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Accounting information and internal performance evaluation

Evidence from Texas banks*

David W. Blackwell
University of Houston, Houston, TX 77204-6284, USA

James A. Brickley and Michael S. Weisbach
University of Rochester, Rochester, NY 14627, USA

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Multi-bank holding companies file detailed financial statements on their subsidiary banks. The availability of these data allows for an empirical examination of the relation between accounting-based performance and personnel decisions for lower-level managers. For our sample of Texas banks, we find that turnover of subsidiary bank managers is negatively related to subsidiary performance, while promotions are positively related to performance. Holding own-bank performance constant, turnover increases with holding-company performance, which is consistent with the view that turnover decisions are based on performance relative to a firm-specific benchmark.

Key words: Contracting; Lower-level management turnover; Relative-performance evaluation

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Correspondence to: Michael S. Weisbach, William E. Simon Graduate School of Business Administration, University of Rochester, Rochester, NY 14627, USA.

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1. Introduction

Measuring the performance of managers below the top of the organization is complicated by the inability to observe market values for the subunits of the firm. A potentially important role of the internal accounting system is to generate information about subunit performance for use in personnel and compensation decisions. The role of the accounting system in the personnel administration of lower-level managers, however, has received little attention in the academic literature.

An important reason for the lack of research in this area is that most companies do not reveal disaggregated information on unit accounting performance, lower-level employee compensation, or even position changes to the public. One industry for which accounting data for subunits are publicly available is banking. In particular, until the late 1980s several states did not permit banks to branch beyond a single location, but did allow banks desiring to operate at multiple locations to organize as multi-bank holding companies.[1] Multi-bank holding companies appear to operate similar to integrated multi-divisional firms. However, in contrast to other integrated companies, multi-bank holding companies are required to file detailed financial statements on their subunits (i.e., subsidiary banks) with bank regulators. Detailed compensation information is not publicly available for subsidiary bank managers. However, information on management turnover and internal position changes is available.

In this paper, we examine the relation between accounting-based performance and the turnover and promotions of managers of subsidiaries of Texas bank holding companies over the period 1984–1987. We focus our attention on three primary topics of interest. First, we examine whether there is a relation between the accounting performance of the subsidiary and the turnover of the manager. Second, we examine the importance of relative-performance evaluation in the turnover decision. We focus particular attention on whether the performance of other managers *within the same organization* is used to filter out the common shocks in the evaluation of employee performance. We also study the potential filtering of shocks to the regional economy, as proxied by the performance of a typical bank in the same geographic region. Third, we study whether internal promotions of bank managers are related to accounting performance.

Our results suggest that accounting measures of performance are used to make decisions about turnover and promotions.[2] Turnover of bank executives

[1] As of 1992, all states allow at least some limited branching (43 allow state-wide branching, while seven allow branching within limited geographic areas).

[2] An equivalent explanation is that some other internally-generated measure that happens to be correlated with accounting numbers is used for making personnel decisions. In either case, the results suggest that the accounting numbers contain information about managerial performance.

is negatively related to own-bank return on assets (*ROA*, after tax and extraordinary items). This relation is quite strong relative to the results of other studies that have focused on top managers of industrial corporations. Our evidence also suggests that measures of relative performance are used in the turnover decision. Holding the *ROA* of the subsidiary bank constant, the likelihood of turnover increases with the performance of the median bank within the same holding company. Finally, we find that the likelihood of promoting the number-two officer in a subsidiary to fill a vacant number-one position is positively related to subsidiary performance.

Because of the high cost of collecting information on bank personnel, it is not feasible to conduct the study on all subsidiary banks in the United States. For reasons discussed below, we limit our examination to Texas banks, rather than sample randomly throughout the country. Because our sample is made up entirely of organizations from one industry in one state, our observations are necessarily relatively homogeneous compared to those of other studies. This homogeneity is both an advantage and a disadvantage. The likelihood that our results are due to a spurious correlation caused by unobserved heterogeneity is reduced. However, care must be taken when generalizing our results since they are based entirely on one regulated industry in one state.

