# Management Turnover, Regulatory Oversight, and Performance: Evidence from Banks[1]

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Abstract

This paper examines the role of the bank examination process in disciplining bank management. Examining data from more than 3,800 U.S. banks, I find that, after factoring in financial condition and various market and organizational factors, poor supervisory ratings and recent ratings downgrades lead to increased executive turnover. In addition, the results suggest that ratings-driven executive turnover is positively related to future performance, after controlling for current financial condition. The results are consistent with the explanation that the bank supervision process, by imposing greater manager discipline, improves the profitability of banking firms and thereby raises shareholder value.

Key Words: executive turnover, supervision, performance, discipline
JEL Codes: G30, G28, G31

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## 1. Introduction

To prevent poor management, shareholders typically use incentive contracts to promote better governance. But because maintaining satisfactory performance through these contracts may not always succeed, penalizing poorly performing management through forced resignation can sometimes be necessary. In recent years, many high profile chief executive officers (CEOs), including those of Bristol-Myers, Home Depot, and Hewlett Packard, have been fired by their companies' boards of directors for poor performance or for making decisions harmful to the reputation of their firms.[3] These actions suggest that company boards are prepared to force out top executives, if necessary, to protect the interest of their shareholders.

But when the board of directors is unable or unwilling to discipline poorly performing management in regulated firms, regulatory bodies can sometimes play an important governance role. Bank regulators, for example, can do so by uncovering important information during the exam process and by prodding bank boards to act on it if necessary. Adverse information regarding management may then lead bank boards to force out management. For example, a community bank CEO was fired in 2001 by the bank's board based on findings of poor internal controls during an Office of the Comptroller of Currency (OCC) examination (Office of the Comptroller of Currency, 2002). In a more recent case, the Federal Deposit Insurance Corporation (FDIC), in conjunction with the Federal Reserve System, ordered Coast Bank of Florida to fire its

[3] Bristol-Meyers CEO Peter Dolan was fired after allegations surfaced that the company illegally flooded the market with its blockbuster drug Plavix (Reeves, 2006). Hewlett-Packard CEO Carly Fiornia was fired for her inability to transform the firm and its stock price (Monica, 2005). Robert Nardelli, Home Depot's CEO, was fired amid a deteriorating housing market and the smallest net income gain in nine years for the firm (Finfacts, 2007).

CEO as part of a formal cease and desist order following Coast's involvement in a pre-construction loan scandal (Frater and Pollick, 2007).

Additional oversight, beyond that provided by a company's board, is possibly more useful than in other regulated and non-regulated industries because of the opaqueness of bank assets.[4] As a result of this opaqueness and the potential consequences of poor bank performance on the larger financial system, bank supervisory bodies rigorously examine all U.S. commercial banks.[5] Bank supervisors primarily discipline banks by rating banks, communicating the ratings and the rationale behind the ratings to banks, and initiating either formal or informal actions when deficiencies in a bank are found.[6] To the extent supervisory oversight leads to the removal of poorly performing senior management, bank supervision may result in increased managerial discipline.

This paper examines whether management turnover in banks is systematically related to supervisory oversight and how supervisor-driven turnover relates to subsequent performance. The study is based on a national data set of approximately 3,800 banks over the years 1986 to 1994. The large sample and the broad span of years allow for significant variation in both management turnover and bank financial performance. I analyze only national banks because supervisory data is available only for them.[7] Overall, I find that, consistent with most past studies, higher levels of financial trouble are associated with greater manager turnover; I also find that higher regulatory intensity

[4] Morgan (1997) finds that harder-to-value firms (firms with opaque assets) tend to have split-bond ratings and banks are more likely to have split bond ratings relative to other types of firms.
[5] The three regulatory bodies that jointly oversee United States (U.S.) commercial banks include the Federal Reserve, the Federal Deposit Insurance Corporation (FDIC), and Office of the Comptroller of Currency (OCC). As of 2007, there are more than 7,000 commercial banks in the United States.
[6] Informal actions can involve a commitment letter, memoranda of understand (MOU), or a safety and soundness plan; they are not publicly disclosed. The most common informal action is an MOU. Formal actions are generally more severe, often mandated, and usually disclosed to the public (see Office of Comptroller of Currency, 2001). The exam rating system is described in the next section.
[7] National banks are supervised by the Office of the Comptroller of Currency (OCC).

is a significant factor in managerial turnover. Increased regulatory intensity, as indicated by worse supervisory ratings and recent rating downgrades, leads to greater turnover even after controlling for a bank's financial condition. In addition, the portion of turnover attributed to supervisor oversight is positively related to future profitability. Overall the evidence suggests, regulatory oversight improves bank discipline and the supervision process can improve the profitability of banks by helping to force out poorly performing management.

Though a vast literature has accumulated documenting the role of executive pay and incentive contracts in affecting performance, comparatively little work has been devoted to examining how firing executives or the threat of being forced out relates to firm performance.[8] Most of the studies that relate executive turnover to performance focus on stock returns and largely find that CEO turnover is negatively related to stock returns (Renneboog, 2000; Khurana, 2003; Murphy and Zabonjik, 2004; Jenter and Kanaan, 2005). Other related literature has examined the causes of performance-driven executive turnover. Gilson (1989), for example, documents significantly higher turnover for financially distressed firms and finds that this turnover is often driven by creditors or by the board of directors. Canella et al. (1995) find similar evidence in a sample of Texas banks; they find that managers in banks that failed for reasons that were beyond the managers' control were more likely to regain commensurate employment. Finally, Crespi et al (2004), who examine governance "interventions," including CEO and board chair turnover, in a sample of Spanish banks, find these interventions are more common following poor performance. Overall, these studies suggest poor performance is

[8] A key work in this area is by Jensen and Murphy (1990). Jensen (1999) provides a review of this literature.

associated with greater executive turnover in both banks and non-banks and that executives are forced to pay a price for poor performance.

A second strand of literature examines the important role bank supervisors play in disciplining banks and bank management. Gunther and Moore (2003), for example, examine the auditing role of bank examinations. They find that supervisor-induced revisions of loan losses are generally upward in direction; thus bank exams can uncover important information about underreporting of losses. Similarly, Dahl et al. (1998) find that bank examinations induce banks to more fully recognize their commercial and industrial loan losses. De Young et al (1998) find that bank examiners can uncover private information; further, they find that this information is more likely to be negative than positive. Houston and James (1993), in a sample of publicly traded banks, find that formal regulatory intervention is an important determinant of management turnover in banks. Finally, Cook et al. (2004) find that the Office of Thrift Supervision (OTS) is more likely to censure thrifts when they are performing poorly and that no relationship exists between the current performance of thrifts and managerial turnover; they conclude that OTS oversight reduces the need for board discipline in these thrifts since thrifts do not seem to discipline management prior to censure by the OTS.

This paper extends these two streams of literature by first examining the relationship between manager turnover and the intensity of bank supervision and then relating manager turnover due to regulatory intensity to subsequent performance. In examining these relationships, I extend the literature in several ways. The first major contribution relates to the nature of the sample used. Many of the works in the two streams of literature cited above examine relatively small numbers of exclusively

exchange-listed firms. Because these firms must release information publicly, their financial condition may be subject to greater scrutiny and the boards of these firms are more likely to act on the behalf of shareholders without any prodding from bank regulators. In addition, exchange-listed firms tend to be larger and generally have better-paid CEOs and directors; since CEO and director pay is well known to be associated with better corporate governance, there is less likely to be a need for outside stakeholders to intervene in these firms. By focusing on a much larger sample of mostly smaller banks, this paper adds insight into the causes of management turnover in banks more generally and less well-known banks in particular.

