risk-return tradeoff following a switch. Evidence of a race for the bottom would by an increase in the failure rate of banks that switch, especially if it is not compensated for by an increase in return. Overall, I find evidence of beneficial competition against the alternative of a race for the bottom, since return rises and failure rates remain effectively unchanged. However, this masks important differences across time.

The reasons for switching regulators may have changed over time. My sample includes banks that switch between 1977 and 2003, a period of massive changes in banking. I divide the sample into three subperiods. The early period, 1977-1981, surrounds the passage of the Depository Institutions Deregulation and Monetary Control Act (DIDMCA) in 1980. Switches in this period may be a response to DIDMCA or to pre-DIDMCA differences across regulators. The middle period, 1982-1991, saw prohibitions on interstate branching and banking gradually relaxed. This period also includes what at the time was the biggest merger wave in banking history. Banks may have switched regulators during this period to adjust to their new competitive environment, although the rate of switching during this period was the lowest in my sample. Finally, in the late period, 1992-2003, prohibitions on interstate banking and on mergers between banks and other financial firms were essentially eliminated. Perhaps because of these changes, there was again a major merger wave in banking.

I find that switches in the early and middle parts of my sample had little impact on bank performance. Return did not change significantly following a switch and there was no unambiguous effect on accounting risk. Moreover, the evidence suggests that bank failure rates did not increase as the result of switches. This is true whether or not the banks had engaged in a merger shortly before switching.

My results imply that banks switching in the late part of my sample moved to a better risk-return tradeoff following their switches. Banks switching to the OCC and the Fed increased return without increasing risk after switching while banks switching to the FDIC reduced risk without sacrificing return post-switch. This is evidence of beneficial competition, and supports the hypothesis that there is specialization among regulators. Interestingly, starting in 1992, there was an increase in the rate of regulatory switching that lasted through at least 2003. It is possible that the increase in switches was associated with the onset of beneficial competition.

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Table 1: Summary statistics for banks that switch primary federal regulators, 1977-2003.

			Total assets less than $1 billion		Total assets between $1 billion and $10 billion		Total assets greater than $10 billion	
Year	Number of banks that change regulators	Percentage of banks that change regulators	Number of banks that change regulators	Percentage of banks that change regulators	Number of banks that change regulators	Percentage of banks that change regulators	Number of banks that change regulators	Percentage of banks that change regulators
1977	79	0.55%	79	0.55%	0	0.00%	0	0.00%
1978	118	0.82%	118	0.83%	0	0.00%	0	0.00%
1979	89	0.62%	89	0.63%	0	0.00%	0	0.00%
1980	78	0.54%	75	0.53%	2	1.15%	1	5.56%
1981	56	0.39%	55	0.39%	1	0.54%	0	0.00%
1982	62	0.43%	57	0.40%	5	2.38%	0	0.00%
1983	61	0.42%	58	0.41%	3	1.29%	0	0.00%
1984	73	0.51%	70	0.50%	3	1.18%	0	0.00%
1985	78	0.55%	77	0.55%	1	0.35%	0	0.00%
1986	78	0.55%	72	0.52%	6	1.97%	0	0.00%
1987	78	0.58%	76	0.58%	2	0.63%	0	0.00%
1988	78	0.60%	77	0.61%	1	0.31%	0	0.00%
1989	64	0.51%	61	0.50%	3	0.97%	0	0.00%
1990	64	0.53%	61	0.52%	2	0.66%	1	2.22%
1991	72	0.62%	68	0.60%	4	1.37%	0	0.00%
1992	105	0.93%	90	0.82%	14	4.33%	1	1.96%
1993	124	1.14%	111	1.06%	12	3.74%	1	1.82%
1994	101	0.99%	96	0.97%	4	1.35%	1	1.75%
1995	154	1.58%	140	1.50%	12	3.88%	2	2.90%
1996	83	0.89%	78	0.87%	3	1.03%	2	2.99%
1997	111	1.25%	101	1.18%	10	3.79%	0	0.00%
1998	119	1.39%	115	1.40%	4	1.42%	0	0.00%
1999	80	0.96%	76	0.95%	4	1.46%	0	0.00%
2000	80	0.99%	70	0.90%	9	3.32%	1	1.43%
2001	71	0.90%	62	0.82%	7	2.50%	2	3.03%
2002	69	0.90%	63	0.86%	6	2.11%	0	0.00%
2003	73	0.95%	63	0.87%	8	2.46%	2	2.63%
total	2298	0.73%	2158	0.70%	126	1.76%	14	1.18%

Table 2. Performance of banks prior to a switch of primary federal regulators.