One potentially important limitation of our analysis is that we do not know the reason for the manager departures observed in our sample. Some of the departures are likely to be quits and ordinary retirements. If quits and/or retirements are corr!elated with accounting performance, our results might reflect phenomenon other than executives being fired for poor performance. Other studies, however, have found similar turnover/performance relations for samples including all departures and much smaller subsamples of known firings [e.g., Warner et al. (1988)]. We also present some sensitivity checks that help to control for ordinary retirements.

Section 2 discusses in more detail how our work extends the existing literature. Section 3 discusses the operating policies of multi-bank holding companies and presents institutional details of Texas banks in the mid-1980s. Section 4 documents our sample-selection process, while section 5 presents the empirical results. Section 6 summarizes the study.

2. Related literature

Turnover/Compensation/Performance. There is an extensive literature on the relation between turnover and performance.[3] The general conclusion of this

[3]Papers documenting the relation between top-management turnover and performance include Barro and Barro (1990), Coughlan and Schmidt (1985), DeAngelo and DeAngelo (1989), Gibbons and Murphy (1990), Gilson (1989, 1990), Hermalin and Weisbach (1988), Jensen and Murphy (1990a), Warner, Watts, and Wruck (1988), and Weisbach (1988). A variety of other papers examine the relation between lower-level turnover (e.g., for bank tellers, nurses, engineers, etc.) and performance [see McEvoy and Cascio (1987) for a review].

existing research is that there is a negative relation between turnover and performance. In contrast to our work, none of this research focuses on managers of subunits within organizations.[4] In addition, most of these studies do not examine the use of accounting-based performance measures. Three studies that do find a negative relation between accounting-based performance measures and CEO turnover are Murphy and Zimmerman (1993), Parrino (1993), and Weisbach (1988). In contrast, Barro and Barro (1990) do not find such a relation for their sample of large bank CEOs (although they do find a significant relation between turnover and stock-price performance). The importance of accounting numbers in evaluating the performance and turnover of lower-level employees has not been examined; rather, existing work focuses on performance reviews by supervisors.

Research on incentive compensation has focused primarily on top management.[5] There are, however, at least five papers that document a small but statistically significant relation between compensation and performance for lower-level managers [Abowd (1990), Fisher and Govindarajan (1992), Gibbs (1992), Leonard (1990), and Medoff and Abraham (1980)]. One important advantage of the data sets used in these studies is that they contain actual compensation paid to lower-level managers. Only Fisher and Govindarajan, however, focus on managers of major subunits of the firm. The other papers pool a broad range of employees throughout the organization in their analysis. In addition, only Leonard (1990) includes an accounting-based measure of *unit* performance (change in sales). The other papers use measures of overall firm performance or reviews by supervisors as performance indicators. Survey evidence from Vancil (1978) also suggests that the compensation of subunit managers depends on unit performance. In his surveys of 317 profit-center managers, 90 percent of the respondents receive an annual bonus which is almost always based (at least in part) on the accounting performance of the division.

Finally, a number of studies examine how wages and composition of pay varies across firms, jobs, and hierarchies.[6] The evidence from these papers suggests that the wage differentials across positions are consistent with the

[4]From an accounting perspective, managers of subunits are particularly interesting. These managers have considerable discretionary authority to affect the profitability of their units. However, market values of the units are not readily available. Hence the accounting system potentially generates valuable information for assessing managerial performance. Accounting numbers are not likely to be very informative for lower-level employees who do not have much discretionary authority to affect the overall profitability of their units.

[5]For example, see Antle and Smith (1986), Barro and Barro (1990), Bizjak, Brickley, and Coles (1993), Clinch and Magliolo (1993), Coughlan and Schmidt (1985), Defeo, Lambert, and Larcker (1989), Gibbons and Murphy (1990), Healy (1985), Healy, Kang, and Palepu (1987), Jensen and Murphy (1990a,b), Lambert and Larcker (1987), Murphy (1985), and Sloan (1993).