Second, much of the previous literature focuses on the disciplining of management in troubled firms. Though my sample has a large number of troubled banks, the large sample and the long time span of observations includes quite a number of banks that are not troubled; moreover, my empirical results suggest that the relationship between supervisory intensity and management turnover is strong even while controlling for bank financial condition. Third, past literature explicitly examining the role of bank supervisors in executive turnover or other bank governance issues has often focused on formal publicly disclosed supervisory actions; by focusing on private ratings this paper factors in both formal and informal actions. Finally, this is the first study to my knowledge to show that supervisor-induced management turnover may have positive effects on future performance.

In the following section I describe the bank examination process and the bank rating system. The data are described in section 3. In sections 4 and 5, I present the empirical results and draw some conclusions.

## 2 . Bank Examination Process and Rating System

Bank supervisors examine vast amounts of information during bank examinations; these examinations are largely focused on evaluating problem loans, overall financial condition, and adherence to banking regulations. A major product of the examination process is a supervisory rating of the bank's overall condition, commonly referred to as a CAMELS rating. It is used by all the three federal banking supervisors -- the Federal Reserve, the FDIC, and the OCC. The overall CAMELS rating and the individual component ratings are all private and confidential. They are never released by supervisory agencies; even historical CAMELS ratings or ratings of banks no longer in existence are not released.

The CAMELS rating is an overall assessment of a bank based on six individual ratings; the word CAMELS is an acronym for categories of supervisory assessment (capital adequacy, asset quality, management, earnings, liquidity, and sensitivity to market risk).[9] All individual component ratings as well as the overall ratings are coded on a scale of “1” to “5” with “1” being best (no supervisory concern) and “5” being worst (very serious supervisory concerns). Banks with weak CAMEL ratings (generally “3”, “4”, and “5”) tend to be monitored more aggressively by supervisors and often are faced with informal and sometimes formal supervisory actions. Thus, weaker ratings should be associated with greater supervisory “intensity.”

Although many of the individual components of CAMEL are likely to be correlated, they are not identical. In this paper, the focus is on the management rating. According to the definition, supervisory management ratings are based on “ a) technical

[9] The last component in CAMELS, sensitivity to market risk, is a relatively new feature. Prior to 1997, only CAMEL was reported. Since the time period of study in this paper is prior to 1997, the rest of this paper will refer only to CAMEL and not CAMELS.

competence, leadership, and administration ability, b) compliance with banking regulations and statutes, c) ability to plan and respond to changing circumstances, d) adequacy of and compliance with internal policies, e) depth and succession, f) tendencies toward self-dealing, g) demonstrated willingness to serve the legitimate banking needs of the community."

Much of the information in the CAMEL or management component ratings can be deduced from publicly available financial information but a growing number of studies indicating the supervisory information inherent in these ratings cannot be fully explained by publicly available information (DeYoung et al., 2001; Peek et al., 1998). Given that most of the guidelines upon which the management supervisory rating is based are also consistent with good corporate governance, supervisory actions based on the private information contained in these ratings may also be related to positive performance. To the extent that supervisors utilize private bank information to discipline banks and bank management, the supervision process may not only improve the safety and soundness of the banking system, but may also improve the governance and profitability of banks.

## 3. Data

All financial data is based on call report data which is publicly available for all U.S. banks. Private supervisory variables are obtained from the OCC, and state branching restriction data is obtained from Berger et al. (1995). Since the supervisory data is available only for national banks, I restrict the sample to these banks. Additionally, the data on executive turnover is only available between 1985 and 1994, and so the sample is further restricted to these years. For the years in which executive turnover data is available, it is reported only for banks with assets of $100 million or less, which further reduces the sample by about 25 percent. Though this may lead to some bias in the results, the remaining sample still contains the overwhelming majority of banks and the results will apply to a broader number of banks and bank classes than prior studies that focused only on large publicly-traded banks.[10] Finally, creating lagged values of the key supervisory variable, indicating a worsening of the supervisory rating, further restricts the sample to data beginning in 1986. Since bank exams occur about every 12 to 18 months and executive turnover is infrequent, I convert the quarterly dataset into a yearly dataset.[11] The final dataset has about 21,000 bank-year observations during the nine year period between 1986 and 1994.[12]

All national banks, with the exception of those without manager turnover data, were included in the sample for all time periods in which data was available; thus, the dataset consists of an unbalanced panel where banks remain in the sample for varying number of years during the observation period (as some new banks form and some

[10] The executive turnover variable is only required to be filled for banks filling out a FFIEC034 report. This excludes banks with assets of $100 million or more.
[11] During the 1980s, many banks faced even less frequent examinations.
[12] There about 3,800 total banks in the sample over the entire sample. Because banks were failing, being acquired, or being established, the average number of observations in any given year is about 2,200.

existing banks are acquired or exit for other reasons during the period). The data were not restricted to banks remaining in the sample over the entire period because doing so would have greatly reduced the sample size and also led to considerable survivorship bias.

All financial variables are "windsorized" at the bottom 1 percent and top 1 percent levels to minimize the effect of outliers and erroneous data points. The financial variables and supervisory rating variables, described below, are based on fourth-quarter values for the variable. Other key variables are derived based on the quarterly information.

### 3.1 Variables

The key dependent variable indicates whether a change in senior executive officer occurred during the year (EXTURN). A senior executive officer is defined as any one of the top three officers in the bank; these officers, regardless of their official titles, perform the functions of a chief executive officer, president, or senior lending officer. A change can occur for any reason including resignation, retirement, death, or demotion to a junior officer. When a bank has fewer than three senior officers, and a third officer is hired to a senior role, it is also counted as a change. This variable is derived from a call report variable indicating whether a change in senior officers has occurred in a given quarter.

The primary explanatory variables are MANRAT and WORSERAT. These variables indicate different dimensions of supervisory monitoring. MANRAT indicates the current level of supervisory concern regarding a bank's senior management. The ratings for management, like CAMEL ratings, go from "1" (highest) to "5" (lowest). By and large, the vast majority of banks are rated as "1" or "2." Ratings of "3" and below indicate increasing levels of supervisory concern. All else equal, we should expect a

worse management rating (higher MANRAT) to be associated with higher supervisory pressure on management and thus higher turnover. WORSERAT, on the other hand, indicates whether the supervisory rating for management has become worse in the last year; it thus captures a different dimension of supervisory oversight than MANRAT. While a low supervisory rating suggests to the board of directors that management may be deficient, a sudden deterioration in supervisory confidence may give the board of directors new information upon which to evaluate executive performance.[13]

To control for a bank's financial condition, I include proxies for bank profitability, financial leverage, liquidity, and credit risk.[14] I measure a bank's profitability as the return on assets (ROA), which is defined as net income to assets. I proxy for credit risk using the dollar amount of loans more than 90 days past due or under non-accrual status, divided by assets (PDUE90). Liquidity (LIQUID) is proxied by amount of non-volatile liabilities scaled by assets.[15] I measure financial leverage using the capital ratio based on Tier 1 capital (CAPRAT).[16] To control for size, I also include the log of total assets (LGASSET). In addition, since the size of the entire banking organization may influence the level of shareholder discipline and supervisor attention, I