Panel A. Accounting data in the year prior to a switch.

	All banks that switch regulators			Merger-related switches			Non-merger related switches		
	Mean	Median	Standard deviation	Mean	Median	Standard deviation	Mean	Median	Standard deviation
ROA	0.83	0.99	1.21	0.82	1.01	1.10	0.84	0.98	1.26
EQUITY/ASSETS	8.76	7.99	4.59	8.44	7.86	4.79	8.92	11.82	12.31
LOAN/ASSETS	56.80	57.95	14.08	58.67	60.20	14.10	55.87	57.04	13.98
CHRG/LOAN	0.60	0.21	3.24	0.66	0.26	1.35	0.56	0.19	3.85
Observations		2181			727			1454	

Panel B. Accounting data in the year prior to a switch net of values for banks of a similar size.

	All banks that switch regulators			Merger-related switches			Non-merger related switches		
	Mean	Median	Standard deviation	Mean	Median	Standard deviation	Mean	Median	Standard deviation
ROA	-0.10	-0.06	1.19	-0.10	-0.02	1.06	-0.11	-0.07	1.26
EQUITY/ASSETS	-0.77	-0.62	4.51	-1.10	-0.78	4.72	-0.60	-0.50	4.40
LOAN/ASSETS	2.29	1.99	13.58	4.17	4.31	13.64	1.36	1.10	13.46
CHRG/LOAN	0.09	0.02	3.22	0.09	0.03	1.29	0.10	0.01	3.84
Observations		2181			727			1454	

Table 2 (continued)

Panel C. Accounting data in the year prior to a switch net of values for banks of a similar size, by time period of switch.

	All banks that switch regulators			Merger-related switches			Non-merger related switches		
	Mean	Median	Standard deviation	Mean	Median	Standard deviation	Mean	Median	Standard deviation
Early period (1977-1981)									
ROA	-0.18	-0.12	0.78	-0.30	-0.21	0.62	-0.17	-0.11	0.79
EQUITY/ASSETS	-0.60	-0.56	2.98	-1.28	-0.89	1.74	-0.54	-0.47	3.07
LOAN/ASSETS	-0.20	-0.21	11.61	3.35	4.12	9.42	-0.55	-0.88	11.75
CHRG/LOAN	0.45	0.03	7.00	0.41	0.09	1.22	0.45	0.02	7.32
Observations		418			37			381	
Middle period (1982-1991)									
ROA	-0.09	-0.04	1.24	-0.23	-0.10	1.44	0.01	-0.02	1.06
EQUITY/ASSETS	-0.78	-0.50	3.80	-1.42	-0.82	3.99	-0.33	-0.31	3.60
LOAN/ASSETS	2.62	2.23	13.84	4.07	3.95	13.62	1.63	1.08	13.93
CHRG/LOAN	0.01	-0.02	1.48	0.14	-0.02	1.82	-0.07	-0.02	1.20
Observations		670			273			397	
Late period (1992-2003)									
ROA	-0.08	-0.04	1.29	0.00	0.02	0.73	-0.13	-0.07	1.54
EQUITY/ASSETS	-0.83	-0.68	5.33	-0.87	-0.74	5.30	-0.80	-0.64	5.36
LOAN/ASSETS	3.05	2.94	14.01	4.31	4.60	13.98	2.27	2.44	13.97
CHRG/LOAN	0.01	0.02	0.78	0.03	0.03	0.78	0.00	0.02	0.77
Observations		1093			417			676	

Table 3. Change in performance of banks surrounding a switch of primary federal regulators.

Year after a switch minus year prior to switch, net of banks of a similar size.

	All banks that switch regulators			Merger-related switches			Non-merger related switches		
	Mean	Median	Standard deviation	Mean	Median	Standard deviation	Mean	Median	Standard deviation
ROA	0.08	0.09	1.94	0.05	0.08	2.54	0.10	0.09	1.58
EQUITY/ASSETS	-0.29	0.02	4.50	-0.21	0.08	3.85	-0.33	0.02	4.78
LOAN/ASSETS	1.61	1.71	11.00	2.30	1.71	11.73	1.29	1.38	10.62
CHRG/LOAN	-0.06	0.00	3.53	-0.12	0.01	1.55	-0.03	0.01	4.14
Observations		1993			637			1356	

Table 4. Performance regressions.
The data are from 1977-2003, with year dummies not shown. Each regression has 277,673 observations. Variable definitions are given in the text and repeated in the Appendix. For both panels, robust p values are in parentheses.