[6]For example, see Cappelli and Cascio (1991), Gerhart and Milkovich (1990), Hill and Phan (1991), and Lambert, Larcker, and Weigelt (1990).

pattern predicted by the tournaments literature [see Lazear and Rosen (1981)]. However, since these studies do not examine either performance or promotions directly, they are indirect tests of the extent that tournament theory characterizes incentives within corporations.

Relative-Performance Evaluation. One cost of incentive compensation is the risk premium agents charge for being evaluated on measures that are beyond their total control. Thus total surplus is increased by factoring any performance measure that reduces the error with which the agent's choices are estimated into the compensation/turnover decision. In this way, it can be optimal to base employee compensation/turnover on performance measured *relative* to some benchmark such as average performance of workers within the same company or industry [see Holmstrom (1982)]. This type of relative-performance evaluation can provide incentives while filtering out common shocks that affect both the worker and the benchmark group.

Four papers examine whether CEO pay is based on absolute or relative performance [Antle and Smith (1986), Barro and Barro (1990), Gibbons and Murphy (1990), and Janakiraman et al. (1992)]. The evidence from these studies is mixed and provides only weak support for the descriptive validity of the relative-evaluation arguments. Our study extends this research to lower-level managers. An advantage of our research design is that we are able to consider the performance of other employees within the same organization as a benchmark. Since there are likely to be firm-specific effects that are beyond the control of the subunit manager, performance of other managers within the same organization is a potentially important filtering device. In addition, if one is to think of relative performance evaluation as an implication of tournament models such as Lazear and Rosen (1981), then one should examine relative performance within a single organization rather than compare performance between different organizations.

Promotions/Performance. Two studies examine the relation between promotions and performance for lower-level employees.[7] Medoff and Abraham (1980) use data from two large firms, while Gibbs (1992) provides a detailed analysis of one large company. The evidence indicates that there is a positive relation between promotions and ratings from annual performance reviews. We might expect such a result, however, even if promotions are entirely based on factors unrelated to performance (e.g., seniority). In such cases, supervisors have incentives to manipulate the reported performance measure to justify the promotion.

Leonard (1990) documents a negative correlation between the frequency of promotions of lower-level managers and the steepness of pay differentials across hierarchial levels. This finding is consistent with the prediction from tournament

[7]In addition, Rosenbaum (1984) provides a detailed analysis of the promotion process within organizations. However, he does not directly study the promotion/performance relation.

theory that, holding the level of incentives constant, there will be a inverse relation between pay differentials across levels and promotion possibilities. Leonard finds no significant correlation between managerial quit rates and pay differentials across levels in the hierarchy.

We measure promotions by the decision to promote the number-two officer in a subsidiary conditional on the turnover of the number-one officer. Several studies examine the same issue at the CEO level [Dalton and Kesner (1985), Furtado and Karan (1989), Parrino (1993), and Warner et al. (1988)]. The evidence from these papers generally suggests that the likelihood of replacing the CEO with an outsider is inversely related to firm performance.

3. The institutional setting

3.1. Bank holding companies: Organizational structure

Our primary interest is in the use of accounting data in assessing the performance of subunit managers *within* organizations. Multi-bank holding companies are of greater relevance to this goal if they operate as integrated firms, rather than as a loose affiliation of independent banks. Williamson (1975) argues that the 'truly-integrated' multi-divisional firm is characterized by an active central office staff that (1) takes a major role in strategic planning, while delegating operating decisions to the divisional level, (2) actively monitors divisional managers and establishes internal monitoring controls, and (3) assigns the firm's resources to their most productive uses. The existing evidence suggests that the operating policies of the typical bank holding company approximate these criteria. Summarizing the results of several studies, Cornyn et al. (1986) conclude that 'bank holding companies tend to operate their organizations more like single, integrated entities than like collections of commonly owned but autonomous companies'.[8] Consistent with Williamson's notion, holding companies tend to 'exercise control over the management philosophy and broad operating policies of their subsidiaries' [Cornyn et al. (1986), p. 178)], rather than trying to control specific policies such as funds management or capital management. Studies also indicate that holding companies actively transfer funds among subsidiary banks and between the banks and the parent company [Hempel et al. (1986, p. 10) and Mayne (1980a,b)].