[13] Since ratings of "1" and "2" are generally considered "good" and ratings "3," "4," and "5" are considered "poor," an alternative to MANRAT could be to use a dummy indicating good or poor ratings. This alternative is explored in robustness tests and discussed later in the paper.
[14] In addition to these measures described, alternative measures of performance, financial leverage, credit risk, and liquidity are considered as part of robustness tests later explored in the paper.
[15] Volatile liabilities are defined as including large Certificates of Deposits (CDs), federal funds purchases, demand notes issued to the U.S. treasury, foreign office deposits, and adjusted trading liabilities.
[16] The Tier 1 capital ratio is defined as: (Tier 1 Capital)/(Average Total Assets-Disallowed Intangibles). Tier 1 capital is considered the most reliable measure of capital used by bank supervisors. It generally consists of common stock, irredeemable and non-cumulative preferred stock, and retained earnings.

include the variable LGHCASSET, which indicates the log assets of the bank holding company.[17]

Lastly, I look for controls relating to bank organizational structure and market factors. Given the large dataset of mostly private firms, detailed data regarding organizational and ownership structure is not available. I do, however, include a dummy indicating whether the bank has acquired another bank during the year (ACQUIRE). Banks that have acquired other banks are more likely to have redundant management and are more likely to have higher executive turnover.[18] Since market competition may affect managerial turnover, I also include an indicator of whether branching is restricted in the state (RESTBR). Branching is defined as "restricted" when it is not allowed at all or not allowed statewide. [19] Additionally, because newer banks are likely to have less experienced management, management turnover could be different for these banks. To control for this I include a dummy indicating that the bank is a de novo bank (DENOVO); I define de novo as being chartered within the last five years. Finally, since executives may leave a bank voluntarily, it would be beneficial to control for other potential causes of executive turnover such as retirement or accepting employment elsewhere. Unfortunately, no information is available about average executive age or other factors that may affect a decision to retire. However, a bank executive's decision to accept employment elsewhere is likely to be affected by the number of bank executive

[17] Total holding company assets are computed by summing the assets of all banks and thrifts in the holding company in which a given bank is a subsidiary. For banks not part of a multi-bank holding company, LGHCASSET is set to 0. In table 1, this variable is only reported for banks that are part of holding companies.

[18] The variable defines an acquisition as an unassisted acquisition (not assisted by the FDIC or other federal agencies in any way).

[19] Market level data, from which measures such as the Herfindahl index could be computed, are not available during this time period. Use of the branch restriction variable benefits from the fact that branching restrictions were largely at the state level and gradually lifted at different times by the various states.

positions in the market where the bank operates. To control for this, I include the variable BANKSMKT which indicates the number of banks and thrifts currently operating in the market. A "market" is defined as a metropolitan statistical area (MSA) for urban markets and county for rural markets.

**3.2 Descriptive Statistics**

Summary statistics for all variables are provided in table 1. The average log assets (LGASSET), measured in thousands of dollars, is 10.57 which implies that the average bank size is $38 million over the entire time period. The 5$^{th}$ percentile, median, and 95$^{th}$ percentile sizes are roughly $12 million, $42 million, and $98 million respectively. The mean log bank holding company (BHC) assets, for banks that are part of multi-bank holding companies, is 13.32 which corresponds to assets of $612 million. Accordingly, the 5$^{th}$ percentile, median, and 95$^{th}$ percentile total BHC assets are $53 million, $382 million, and $24.574 billion respectively. Thus, there is a wide range of bank and holding company sizes in the sample.

The capital ratio (CAPRAT) has a mean 8.73 percent and a median 8.31 percent. The mean and median return on assets (ROA) is 0.64 percent and 0.95 percent. The average past due loans to assets (PDUE90) is 1.19 percent and the median is 0.68 percent. Finally, the mean and median for the last financial variable, liquidity (LIQUID) are roughly 89.18 percent and 91.28 percent.

The ACQUIRE variable indicates that about 2 percent of banks acquire other banks in any given year. The mean value for DENOVO indicates that newer (De Novo)

**Table 1**
**Variable Names, Definitions, and Summary Statistics[a,b]**

| Variable Name and Definition | Number of Obs | Mean | Std Deviation | Percentiles 5th | 50th | 95th |
|---|---|---|---|---|---|---|
| EXTURN | 21,282 | 27.09% | 44.45% | 0.00% | 0.00% | 100.00% |
| *Indicates senior officer change in year* | | | | | | |
| MANRAT | 21,282 | 2.28 | 0.80 | 1.00 | 2.00 | 4.00 |
| *Supervisory rating (1=Best,5=Worst)* | | | | | | |
| WORSERAT | 21,282 | 13.21% | 33.86% | 0.00% | 0.00% | 100.00% |
| *Indicates rating worsened in year* | | | | | | |
| LGASSET | 21,282 | 10.57 | 0.65 | 9.37 | 10.64 | 11.49 |
| *Log ofassets* | | | | | | |
| LGHCASSET | 5,577 | 13.32 | 1.96 | 10.87 | 12.85 | 17.02 |
| *Log of holding company assets* | | | | | | |
| CHLGASSET | 21,282 | 0.06 | 0.15 | -0.10 | 0.04 | 0.28 |
| *Change in log assets (since last year)* | | | | | | |
| CAP_RAT | 21,282 | 8.73% | 3.14% | 4.55% | 8.31% | 14.49% |
| *(Tier 1) Capital ratio* | | | | | | |
| ROA | 21,282 | 0.64% | 1.33% | -1.91% | 0.95% | 1.81% |
| *Return on assets* | | | | | | |
| PDUE90 | 21,282 | 1.19% | 1.53% | 0.01% | 0.68% | 4.27% |
| *Loans 90 days past due to assets* | | | | | | |
| LIQUID | 21,282 | 89.18% | 8.40% | 71.96% | 91.28% | 98.53% |
| *Non-volatile liabilities to assets* | | | | | | |
| DENOVO | 21,282 | 8.64% | 28.10% | 0.00% | 0.00% | 100.00% |
| *Indicates new bank (five or fewer years)* | | | | | | |
| ACQUIRE | 21,282 | 2.06% | 14.21% | 0.00% | 0.00% | 0.00% |
| *Indicates acquired another bank in year* | | | | | | |
| RESTRBR | 21,282 | 61.15% | 48.74% | 0.00% | 100.00% | 100.00% |
| *Indicates restricted branching* | | | | | | |
| BANKSMKT | 21,282 | 132.69 | 111.38 | 7 | 123 | 341 |
| *Number of banks in market* | | | | | | |

[a] Statistics are based on data from 1986 to 1994. Most data is obtained from call reports; supervisory variables and RESTBR are derived from data obtained from the Office of Comptroller of Currency and Berger et al. (1995), respectively.

[b] All financial variables are "windsorized" to the bottom and top 1 percent values.

[c] LGASSET and LGHCASSET are based on assets measured in thousands of dollars.

[d] Averages for LGHCASSET include only banks that are part of multi-bank holding companies (about 27 percent of the sample).

banks make up about 8.6 percent of the banks in the sample. About 61 percent of banks in the sample are in restricted branching states, as indicated by RESTRBR.[20] Finally, the average and median market size across banks during the sample is period is 133 and 123 respectively; this number includes the total number of both banks and thrifts in the MSA or rural county.

The supervisory variable MANRAT has a mean of 2.28 and a median of 2. This suggests that the majority of banks are rated highly ("1" or "2") and a lesser number of poorly rated banks leads to a mean being higher than the median. The other supervisory variable, WORSERAT, indicates that about 13.2 percent of banks have a ratings downgrade in any given year (where a downgrade implies a higher value for MANRAT). The mean for the dependent variable, EXTURN, shows that about 27 percent of banks had senior executive changes in any given year during the observation period.