Panel A.

	(1) ROA	(2) EQUITY/ ASSETS	(3) LOAN/ ASSETS	(4) CHRG/ LOAN
TREND PRE	-0.016	-0.031	-0.298	-0.009
	(0.001)***	(0.030)**	(0.000)***	(0.396)
DUMMY PRE	0.052	-0.136	2.219	0.033
	(0.006)***	(0.033)**	(0.000)***	(0.512)
TREND POST	0.019	-0.085	-0.243	0.011
	(0.001)***	(0.000)***	(0.019)**	(0.197)
DUMMY POST	-0.028	-0.222	1.123	-0.029
	(0.165)	(0.001)***	(0.003)***	(0.266)
MERGER	0.046	-0.085	0.727	-0.024
	(0.000)***	(0.000)***	(0.000)***	(0.119)
LEADBANK HC	0.144	-0.926	0.913	0.063
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
NONLEAD SREG	0.100	-1.045	2.565	0.024
	(0.000)***	(0.000)***	(0.000)***	(0.080)*
NONLEAD DREG	0.089	-0.943	2.077	0.021
	(0.000)***	(0.000)***	(0.000)***	(0.547)
FED	-0.008	0.197	1.980	-0.009
	(0.413)	(0.000)***	(0.000)***	(0.765)
FDIC	0.069	0.055	1.754	0.045
	(0.000)***	(0.062)*	(0.000)***	(0.000)***
LOG ASSETS	0.191	-1.073	2.572	0.080
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
ROA		1.109	-0.414	-0.830
		(0.000)***	(0.000)***	(0.000)***
EQUITY/ASSETS	0.091		-1.312	0.037
	(0.000)***		(0.000)***	(0.000)***
LOAN/ASSETS	-0.001	-0.040		-0.003
	(0.000)***	(0.000)***		(0.000)***
CHRG/LOAN	-0.150	0.081	-0.209	
	(0.050)*	(0.074)*	(0.005)***	
R-squared	0.284	0.313	0.168	0.172

Year dummies not shown.
* significant at 10%; ** significant at 5%; *** significant at 1%

(**Table 4 continued)**

Panel B. Estimated changes in accounting variables.

	ROA	Equity-to-asset ratio	Loan-to-asset ratio	Chargeoff-to-loan ratio
Change from 5 years prior to switch to 1 year prior to switch	-0.065 (0.001)***	-0.122 (0.030)**	-1.194 (0.000)***	-0.037 (0.396)
Change from 1 year prior to switch to 1 year after switch	-0.045 (0.259)	-0.140 (0.765)	-1.042 (0.640)	-0.042 (0.819)
Change from 1 year prior to 5 years after switch	0.096 (0.000)***	-0.356 (0.000)***	-0.822 (0.072)*	0.038 (0.229)
Change from 1 year prior to 5 years after switch divided by sample mean	0.115	-0.041	-0.014	0.063

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5. By time period

The data are from 1977-2003. The results below are based on regressions of (1) with interaction terms between the time period dummies and the pre- and post-switch dummies and trend variables. Each regression has 277,673 observations. The change variables are calculated based on the coefficients on the interaction involving the pre- and post-switch dummies and trend variables. Variable definitions are given in the text and repeated in the Appendix. Robust p values are given in parentheses.

Panel A. Return on assets (ROA)

	ROA		
	Early (1977-1981)	Mid (1982-1991)	Late (1992-2000)
Change from 5 years prior to switch to 1 year prior to switch	-0.032 (0.447)	-0.090 (0.015)**	-0.056 (0.074)*
Change from 1 year prior to switch to 1 year after switch	0.023 (0.514)	-0.061 (0.144)	0.076 (0.000)***
Change from 1 year prior to 5 years after switch	-0.034 (0.619)	0.019 (0.641)	0.161 (0.000)***
Change from 1 year prior to 5 years after switch divided by sample mean	-0.045	0.030	0.166

Panel B. Equity-to-asset ratio

	Equity-to-asset ratio		
	Early (1977-1981)	Mid (1982-1991)	Late (1992-2000)
Change from 5 years prior to switch to 1 year prior to switch	-0.240 (0.125)	-0.147 (0.117)	0.023 (0.821)
Change from 1 year prior to switch to 1 year after switch	-0.215 (0.085)*	0.159 (0.094)*	-0.081 (0.377)
Change from 1 year prior to 5 years after switch	-0.535 (0.006)***	-0.144 (0.155)	-0.499 (0.000)***
Change from 1 year prior to 5 years after switch divided by sample mean	-0.068	-0.018	-0.053