While holding companies appear to act as integrated firms, survey evidence indicates that individual bank managers nonetheless have important decision

[8]Cornyn, Hanweck, Rhoades, and Rose (1986, p. 178). For a specific example of the active monitoring role of the holding company see 'Mark Twain Bancshares, Inc.', Harvard Business School Case #9-385-178. In 1984, John Dubinsky, the president of Mark Twain Bancshares, said that 30 to 40 percent of the headquarters personnel were involved in monitoring subsidiary banks.

rights that have a meaningful effect on bank profitability.Whalen (1982) surveys 65 multi-bank holding companies concerning their degree of centralization of decision making (10 of the banks are in Texas). Most of the holding companies in the survey maintain tight control over subsidiary dividend policy, major capital expenditures, and external capital raising. The holding companies also monitor the subsidiaries and offer advice on many key elements of bank management. The holding companies often have centralized computer and other administrative services. Subsidiary managers, however, generally have considerable authority over many operational decisions (e.g., rights to issue certificates of deposit, set loan prices and deposit rates, manage loan and security portfolios, etc). In addition, 80 percent of the holding companies report that they have centralized incentive systems, suggesting that the holding-company managers have delegated enough decision rights to the subsidiary managers so that direct monitoring is not sufficient to align incentives.

To help corroborate the conclusions of the Whalen survey for the banks in our sample, we contact 30 CEOs of subsidiary banks in our sample. Twenty-one of the CEOs answer our survey questions. Over 80 percent of these officers indicate that decision rights for loan pricing, deposit pricing, and personnel decisions for lower-level employees (e.g., tellers) are decentralized to the subsidiary level, while 76 percent indicate that 'aggressiveness of lending policies' is also decentralized to the subsidiary level. Other decisions on asset/liability management, size and composition of the investment portfolio, and liquidity management tend to be more centralized. However, the subsidiary bank manager generally has significant decision rights in these areas as well. All of the holding companies indicate that accounting performance of the subsidiary bank (as measured by return on assets, return on equity, or net income) is at least 'somewhat important' in evaluating the performance of subsidiary bank management (81 percent describe it as 'very important').

Also important for our study is the degree of control exercised by the parent company over the firing and promotion decisions for top management of subsidiary banks. While we know of no large-sample evidence on this topic, evidence from specific banks suggests that the holding-company staff, and not the boards of subsidiary banks, have effective control over personnel decisions for subsidiary presidents and CEOs. A good example is the case of Mark Twain Bancshares, Inc., where the chairman stated in 1984 that he 'personally interviewed every candidate for a managerial job' throughout the holding company ('Mark Twain Bancshares, Inc.', Harvard Business School Case #9-385-178, p. 5). In addition, our survey results suggest that the holding companies tend to exert tight control over hiring, firing, promoting, demoting, and rewarding the top officers in subsidiary banks. In fact, one of the CEOs we interviewed emphasized that far from being 'tight' control, the control of the holding company over management personnel decisions in his bank was 'absolute'.

3.2. Why Texas banks?

During our sample period, there were three types of state branch-banking regulations. Some states allowed no branching whatsoever (called unit-banking states), other states allowed limited branching (within a geographic region such as a county) and other states allowed statewide branching. Of the seven unit-banking states in 1984, four allowed holding companies to operate multiple banks as subsidiaries.

We believe that the analysis of banks in unit-banking states that permit multi-bank holding companies is potentially most fruitful for two reasons. First, subsidiary banks report financial information to federal regulators, while bank branches do not. Second, restrictions on branching increase the likelihood that multi-bank holding companies act as integrated, multi-divisional firms. In nonunit-banking states, firms wanting more centralized control have the option to organize as a set of branches rather than as a holding company. Hence, truly integrated firms in these states might not organize as holding companies.