**4. Empirical Results**

To test my predictions relating manager turnover to regulatory supervision and financial condition, I first conduct univariate tests relating managerial turnover to supervisory ratings. Next, I examine the same question through multivariate techniques.

Both the univariate and multivariate results are consistent with the explanation that managerial supervision is a factor in executive turnover after controlling for financial condition. Because greater supervisory intensity should be associated with poorly performing management, if higher supervisory intensity indeed drives management turnover, then the management turnover explained by supervisory ratings and rating downgrades should be associated with improved subsequent performance. Further tests

[20] Despite this high number, it is important to note that RESTBR varies not only by market but also by year given the gradual lifting of restrictions by the states. For example, in 1986 about 92 percent of banks were in restricting branching states. The values for 1989 and 1994 were 68 percent and 35 percent respectively.

explore whether supervision-induced managerial turnover is related to future profitability, in part to verify that the previous results are not due to misspecification. The results indicate that, after controlling for current financial condition, supervisor-induced executive turnover leads to improved profitability.

### 4.1. Univariate Tests: Managerial Turnover and Supervision

Table 2 divides the sample by year and by whether executive turnover occurred in the year. The first three years of the sample (1986-1988) represent a period immediately following deregulation, excessive competition in the banking industry, and an increasing number of bank failures; the next three years (1989-1991) are characterized by even more bank failures and the enacting of new risk-based capital standards to limit risk-taking incentives by bank management. The last few years (1992-1994) are characterized by a more stable banking environment and improved bank profitability.

The results indicate that there are important differences in the supervisory variables over time. Managerial ratings (MANRAT) tend to be worse and ratings downgrades (WORSERAT) are more widespread in the earlier part of the sample relative to the latter part; these differences are statistically significant at conventional levels. Still MANRAT values are worse (higher) and rating downgrades more prevalent (WORSERAT) in banks with executive turnover regardless of year. The differences between banks with and without executive turnover are statistically significant in every year of the sample.

**Table 2**
**Supervisory Variables by Year: Univariate Tests[a]**

| | | No Executive Changes | At Least 1 Executive Change | No Change vs Change |
|---|---|---|---|---|
| | | (N= 2,146) | (N= 1,077) | |
| 1986 | MANRAT | 2.19 | 2.55 | *** |
| | WORSERAT | 16.45% | 23.12% | *** |
| | | (N= 2,089) | (N= 983) | |
| 1987 | MANRAT | 2.20 | 2.56 | *** |
| | WORSERAT | 10.63% | 18.51% | *** |
| | | (N= 2,037) | (N= 843) | |
| 1988 | MANRAT | 2.18 | 2.60 | *** |
| | WORSERAT | 10.01% | 20.17% | *** |
| | | (N= 1,216) | (N= 343) | |
| 1989 | MANRAT | 2.14 | 2.36 | *** |
| | WORSERAT | 8.88% | 13.12% | ** |
| | | (N= 1,781) | (N= 629) | |
| 1990 | MANRAT | 2.25 | 2.69 | *** |
| | WORSERAT | 13.14% | 22.89% | *** |
| | | (N= 1,694) | (N= 598) | |
| 1991 | MANRAT | 2.32 | 2.76 | *** |
| | WORSERAT | 14.40% | 23.75% | *** |
| | | (N= 1,631) | (N= 500) | |
| 1992 | MANRAT | 2.27 | 2.73 | *** |
| | WORSERAT | 10.24% | 21.00% | *** |
| | | (N= 1,529) | (N= 419) | |
| 1993 | MANRAT | 2.05 | 2.42 | *** |
| | WORSERAT | 5.69% | 10.26% | *** |
| | | (N= 1,393) | (N= 374) | |
| 1994 | MANRAT | 1.93 | 2.15 | *** |
| | WORSERAT | 5.53% | 9.63% | *** |
| 1986 vs | MANRAT | *** | *** | |
| 1994 | WORSERAT | *** | *** | |

[a] Tests of differences are done using standard unpaired t-tests. Test significance is denoted by *** (p-value <.01), ** (p-value between .05 and .01), and * (p-value between .1 and .05).

The tests described in table 2 indicate that bank supervision plays a part in bank executive turnover but do not factor in the effects of bank financial condition. To address this issue, the framework of table 2 is modified by breaking down the observations into quartiles of financial condition rather than by year; this is done separately for all the financial condition variables: ROA, PDUE90, CAPRAT, and LIQUID. The results, presented in tables 3 panels a through d, show that ROA is lower, PDUE90 is higher, CAPRAT is lower, and LIQUID is lower for banks with management turnover. This suggests that financial condition is a driver of bank executive turnover and is consistent with most past studies.

The supervisory variables are also significantly different across financial condition, as we should expect with worse ratings and ratings reductions more prevalent for banks in weaker financial condition. Additionally, as hypothesized, managerial ratings tend to be worse (higher value) and ratings downgrades more common (WORSERAT) for banks that have executive turnover regardless of financial condition. This is generally true for all financial condition variables and for all quartiles of these variables.

**4.2 Multivariate Tests: Managerial Turnover and Supervision**

While the univariate statistics clearly suggest that managerial turnover is driven in part by supervisory ratings or rating changes, they may not adequately adjust for how a bank's financial condition or other factors may influence turnover. If these other factors are really driving executive turnover, then not adequately accounting for them may lead to inaccurate results.

**Table 3**
**Supervisory Variables by Financial Condition[a,b]: Univariate Tests[c]**

**Panel A: Supervisory Variables and Management Turnover by ROA**

| | | ROA Quartile | | | | Test of |
|---|---|---|---|---|---|---|
| | | 1 (Worst) | 2 | 3 | 4 (Best) | Difference - Quartile 1 vs 4 |
| No Exec Change | MANRAT | 2.69 | 2.22 | 2.04 | 1.94 | *** |
| (EXTURN=0) | WORSERAT | 0.22 | 0.11 | 0.07 | 0.07 | *** |
| At least 1 Exec Change | MANRAT | 3.06 | 2.38 | 2.17 | 2.10 | *** |
| (EXTURN=1) | WORSERAT | 0.31 | 0.14 | 0.12 | 0.08 | *** |
| No Exec Change vs | MANRAT | *** | *** | *** | *** | |
| At least 1 Exec Change | WORSERAT | *** | *** | *** | | |

**Panel B: Supervisory Variables and Management Turnover by PDUE90**

| | | PDUE90 Quartile | | | | Test of |
|---|---|---|---|---|---|---|
| | | 1 (Best) | 2 | 3 | 4 (Worst) | Difference Quartile 1 vs 4 |
| No Exec Change | MANRAT | 1.91 | 2.03 | 2.21 | 2.65 | *** |
| (EXTURN=0) | WORSERAT | 0.08 | 0.09 | 0.11 | 0.18 | *** |
| At least 1 Exec Change | MANRAT | 2.06 | 2.25 | 2.48 | 3.11 | *** |
| (EXTURN=1) | WORSERAT | 0.11 | 0.14 | 0.16 | 0.30 | *** |
| No Exec Change vs | MANRAT | *** | *** | *** | *** | |
| At least 1 Exec Change | WORSERAT | *** | *** | *** | *** | |