* significant at 10%; ** significant at 5%; *** significant at 1%

(**Table 5 continued)**

Panel C. Loans-to-assets ratio

	Loan-to-asset ratio		
	Early (1977-1981)	Mid (1982-1991)	Late (1992-2000)
Change from 5 years prior to switch to 1 year prior to switch	-1.310 (0.155)	-2.015 (0.001)***	1.309 (0.454)
Change from 1 year prior to switch to 1 year after switch	-1.389 (0.084)*	1.091 (0.103)	0.129 (0.784)
Change from 1 year prior to 5 years after switch	-1.740 (0.285)	0.019 (0.980)	-1.792 (0.007)***
Change from 1 year prior to 5 years after switch divided by sample mean	-0.033	0.000	-0.030

Panel D. Chargeoff-to-loan ratio

	Chargeoff-to-loan ratio		
	Early (1977-1981)	Mid (1982-1991)	Late (1992-2000)
Change from 5 years prior to switch to 1 year prior to switch	-0.028 (0.575)	0.036 (0.425)	-0.147 (0.191)
Change from 1 year prior to switch to 1 year after switch	-0.047 (0.141)	-0.101 (0.053)*	0.075 (0.004)***
Change from 1 year prior to 5 years after switch	-0.094 (0.229)	-0.090 (0.084)	0.166 (0.000)***
Change from 1 year prior to 5 years after switch divided by sample mean	-0.124	-0.100	0.478

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 6.
Regressions of (1) for return and risk. Includes standard controls (see Table 4) plus pre- and post-switch trend and dummies. The coefficients on the pre- and post-switch trend and dummies are used to calculate the estimates. The data are from 1977-2003. Each regression has 277,673 observations. Variable definitions are given in the text and repeated in the Appendix. Robust p values are given in parentheses.

Panel A. Return on assets (ROA)

	Merger-related switches			Non-merger-related switches		
	Early (1977-1981)	Mid (1982-1991)	Late (1992-2000)	Early (1977-1981)	Mid (1982-1991)	Late (1992-2000)
Change from 5 years prior to switch to 1 year prior to switch	0.030 (0.725)	-0.218 (0.000)***	-0.184 (0.002)***	-0.078 (0.113)	0.008 (0.858)	0.023 (0.488)
Change from 1 year prior to switch to 1 year after switch	-0.083 (0.436)	-0.005 (0.945)	0.093 (0.011)**	0.033 (0.378)	-0.107 (0.040)**	0.064 (0.009)***
Change from 1 year prior to 5 years after switch	-0.122 (0.707)	0.102 (0.204)	0.185 (0.000)***	-0.027 (0.700)	-0.044 (0.351)	0.146 (0.000)***
Change from 1 year prior to 5 years after switch divided by sample mean	-0.188	0.213	0.173	-0.034	-0.057	0.159

Panel B. Equity-to-asset ratio

	Merger-related switches			Non-merger-related switches		
	Early (1977-1981)	Mid (1982-1991)	Late (1992-2000)	Early (1977-1981)	Mid (1982-1991)	Late (1992-2000)
Change from 5 years prior to switch to 1 year prior to switch	0.273 (0.227)	-0.038 (0.740)	0.366 (0.023)**	-0.372 (0.053)*	-0.261 (0.065)*	-0.207 (0.119)
Change from 1 year prior to switch to 1 year after switch	-0.435 (0.151)	0.227 (0.083)*	-0.082 (0.617)	-0.146 (0.293)	0.109 (0.402)	-0.056 (0.596)
Change from 1 year prior to 5 years after switch	-0.997 (0.098)*	0.022 (0.898)	-0.588 (0.002)***	-0.444 (0.033)**	-0.209 (0.118)	-0.410 (0.002)***
Change from 1 year prior to 5 years after switch divided by sample mean	-0.140	0.003	-0.064	-0.056	-0.024	-0.043