We concentrate on Texas because it contains over half of the banks covered by regulations that prohibit branching but permit multi-bank holding companies.[9] We do not examine all banks covered by these regulations because of the high cost of data collection. The advantage of our sample-selection procedure is that it enables us to have a relatively large number of observations, while simultaneously ensuring that they are homogeneous with respect to regional business conditions and regulations. The disadvantage is that Texas may be atypical for an unknown reason. Also, we lose the potential advantages of variation in data caused by regional differences.

There were three major types of banks in Texas during our sample period: 1) independent banks, 2) subsidiary banks of single-bank holding companies, and 3) subsidiary banks of multi-bank holding companies. We focus our analysis on the subsidiaries of multi-bank holding companies, since we are interested in subunit managers.

The banking industry in Texas experienced financial difficulty beginning in the late 1980's, the end of our sample period. The median *ROA* (after tax and extraordinary items) for Texas banks dropped substantially, from about one percent in 1984 to about zero percent in 1987. As a comparison, the median *ROA* also dropped, although not as much, in the three other states with similar regulations – from 0.9 percent to 0.7 percent over the same period. Because of the difficult financial conditions prevailing during the end of this period, our sample is likely to contain a disproportionately large amount of variation in the data. This variation potentially makes analysis of these data more useful than analysis of comparable data for other samples. However, the possibility exists

[9]See Brickley and James (1987). Colorado, Missouri, and Montana also had this regulation in our sample period.

that some of our results may not hold up during better financial conditions. In our empirical analysis, we conduct several sensitivity checks and find that our results are not driven by firms in significant financial distress. We also directly control for time effects.

4. Sample selection

4.1. Commercial banks and data availability

All FDIC-insured commercial banks (both independent banks and subsidiaries of holding companies) are required to file detailed financial information with federal regulators. These agencies, in turn, compile the report of condition (essentially the balance sheet) and the report of income and dividends (the income statement) for each insured bank. This information is available to the public on computer tapes through the United States Department of Commerce, National Technical Information Service.[10]

We use this database to collect financial, locational, and holding-company affiliation information for subsidiaries of multi-bank holding companies in Texas for each year between 1984 and 1987. We conclude our analysis in 1987, because in 1988 Texas altered its banking regulations to permit statewide branching. Table 1 provides descriptive statistics for these banks. The table focuses on medians rather than means because most of the distributions are skewed to the right. This skewness is clearly evident for the number of banks per holding company; while there are some very large holding companies, the median holding company has three subsidiary banks. The median asset size for the subsidiary banks is around $60 million. The typical bank has 30 to 40 employees with a salary per employee (including fringe benefits) of around $25,000. As previously discussed, a major slowdown occurred in the banking industry towards the end of our sample period. Return on assets was substantially lower during the latter part of this period. There was also a cutback in employment and a slowdown in wage growth.

4.2. Obtaining employment histories

Given the listing of banks obtained from the Department of Commerce tapes, we attempt to identify the names and titles of all the executives of each bank through the *American Bank Directory*. We are able to obtain this information for each year between 1984 and 1987 for approximately 85 percent of the sample banks. When multiple executives have the same or similar names, we call the

[10]The official title of the dataset is 'Report and Condition and Income for Commercial Banks and Selected other Financial Institutions'.

Table 1

Summary statistics on subsidiary banks of Texas multi-bank holding companies: 1984–1987.[a]

Variable	1984	1985	1986	1987
Number of holding companies	116	136	143	134
Number of subsidiary banks	705	777	808	644
Mean (median) number of subsidiary banks per holding company	6.08 (3)	5.71 (3)	5.65 (3)	4.81 (3)
Minimum–maximum subsidiary banks per holding company	2–66	2–62	2–71	2–45
Median total assets per subsidiary bank ($millions)	57.7	58.1	61.8	60.1
Median return on assets per subsidiary bank (percent)	0.907	0.703	0.160	0.000
Median number of employees per subsidiary bank	43	41	34	33
Median salary/employee per subsidiary bank ($000s)	22.05	24.07	25.11	25.07

[a] Data are from 'Report of Condition and Income for Commercial Banks and Selected Other Financial Institutions', which is published by the Department of Commerce. All subsidiary banks belonging to holding companies with at least two subsidiary banks are included.

bank in question so that we can trace each executive's employment history through time. Through this process, we are able to compile a complete employment history for each executive throughout the sample period, so long as the person remained as an executive with any Texas bank.