**Panel C: Supervisory Variables and Management Turnover by CAPRAT**

| | | CAPRAT Quartile | | | | Test of |
|---|---|---|---|---|---|---|
| | | 1 (Worst) | 2 | 3 | 4 (Best) | Difference Quartile 1 vs 4 |
| No Exec Change | MANRAT | 2.52 | 2.17 | 2.09 | 2.02 | *** |
| (EXTURN=0) | WORSERAT | 0.16 | 0.10 | 0.09 | 0.10 | *** |
| At least 1 Exec Change | MANRAT | 2.98 | 2.40 | 2.31 | 2.24 | *** |
| (EXTURN=1) | WORSERAT | 0.27 | 0.16 | 0.15 | 0.14 | *** |
| No Exec Change vs | MANRAT | *** | *** | *** | *** | |
| At least 1 Exec Change | WORSERAT | *** | *** | *** | *** | |

**Panel D: Supervisory Variables and Management Turnover by LIQUID**

| | | LIQUID Quartile | | | | Test of |
|---|---|---|---|---|---|---|
| | | 1 (Worst) | 2 | 3 | 4 (Best) | Difference Quartile 1 vs 4 |
| No Exec Change | MANRAT | 2.25 | 2.18 | 2.16 | 2.13 | *** |
| (EXTURN=0) | WORSERAT | 0.14 | 0.11 | 0.10 | 0.09 | *** |
| At least 1 Exec Change | MANRAT | 2.74 | 2.56 | 2.47 | 2.45 | *** |
| (EXTURN=1) | WORSERAT | 0.26 | 0.19 | 0.15 | 0.16 | *** |
| No Exec Change vs | MANRAT | *** | *** | *** | *** | |
| At least 1 Exec Change | WORSERAT | *** | *** | *** | *** | |

[a] Panel A, B, C, and D describe MANRAT and WORSERAT by ROA, PDUE90, CAPRAT, and LIQUID respectively.

[b] Each panel summary is based on the entire sample of 21292 observations between 1986 and 1994.

[c] Tests of differences are done using standard unpaired t-tests. Test significance is denoted by *** (p-value <.01), ** (p-value between .05 and .01), and * (p-value between .1 and .05).

To better control for other factors that may drive executive turnover, I conduct multivariate regressions controlling for key financial variables and other controls. I employ a logistic model for these tests. In all, regressions for four different specifications are estimated as shown below:

$$Log\left(\frac{\Pr ob(EXTURN_{i,t}=1)}{1-\Pr ob(EXTURN_{i,t}=1)}\right) = \sum_{j=0}^{3} B_j * FC_{j;i,t-1} + \sum_{j=4}^{6} B_j * OFC_{j;i,t-1} + \sum_{j=7}^{10} B_j * NFC_{j;i,t} + YEAR_t + BANK_i + \varepsilon_{i,t} \quad (1)$$

$$Log\left(\frac{\Pr ob(EXTURN_{i,t}=1)}{1-\Pr ob(EXTURN_{i,t}=1)}\right) = B_0 * MANRAT_{i,t-1} + \sum_{j=1}^{4} B_j * FC_{j;i,t-1} + \sum_{j=5}^{7} B_j * OFC_{j;i,t-1} + \sum_{j=8}^{11} B_j * NFC_{j;i,t} + YEAR_t + BANK_i + \varepsilon_{i,t} \quad (2)$$

$$Log\left(\frac{\Pr ob(EXTURN_{i,t}=1)}{1-\Pr ob(EXTURN_{i,t}=1)}\right) = B_0 * WORSERAT_{i,t-1} + \sum_{j=1}^{4} B_j * FC_{j;i,t-1} + \sum_{j=5}^{7} B_j * OFC_{j;i,t-1} + \sum_{j=8}^{11} B_j * NFC_{j;i,t} + YEAR_t + BANK_i + \varepsilon_{i,t} \quad (3)$$

$$Log\left(\frac{\Pr ob(EXTURN_{i,t}=1)}{1-\Pr ob(EXTURN_{i,t}=1)}\right) = B_0 * MANRAT_{i,t-1} + B_1 * WORSERAT_{i,t-1} + \sum_{j=2}^{5} B_j * FC_{j;i,t-1} + \sum_{j=6}^{8} B_j * OFC_{j;i,t-1} + \sum_{j=9}^{12} B_j * NFC_{j;i,t} + YEAR_t + BANK_i + \varepsilon_{i,t} \quad (4)$$

In the above equations, FC is a vector of financial condition controls including ROA, PDUE90, CAPRAT and LIQUID; the OFC vector indicates the other financial controls LGASSET, LGHCASSET, and CHLGASSET. The third vector, NFC, includes the non-financial controls DENOVO, ACQUIRE, RESTBR, and BANKSMT. The first of these specifications, equation (1), estimates the effect only of financial condition (FC), other financial controls (OFC), and non-financial controls (NFC) on EXTURN. This is

done primarily to examine how the financial variables and non-financial variables affect EXTURN in the absence of supervisory information in the regressions. The next specification, equation (2), estimates the effect of MANRAT on EXTURN after controlling for the financial variables and other control variables. The third equation estimates the same regression but replaces MANRAT with WORSERAT. The last specification, equation (4), includes both MANRAT and WORSERAT. If both the managerial rating and a recent ratings downgrade are important in affecting executive turnover, then both $B_0$ and $B_1$ should be positive and significant in equation (4). The results are reported in columns (1) to column (4) of table 4. The number of observations drops from about 21,000 in the univariate tests to about 16,000 in these multivariate regressions; observations for fixed-effect logit specifications are fewer because this procedure requires at least one change in the dependent variable across time. [21] For conciseness of presentation, the coefficients for the time dummies are not reported. [22] To mitigate the effect of other omitted bank level variables, I include bank fixed effects in each of these specifications. Time dummies are also included to minimize the effect of unobserved macroeconomic or industry factors.

In each of these regressions, MANRAT, WORSERAT, and the financial variables are lagged to minimize potential endogeneity problems. The implicit assumption in each of these regressions is that WORSERAT and MANRAT are in part driven by a bank's financial condition, market-level variables, and other bank-specific variables. The inclusion of these other variables in the regression should then allow us to

[21] Without variation in the dependent variable, observations of a given bank will have either all positive or all negative outcomes and computation of a fixed effect becomes impossible for this procedure.
[22] Since the logit specification has bank fixed effects, no constant term can be estimated.