* significant at 10%; ** significant at 5%; *** significant at 1%

(**Table 6 continued)**

Panel C. Loans-to-assets ratio

	Merger-related switches			Non-merger-related switches		
	Early (1977-1981)	Mid (1982-1991)	Late (1992-2000)	Early (1977-1981)	Mid (1982-1991)	Late (1992-2000)
Change from 5 years prior to switch to 1 year prior to switch	0.624 (0.743)	-1.721 (0.038)**	-0.172 (0.841)	-2.259 (0.041)**	-2.152 (0.010)***	-0.553 (0.443)
Change from 1 year prior to switch to 1 year after switch	-5.278 (0.038)**	0.847 (0.432)	1.063 (0.159)	-0.945 (0.265)	1.155 (0.177)	-0.411 (0.481)
Change from 1 year prior to 5 years after switch	0.877 (0.902)	2.457 (0.080)*	-2.766 (0.011)**	-1.841 (0.272)	-0.205 (0.822)	-1.256 (0.128)
Change from 1 year prior to 5 years after switch divided by sample mean	0.015	0.044	-0.046	-0.035	-0.004	-0.021

Panel D. Chargeoff-to-loan ratio

	Merger-related switches			Non-merger-related switches		
	Early (1977-1981)	Mid (1982-1991)	Late (1992-2000)	Early (1977-1981)	Mid (1982-1991)	Late (1992-2000)
Change from 5 years prior to switch to 1 year prior to switch	-0.020 (0.832)	0.035 (0.609)	-0.328 (0.262)	-0.038 (0.524)	0.034 (0.571)	-0.041 (0.299)
Change from 1 year prior to switch to 1 year after switch	-0.057 (0.611)	-0.039 (0.635)	0.119 (0.012)**	-0.046 (0.321)	-0.147 (0.025)**	0.052 (0.060)*
Change from 1 year prior to 5 years after switch	-0.126 (0.716)	0.121 (0.249)	0.157 (0.005)***	-0.092 (0.255)	-0.141 (0.024)**	0.176 (0.005)***
Change from 1 year prior to 5 years after switch divided by sample mean	-0.173	0.114	0.398	-0.121	-0.178	0.550

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 7. Predicted failure probabilities.
The data are from 1977-1999, with year dummies not shown. The logisitic regressions in columns (1) and (3) include all banks that never switch primary federal regulators. The logistic regressions in the other columns include banks that never switch plus banks that have switched regulators in the previous six years (excluding the year of the switch). Variable definitions are given in the text and repeated in the Appendix. Robust p values are given in parentheses.

	(1) FAIL DUMMY 3	(2) FAIL DUMMY 3	(3) FAIL DUMMY 5	(4) FAIL DUMMY 5	(5) FAIL DUMMY 5
SWITCH		-0.102		-0.033	
		(0.449)		(0.741)	
MRG SWITCH		-0.213		-0.480	
		(0.442)		(0.045)**	
SWITCH EARLY					-0.038
					(0.884)
SWITCH MID					-0.148
					(0.203)
SWITCH LATE					0.955
					(0.002)***
MRG SWITCH EARLY					-0.362
					(0.735)
MRG SWITCH MID					-0.314
					(0.211)
LOG ASSETS	-0.597	-0.601	-0.443	-0.449	-0.449
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
ROA	-0.384	-0.381	-0.422	-0.418	-0.418
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
EQUITY/ASSETS	-0.290	-0.295	-0.109	-0.113	-0.114
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
LOAN/ASSETS	0.055	0.055	0.059	0.059	0.059
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
CHRG/LOAN	-0.018	-0.019	-0.012	-0.013	-0.013
	(0.035)**	(0.027)**	(0.110)	(0.079)*	(0.078)*
Observations	258,290	264,316	258,290	264,316	264,316

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 8. Predicted and actual failure rates for banks that switch regulators.
Failure rates over the next five years for banks that switch regulators as of the end of the year of the switch. The data are from 1977-1999. The predicted failure rate is based on the coefficient for regression reported in column (3) of Table 7. The standard deviations of the predicted and actual failure rates are in parentheses.

	Predicted failure rate over the next five years using (2)	Actual failures over the next five years	p value for test of difference between predicted and actual failure rate
All banks that switch regulators	1.98% (4.66%)	1.80% (13.29%)	0.474
Early period (1977-1981)	1.33% (1.56%)	1.19% (10.86%)	0.790
Middle period (1982-1991)	4.54% (6.67%)	4.24% (20.17%)	0.667
Late period (1992-1999)	0.25% (2.09%)	0.11% (3.38%)	0.299
Merger related switches	2.06% (4.55%)	1.91% (13.68%)	0.732
Non-merger related switches	1.96% (4.73%)	1.83% (13.08%)	0.527
Non-merger related switches, late period	0.29% (2.72%)	0.19% (4.42%)	0.688