Our intent is to examine the incentives facing the officers who have the major operating authority for their units. In the sample, however, some executives have titles that indicate that their major function is either to monitor divisional managers or is largely ceremonial. For example, titles such as 'Chairman of the Executive Committee' or 'Senior Chairman' presumably are honorary. (There were 43 such individuals in 1985.) More common titles include 'Chairman' and 'Vice-Chairman' (with 89 and 298 cases in 1985, respectively). Both our personal conversations with executives and the fact that there are a number of executives who hold these titles at more than one bank, suggest that either these positions are largely ceremonial or are monitoring rather than operating positions. Given our intent, we restrict our sample to officers that have a title commonly associated with an operating officer, either 'CEO' or 'President'.

This restriction leaves us with six different combinations of titles in our sample. Table 2 presents the distribution of titles for 1985. For our empirical work on promotions, we rank the titles in the order they are presented in the table, so that an individual with the title 'CEO, President, and Chairman' would

Table 2

The distribution of titles for Texas bank executives in 1985.[a]

Title	Number of executives with title
CEO, President, and Chairman	68
CEO and Chairman	104
President and Chairman	11
CEO and President	300
CEO	16
President	179
Total	678

[a] Sample includes all executives of subsidiary banks of multi-bank holding companies listed in the *American Bank Directory* in 1985 with a title that indicates that the executive is an operating officer.

Table 3

Frequency of turnover and position changes in subsidiary banks of Texas holding companies: 1984–1986.

Employment status in following year	Number	Percent
No longer with same holding company	321	16.0
Same bank, same position	1393	69.6
Same bank, different title	259	12.9
Different bank, same holding company	21	1.0
Work for holding company[a]	7	0.3
Total	2001	100

[a]Data for this category are incomplete, and hence understate the number of executives who actually become holding company employees.

have the highest possible title in our sample, while an individual with the title 'President' has the lowest possible rank that could make it into our sample. Of course, no bank has executives with all six titles. In 1985, 442 banks in our sample have just one officer, while 115 have two officers and only two banks have three officers. The most common title is a combination of CEO and President with 300 occurrences, while the least common is a combination of President and Chairman with 11.

Table 3 presents descriptive statistics on the frequency of turnover and position changes for banks in the sample. This analysis pools executives across years so each bank executive at a given year end is treated as a separate observation. The table reports the employment status of the executive at the end of following year. The percentage of executives leaving the holding company is 16.0 percent. The percentage of executives that remain in the same bank and keep the same title is 69.6 percent, while 14.2 percent change positions within the holding company. Most position changes involve an executive staying in the same bank but receiving a title change. In only 1 percent of the cases, does

the executive take a new job in a different subsidiary bank of the same bank holding company. The frequency of moving to the central holding company is also low.[11] We find it somewhat surprising that there is not more interbank movement within holding companies, given one of the alleged benefits of a multi-divisional firm is the ability to shift personnel across units [see Williamson (1981)]. Perhaps the knowledge of local customers is so important in evaluating loans and generating business that extensive shifting of personnel across locations is not cost effective.

5. Turnover/promotion and performance for subsidiary bank managers

5.1. Turnover and performance

Ideally, we would like to estimate an equation that predicts the probability that a manager is fired in a given period.[12] Unfortunately, while our data collection process identifies separations of workers and firms, we have no way of telling whether the separation is voluntary or involuntary. We therefore estimate equations that predict whether a manager departs from a holding company, ignoring the reason for the potential departure. The problem of identifying the reason for departure is widespread throughout the entire management-turnover literature. Studies of CEO turnover, however, report similar results using samples that do not condition on the reason for turnover (such as ours) and much smaller subsamples of known firings [e.g., see Warner et al. (1988)]. Our inability to differentiate between firings and voluntary retirements potentially weakens our ability to measure a relation between poor performance and firing probabilities. In addition, if for some reason CEOs near retirement tend to be associated with banks with low *ROA*, we could potentially find a correlation between turnover and firm performance, even if the probability of being fired is independent of performance. We control for this possibility in our sensitivity checks reported below.