**Table 4**

**Determinants of Executive Turnover: Multivariate Tests[a,b]**

| | (1) | | (2) | | (3) | | (4) | |
|---|---|---|---|---|---|---|---|---|
| MANRAT | | | 0.2348 | *** | | | 0.1567 | *** |
| | | | (6.99) | | | | (4.07) | |
| WORSERAT | | | | | 0.3595 | *** | 0.2425 | *** |
| | | | | | (7.10) | | (4.17) | |
| LGASSET | -0.2331 | ** | -0.1516 | | -0.2672 | ** | -0.2020 | * |
| | -(1.98) | | -(1.28) | | -(2.26) | | -(1.69) | |
| LGHCASSET[c] | -0.0001 | | 0.0013 | | 0.0001 | | 0.0010 | |
| | -(0.01) | | (0.17) | | (0.01) | | (0.13) | |
| CHLGASSET | -(0.86) | *** | -(0.76) | *** | -(0.81) | *** | -(0.76) | *** |
| | -(5.40) | | -(4.78) | | -(5.10) | | -(4.78) | |
| CAPRAT | 1.2808 | | 2.6861 | ** | 1.2820 | | 2.2224 | * |
| | (1.01) | | (2.10) | | (1.01) | | (1.73) | |
| PDUE90 | 6.1889 | *** | 4.2629 | ** | 5.6444 | *** | 4.5328 | ** |
| | (3.50) | | (2.38) | | (3.19) | | (2.53) | |
| ROA | -16.0400 | *** | -13.1838 | *** | -13.6732 | *** | -12.5343 | *** |
| | -(7.53) | | -(6.09) | | -(6.33) | | -(5.77) | |
| LIQUID | -0.3093 | | -0.5580 | | -0.2709 | | -0.4483 | |
| | -(0.69) | | -(1.23) | | -(0.60) | | -(0.99) | |
| DENOVO | -0.0162 | | 0.0080 | | -0.0142 | | 0.0009 | |
| | -(0.17) | | (0.08) | | -(0.15) | | (0.01) | |
| ACQUIRE | 0.4161 | *** | 0.4104 | *** | 0.4087 | *** | 0.4074 | *** |
| | (3.06) | | (3.02) | | (3.00) | | (2.99) | |
| RESTBR | 0.1163 | * | 0.1061 | | 0.1154 | * | 0.1089 | |
| | (1.70) | | (1.55) | | (1.68) | | (1.59) | |
| BANKSMKT | -0.0004 | | -0.0003 | | -0.0004 | | -0.0003 | |
| | -(0.48) | | -(0.30) | | -(0.47) | | -(0.35) | |
| BANK DUMMIES | + | | + | | + | | + | |
| YEAR DUMMIES | + | | + | | + | | + | |
| Number of Observations | 16239 | | 16239 | | 16239 | | 16239 | |
| Adjusted R-Square | 0.0185 | | 0.0224 | | 0.0224 | | 0.0237 | |
| Chi-Sq Test Stat | 235.513 | | 284.537 | | 285.2806 | | 301.8664 | |
| Chi-Sq Test P-Value | 0.0000 | | 0.0000 | | 0.0000 | | 0.0000 | |

[a] Columns (1) through (4) describe logit regression results with the dependent variable being EXTURN (indicator of executive turnover during the year). All regressions are based on data from 1986 to 1994, include yearly dummies, and bank-fixed effects. T-stats, in parentheses, are below each regression coefficient.

[b] The asterisks indicate significance of the regression coefficients. Significance at the 1 percent level is indicated by ***. Similarly ** and * indicate significance at the 5 and 10 percent levels respectively.

[c] The variable LGHCASSET is set to 0 for banks not part of multi-bank holding companies.

examine the impact of private information observed during the examination process and the coefficients of WORSERAT and MANRAT should reflect the effect of supervisory ratings only.

The results in the first column suggest that managerial turnover is driven in part by poor performance (ROA) and higher credit risk (PDUE90), which is consistent with past studies of drivers of executive turnover; it is not however significantly related to liquidity (LIQUID) or capital ratio (CAPRAT). Turnover is also more prevalent in banks that have acquired other banks during the year (ACQUIRE), as might be expected. Executive turnover is also associated with smaller banks and banks in restricted branching states.

In columns (2) through (4), the results imply that MANRAT and WORSERAT, both individually and collectively, play a significant part in driving executive turnover in banks after controlling for financial and non-financial factors; the results are significant at the 1 percent level and consistent with the univariate results.[23] In columns (2) and (4), an increase in MANRAT by 1 leads to a increase in the odds of executive turnover by e(0.23)=1.26 and e(0.16)=1.17 respectively. Similarly, in both columns (3) and (4), for banks whose supervisory management rating has worsened, the odds of executive turnover are found to be higher by e(0.36)=1.43 and e(0.24)=1.27 respectively.

The financial condition variables ROA, ROE, PDUE90, CAPRAT, and LIQUID have varied levels of significance across columns (2) through (4) of table 4. The significance and direction of ROA and PDUE90 are consistent with the results of column

[23] The exclusions of banks with no changes in management could potentially lead to bias. To test for this possibility, I also estimate this model using a linear probability model, also with bank fixed effects. The results, not reported, are very similar.

(1). The magnitude of the coefficients for these variables is lower than in column (1), however, which suggests that MANRAT and WORSERAT explain some of the same variation in EXTURN that is explained by these financial variables; it may also indicate that poor financial condition drives managerial turnover in part because of supervisory actions. The sign of the coefficients for CAPRAT are in the same direction as in column (1) but are generally higher and more significant when MANRAT is included in the regression; this suggests that after controlling for supervisory intensity, CAPRAT has a positive association with turnover. One possible reason for a positive association between CAPRAT and EXTURN could be that, after controlling for other aspects of financial condition and supervisory oversight, better-capitalized banks are more likely to take over other banks and takeover activity may be associated with greater turnover.[24] Liquidity (LIQUID), in contrast to performance, capital ratio, and credit risk, is not significantly related to executive turnover in any of the four specifications. The fact that liquidity does not affect turnover after controlling for the other factors may indicate that bank boards do not generally judge executive performance based on liquidity.

Taken together, the significance and direction of the coefficients of the financial variables indicate that after factoring in managerial ratings, bank fixed-effects, and time-fixed effects, the other financial variables besides ROA and PDUE90, have inconsistent or insignificant impact on bank executive turnover. Further, it may indicate that bank boards of directors and shareholders consider performance (ROA) and to some extent

[24] The difference in the coefficients of CAPRAT when MANRAT is included could also indicate multi-collinearity between CAPRAT and MANRAT; to examine whether this potential multi-collinearity seriously biases the coefficient for MANRAT, regressions (2) and (4) were re-run without including CAPRAT as an explanatory variable. The coefficient for MANRAT in each case was hardly changed.

credit risk (PDUE09) to be the primary metrics for judging bank executives' performance.

The ACQUIRE variable is positively and significantly associated with executive turnover across all specifications; this is consistent with the explanation that firms undergoing merger activity have redundant executive positions and experience more turnover. The size variable, LGASSET, seems to be negatively and significantly related to turnover in most specifications; one explanation could be that smaller banks are less stable and more likely to be acquired. The relationship between change in size (CHLGASSET) and turnover is highly negative in all specifications; this may indicate that bank owners punish bank management for poor growth. Banks in restricted branching states are generally more likely to have turnover, although the association is only weakly significant in specifications (1) and (3) and not significant in specifications (2) and (4). Since branching restrictions were much more prevalent during the earlier years of the sample, a positive association between branching restrictions and turnover may be attributable to greater financial distress among banks during the earlier part of the sample. The number of banks in the market (BANKSMKT) and holding company size (LGHCASSET) are not significantly related to executive turnover in any specification.

**4.3 Multivariate Tests: Future Profitability and Managerial Turnover**

The univariate and multivariate tests indicate that bank executive turnover is, in part, driven by supervisory oversight. The implicit assumption in these tests is that bank supervisors pressure bank boards to fire their management primarily if inefficient or self-dealing tendencies in management are found; thus, it is also implicit that bank supervisor-driven turnover is likely to improve bank performance. However, if the regressions

relating executive turnover to supervisory oversight are misspecified, the positive association between EXTURN and the supervisory variables could be spurious. In particular, if EXTURN is not really driven by MANRAT and WORSERAT and instead driven by variables correlated with MANRAT and WORSERAT, then the interpretation of these results will not be correct.

To explore the possibility of misspecification, I now turn to the question of whether this supervisor-driven turnover is beneficial to bank owners. If oversight is beneficial, then the portion of executive turnover driven by higher supervisory oversight should be associated with better future performance after factoring in the bank's current financial condition. If a positive association is found, then equation (4) is likely to be correctly specified.