Table 9. Performance by the regulator switched from and switch to.
Panel A is based on regressions of (1) for return and risk. Includes standard controls (see Table 4) plus pre- and post-switch trend and dummies interacted with regulator dummies. The coefficients on the pre- and post-switch trend and dummies are used to calculate the estimates. The data are from 1977-2003. Each regression has 277,673 observations. Variable definitions are given in the text and repeated in the Appendix. Robust p values are given in parentheses. Panel B reports failure rates over the next five years for banks that switch regulators as of the end of the year of the switch. The data are from 1977-1999. The predicted failure rate is based on the coefficient for regression reported in column (3) of Table 7. The standard deviations of the predicted and actual failure rates are in parentheses.

Panel A. Estimated change in accounting variables from 1 year prior to 5 years after switch

	ROA	Equity-to-asset ratio	Loan-to-asset ratio	Chargeoff-to-loan ratio
Banks switching *to* the OCC	0.177	-0.450	0.664	0.081
	(0.000)***	(0.007)***	(0.538)	(0.198)
Banks switching *to* the Fed	0.242	-0.700	-0.179	0.196
	(0.000)***	(0.000)***	(0.813)	(0.006)***
Banks switching *to* the FDIC	-0.010	-0.162	-1.745	-0.121
	(0.791)	(0.155)	(0.014)**	(0.010)***
Banks switching *from* the OCC	0.050	-0.301	-1.593	-0.042
	(0.171)	(0.013)**	(0.033)**	(0.523)
Banks switching *from* the Fed	0.013	-0.399	-1.881	-0.111
	(0.823)	(0.025)**	(0.120)	(0.145)
Banks switching *from* the FDIC	0.224	-0.519	0.674	0.160
	(0.000)***	(0.000)***	(0.340)	(0.000)***

* significant at 10%; ** significant at 5%; *** significant at 1%

Panel B. Predicted and actual failure rates.

	Predicted failure rate over the next five years using (2)	Actual failures over the next five years	p value for test of difference between predicted and actual failure rate
All banks that switch regulators	1.98% (4.66%)	1.80% (13.29%)	0.474
Banks switching *to* the OCC	3.55% (6.98%)	4.62% (7.53%)	0.181
Banks switching *to* the Fed	0.96% (2.07%)	0.57% (7.53%)	0.178
Banks switching *to* the FDIC	1.83% (4.02%)	0.92% (9.56%)	0.008
Banks switching *from* the OCC	1.57% (3.52%)	0.81% (8.98%)	0.031
Banks switching *from* the Fed	2.11% (4.54%)	0.98% (9.85%)	0.018
Banks switching *from* the FDIC	2.28% (5.41%)	2.82% (16.56%)	0.258

Appendix. Variable definitions.

Variable	Definition
ROA	Return on assets for year t (income / assets).
EQUITY/ASSETS	Equity-to-asset ratio as of the end of year t.
LOAN/ASSETS	Loan-to-asset ratio as of the end of year t.
CHRG/LOAN	Chargeoff-to-loan ratio as of the end of year t.
LOG ASSETS	Log of total assets.
MERGER	Merger dummy, equals one if the bank was involved in a merger in year t or year t-1.
LEADBANK HC	Lead bank in a bank holding company as of the end of year t.
NONLEAD SREG	Nonlead bank in a holding company, with the same primary regulator as the lead bank, as of the end of year t.
NONLEAD DREG	Nonlead bank in a holding company, with a different primary regulator as the lead bank, as of the end of year t.
FED	Dummy equal to one if primary federal regulator at the end of year t was the Fed.
FDIC	Dummy equal to one if primary federal regulator at the end of year t was the FDIC.
TREND PRE	Trend variable for prior to a switch. Value equals 1 for t-5, 2 for t-4, as so on for the five years prior to a switch in year t.
TREND POST	Trend variable after a switch. Value equals 1 for t+1, 2 for t+1, as so on for the five years after a switch in year t.
DUMMY PRE	Dummy variable for prior to a switch. Equals 1 for the five years prior to a switch.
DUMMY POST	Dummy variable for after a switch. Equals 1 for the five years after a switch.
DUMMY NO MRG	Dummy variable for switches that do not follow a merger. Equals 1 for a switch where there is no merger in the year of the switch or the year prior to it.
DUMMY MRG	Dummy variable for switches that follow a merger. Equals 1 for a switch where there is a merger in the year of the switch or the year prior to it.