Tests relating supervisor-driven executive turnover and performance may also help address the related question of whether supervisory actions provide banks with important information. If supervisory actions provide bank boards little useful information, then the management turnover initiated by these actions is likely to be related to legal liability or other regulatory issues rather than to exam information providing evidence of poor governance or performance. But if supervisor-driven turnover is related to better subsequent performance, such turnover is more likely to be caused by governance or performance-related information derived from bank examinations.

To examine the relation of supervisor-driven turnover and performance, I regress future profitability on the portion of the likelihood of executive turnover attributable to supervisory intensity and current financial condition. Future profitability is defined as

ROA at some time in the future.[25] Current financial condition is proxied by current ROA, PDUE90, LIQUID, and CAPRAT. As before, I control for other financial variables as well, including bank size (LGASSET), holding company size (LGHCASSET), and growth (CHLGASSET). Bank-level factors (fixed effects) and time-fixed effects (year dummies) are also included, as before, to control for other unobserved factors.

The portion of the executive turnover driven by supervisor oversight is estimated using the procedure utilized by Core et al. (1999), Bertrand and Mullainathan (2001), and others. This involves obtaining the predicted value of EXTURN from the regression of EXTURN on supervisory ratings and controls, i.e., equation (4). However instead of estimating predicted values in the usual sense, I estimate the predicted value using only the supervisory variables. Thus, EL_EXTURN ("excess" likelihood of executive turnover) is defined as:

$$Log\left(\frac{EL_EXTURN_{i,t}}{1-EL_EXTURN_{i,t}}\right) = b_0 * MANRAT_{i,t-1} + b_1 * WORSERAT_{i,t-1} \qquad (5)$$

In equation (5), $b_0$ and $b_1$ are the estimated coefficients for MANRAT and WORSERAT from equation (5). After obtaining estimates for EL_EXTURN, I next execute regressions of future profitability on these variables and other controls.[26] $ROA_{i,t+k}$ in equation (6) represents ROA for bank i exactly k years in the future (k=1,2,3, and 4 in columns 1,2,3 and 4 respectively); the results of these regressions are reported in table 4. As before, FC indicates the financial condition variables ROA, PDUE90,

[25] In robustness tests described later in the paper, I also utilize the alternative measure of performance, return on equity (ROE).

[26] To be consistent with the estimation equation (3), I only include banks that had at least one change in senior management during the entire observation period. Additional tests, not reported, indicate that the results for equations (6) and (7) do not depend on this data reduction.

CAPRAT and LIQUID; OFC indicates the other financial controls LGASSET, LGHCASSET, and CHLGASSET.

$$ROA_{i,t+k} = Ø_0 * EL_EXTURN_{i,t-1} + \sum_{j=1}^{4} Ø_j * FC_{j;i,t-1} + \sum_{j=5}^{7} Ø_j * OFC_{j;i,t-1} + YEAR_t + BANK_i + \varepsilon_{i,t} \quad (6)$$

### 4.3.1 Performance and Supervisor-Driven Executive Turnover

The results in table 5, columns (1) through (4) indicate that as supervisor-driven turnover (EL_EXTURN) increases, future ROA is higher. The coefficient for EL_EXTURN in each of these specifications is significant at conventional levels; this is consistent with the explanation that supervisor-driven turnover helps improve the performance of banks.

In particular, the estimated coefficients indicate that as the portion of executive turnover likelihood implied by supervisory actions (EL_EXTURN) increases from 0 to 1, the ROA in one year, two years, three years, and four years will increase by 61 basis points, 94 basis points, 71 basis points, and 49 basis points respectively. Alternatively, a worsening of the MANRAT rating from 2 to 3 would induce executive turnover resulting in an ROA higher by 11 basis points in one year, 17 basis points in two years, 13 basis points in three years, and 9 basis points in four years; if instead a worsening of MANRAT occurred from 3 to 4, the resulting executive turnover would lead to an increase in ROA in one, two, three, and four years of 9, 14, 10, and 7 basis points respectively.[27]

[27] These estimates are calculated using equation (5) to first estimate the difference in EL_EXTURN implied by a given change in MANRAT and WORSERAT. This difference is then applied to the coefficient of EL_EXTURN to estimate the effect as described. For example, if a change of MANRAT of "2" to "3" and a change of WORSERAT from "0" to "1" leads to an increase in EL_EXTURN of X, then the implied increase in ROA in one year is 0.0061 * X.

**Table 5**
**Future Profitability and Supervisory Driven Turnover: Multivariate Tests[a,b]**

| | (1) ROA In 1 Year | (2) ROA In 2 Years | (3) ROA In 3 Years | (4) ROA In 4 Years |
|---|---|---|---|---|
| EL - EXTURN[c] | 0.0061 *** | 0.0094 *** | 0.0071 *** | 0.0049 *** |
| | (3.55) | (6.04) | (4.92) | (3.66) |
| LGASSET | -0.0047 *** | -0.0055 *** | -0.0039 *** | -0.0020 *** |
| | -(11.60) | -(14.61) | -(11.27) | -(6.19) |
| LGHCASSET[d] | -0.0001 *** | -0.0001 *** | -0.0001 *** | 0.0000 ** |
| | -(2.77) | -(3.83) | -(3.99) | -(2.07) |
| CHLGASSET | 0.0032 *** | 0.0015 *** | 0.0014 *** | 0.0004 |
| | (6.08) | (2.90) | (3.01) | (0.85) |
| CAPRAT | -0.0928 *** | -0.0968 *** | -0.0597 *** | -0.0193 *** |
| | -(19.21) | -(21.74) | -(14.50) | -(4.97) |
| PDUE90 | -0.1448 *** | -0.0476 *** | 0.0002 | 0.00 |
| | -(20.48) | -(7.25) | (0.04) | (0.27) |
| ROA | 0.18 *** | 0.02 ** | -0.05 *** | -0.0610 *** |
| | (20.47) | (2.52) | -(6.25) | -(8.50) |
| LIQUID | 0.0281 *** | 0.0281 *** | 0.0189 *** | 0.0078 *** |
| | (17.14) | (18.64) | (13.58) | (5.94) |
| BANK DUMMIES | + | + | + | + |
| YEAR DUMMIES | + | + | + | + |
| Constant Term | 0.0346 | 0.0418 | 0.0325 *** | 0.0211 *** |
| | (7.11) | (9.30) | (7.83) | (5.35) |
| Number of Observations | 16360 | 15199 | 14137 | 13225 |
| Adjusted R-Square | 0.1393 | 0.0043 | 0.0001 | 0.0002 |
| F-Statistic | 206.82 | 142.36 | 101.90 | 58.65 |
| F-Test P-Value | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

[a] All regressions utilize bank-fixed effects, include year dummies, and use data from 1986 to 1994. The dependent variable is ROA in one, two, three, or four years in columns 1 through 4 respectively.

[b] The asterisks indicate significance of the regression coefficients. Significance at the 1 percent level is indicated by ***. Similarly ** and * indicate significance at the 5 percent and 10 percent levels respectively.

[c] EL_EXTURN is the portion of the likelihood of executive turnover explained only by the supervisory variables MANRAT and WORSERAT. It is calculated based on the estimated coefficients of these variables in table 4, column (4)

[d] The variable LGHCASSET is set to 0 for banks not part of multi-bank holding companies.

### 4.3.2 Performance and Financial Controls

In the first two columns of table 4, higher current ROA and lower current PDUE90 is associated with better future ROA as might be expected. In contrast, higher capital, as measured by CAPRAT, is associated with lower future ROA in all specifications. This may be because higher financial leverage (or lower capital ratios) may be indicative of poor financial condition only at very high levels. In general, a lower capital ratio may also be indicative of higher risk, which implies a higher ROA.[28] Also in the third and fourth columns, with the dependent variable being ROA in three years and four years, I find that current ROA is actually negatively associated with future ROA. This may be because three years is a significant time into the future and may be related to cyclicality of profits (banks that are currently in a cyclical downturn are likely to recover in three years). Finally, the results suggest higher values of LIQUID are related to higher future profitability. The coefficient for liquid is positively and significantly related to ROA in one, two, three, and four years.

The regressions also indicate that bank size and bank holding company (BHC) size affect future profitability. Both the LGASSET term and the LGHCASSET term are significantly negatively related to future ROA in all specifications. A possible cause of any negative relationship between bank or BHC size and future profitability could be that as firms grow, assets may increase at a faster clip than income. The results also indicate that ROA tends to be higher in growing firms (higher CHLGASSET); the results for this variable are significant in columns (1) – (3).

[28] Traditional corporate financial theory suggests a risk-return trade-off. That is, investors must be compensated for higher risk by receiving a higher expected return.

### 4.3.3 Future Performance and Surviving Firms

It is important to note that while the above results are strong, they may be affected by substantial survivorship bias; for example only banks that survive four years are included in the regression indicated by column 4 of table 5. If banks that face supervisor-driven management turnover exit during this four-year period due to poor performance (culminating in failure or acquisition), the effect of management-driven turnover on performance will be overstated; alternatively, if these banks exit primarily due to superior performance (i.e., if better-performing banks are acquired), the effect of supervisor-driven turnover on performance will be understated.

In either case, the bias will be strongest in regressions with the four-year lag and less strong for the regressions using a three-year lag or two-year lag. For the one-year lag, the bias should be negligible since the overwhelming majority of banks survive in the regressions. Given the strong results for the one-year time lag, survivorship bias is not likely to significantly affect the overall interpretation of these results.

### 4.4 Sensitivity/Robustness Tests

Since the frequency of examinations may have varied considerably over the period of study, the key explanatory variable (MANRAT) may suffer from not being consistent over time and across banks and thus may not be able to measure current supervisory intensity uniformly. To examine the extent of this problem, the regressions were re-run to include only banks where exams were conducted during the previous 18 months; the results (not reported) indicate the key variables of interest, MANRAT and WORSERAT, are still significant and the coefficients do not change dramatically. Thus,

non-uniform exam frequency by bank regulators does not seem to adversely affect the results.

To the extent that the a bank's board observes the same things that bank supervisors observe, the supervisory intensity variables may be correlated with unobserved board variables and the board variables may really be driving executive turnover. The inclusion of bank fixed effects in regressions (1) through (4) reduces the likelihood of this possibility. To examine this possibility further, I explore bank executive turnover in relation to the timing of bank exams. If management changes are driven by supervisory oversight rather than board variables correlated with this oversight, then turnover should occur more frequently in the year after a bank exam than in the year before it. Additional tests, not reported, suggest that for exams in which a rating worsened, management turnover is much more prevalent in the year of the exam and the year following the exam than in the year prior to the exam. This suggests that supervisory oversight, as opposed to unobserved board variables, are driving executive turnover in banks.

Supervisory information regarding managerial performance was derived using the managerial rating component of the CAMEL rating. This managerial component rating was chosen because it was deemed more indicative of private supervisory information about management than of information about other aspects of a bank's condition. If bank regulators judge a management team's performance largely based on the other aspects of bank condition, the overall CAMEL rating and the management component rating would probably be the same. A correlation analysis determined that the correlation between MANRAT and the overall CAMEL rating was about 80 percent and the correlation

between WORSERAT and a worsening in the overall CAMEL rating was about 60 percent during the sample period. This suggests that the managerial component rating and the overall rating are highly correlated but not identical. To further explore the sensitivity of the results to using the overall CAMEL rating instead of the management component rating, equations (2), (3), and (4) were re-estimated while replacing MANRAT and WORSERAT with analogous variables based on the overall CAMEL rating. The results for the key variables were still significant in the same direction, but the coefficients were generally smaller; this suggests that while the overall CAMEL rating and the managerial component of CAMEL contain similar information, the management component is better suited to measuring private information about managerial ability.

Though the CAMEL ratings and components ratings vary from "1" to "5," it is not necessary that downgrades convey the same information regardless of the starting point; for example, a downgrade from "1" to "2" may not mean the same thing as a downgrade from "2" to "3." To the extent that both MANRAT and WORSERAT are included in the regression, this problem is alleviated because we can see the affect of a downgrade holding MANRAT constant at some value. But since MANRAT ratings of "1 "and "2" are generally considered "good" and MANRAT ratings of "3" and higher are considered "poor," we could alternatively construct another variable indicating whether a rating was poor. To see if the results are affected by using a dummy indicating poor vs. good management ratings as an alterative to MANRAT, regression specifications (2) and (4) were re-run with this change. Some of the coefficients changed, but both the new variable and WORSERAT still had positive and significant coefficients.

Sensitivity of the results to various alternative measures of key financial variables was also examined. As an alternative to using ROA to measure performance, regression specifications (1) through (4) were re-run using ROE (return on equity) to measure performance. The signs, magnitude, and significance of the key variables, MANRAT and WORSERAT, were largely unaffected by the alternate definition of performance. ROE was also used in place of ROA in the performance regressions (specification 6); the coefficients of EL_EXTURN were still positive and significant at conventional levels for each of the four time lags of performance (one, two, three, and four years). Substitute measures for liquidity, financial leverage, and credit risk were also considered. An alternative measure of liquidity considered was the difference between federal funds sold and purchased scaled by assets; the significance and magnitude of the coefficients for the key variables of interest, MANRAT and WORSERAT, were found to be relatively unchanged using this measure of liquidity.[29] The simple ratio of total liabilities to assets was considered an alternative measure of financial leverage; again, the use of this measure did not seriously affect the results for the key variable of interest. Lastly, instead of defining credit risk as loans at least 90 days past due, a variable measuring credit risk as loans at least 60 days past due was created. The use of this substitute measure of credit risk also did not substantially affect the significance or magnitude of the coefficients for MANRAT and WORSERAT.

## 5. Conclusions

This paper has examined the relationship between executive turnover and oversight by bank regulators. The results indicate that banks with weaker supervisory

[29] Negative values of this alternative measure of LIQUID indicate net federal funds purchases and thus indicate illiquidity, and increasing values of LIQUID indicate increasing levels of liquidity. A similar definition is used in Wheelock and Wilson (1995).

ratings and banks that have had a recent ratings downgrade are more likely to suffer management turnover. I also find that the portion of the likelihood of management turnover explained by supervisory variables is positively related to a significant degree with future performance.

The results add to the growing body of evidence that the bank examination process uncovers valuable information. In addition, the results are consistent with the explanation that supervisors use this private information to put pressure on ineffective management to resign or to exert pressure on poorly performing management by informing the bank's board of directors of adverse bank examination findings. The results imply that bank supervisors, through the examination process, not only help to insure the safety and soundness of the banking system, but also help to improve the profitability of banks and thereby add value for bank shareholders.

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