To estimate a model that predicts the probability of separations between workers and firms, we pool executives across the years 1984–1986. We set the

[11]However, our data for this category are incomplete. The most comprehensive source of holding-company personnel data that we could identify is *Moody's*, which contains information on less than 20 percent of the banks in our sample. Therefore, we potentially misclassify some executives who move to the holding company as leaving their organizations.

[12]In our discussion, we assume that managers are made worse off by involuntary turnover, so that a negative association between turnover and performance provides incentives for manager to perform well. Note that our results also can be interpreted in the context of the view that quits and layoffs are really the same phenomenon; i.e., part of the process that matches workers with firms [McLaughlin (1990, 1991)]. In this case, poor performance would indicate that the value of the worker to the firm is lower than previously thought. The firm would offer the worker a wage lower than his reservation wage, so he would leave the firm.

dependent variable equal to one if the *top manager* of the subsidiary leaves the holding company during the subsequent year, and zero otherwise. By this definition, executives that move to a different bank belonging to the same holding company are not counted as departures, nor are executives who we identify as becoming employees of the holding company. Because we want to concentrate on internal labor markets, we do not include executives from banks that are acquired or liquidated in our primary estimations. Since the dependent variable is dichotomous, we estimate the model using a logit specification.

We assume that the probability of a manager leaving the firm is a function of subsidiary performance as measured by ROA (after tax and extraordinary items).[13] The *ROA* is for the final full year of employment of the manager (we include lagged values in the specification checks reported below). We do not include the *ROA* in the potential year of departure because the accounting numbers in this year could be affected by the new bank manager. Because it has been documented elsewhere that firm size affects compensation [see, e.g., Brown and Medoff (1989)], and hence could plausibly affect turnover rates, we control for firm size (using the log of assets, since assets have a very skewed distribution). In addition, we include separate year effects to control for industry-wide shocks.

Estimates of the model are presented in table 4. The first two columns report the results using the level of *ROA* as the primary explanatory variable. The second column differs from the first by the inclusion of fixed effects (dummy variables) for each holding company. We include these effects because it seems likely that turnover would vary systematically by holding company. For example, executives might be more likely to leave a holding company that is in financial trouble or for some other reason becomes an unpleasant place to work. The third and fourth columns report estimates of similar equations using the change in *ROA* as the performance measure.

The estimated coefficients on *ROA* from table 4 are all negative and significantly different from zero at conventional levels. These results suggest that managers who do not perform well are replaced. The coefficients on performance are relatively constant across columns, suggesting that the distinction between the level or change in *ROA* as a performance measure is not important.[14] Moreover, the holding company-specific effects are not jointly significantly different from zero at conventional levels using a chi-square test and do not appear to affect the coefficient on the performance measure. This

[13]This statistic is commonly considered an important ratio in determining financial performance for banks. [See Sinkey (1992) or Stickney (1990).] Because it is not clear whether one should use the level or the change in *ROA* as a measure of performance, we conduct all tests using both specifications.

[14]We replicate all the estimated equations discussed throughout the paper using both the level and change in *ROA* as our independent variable. In all cases, the results are comparable. To conserve on space, we only report the results using the level of *ROA*.

Table 4

Logit equations predicting management turnover[a] – Executives of subsidiary banks of multi-bank holding companies: 1984–1986.[b]

Independent variable	Predicted sign	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Constant	?	0.145 (0.21)	− 0.182 (− 0.12)	0.917 (1.24)	0.133 (0.09)
Return on assets	−	− 21.4 (− 5.51)	− 23.1 (− 3.70)	—	—
Change in return on assets	−	—	—	− 17.1 (− 3.71)	− 17.1 (− 2.56)
Log of assets	?	− 0.145 (− 2.27)	− 0.152 (− 1.60)	− 0.230 (− 3.48)	− 0.213 (− 2.15)
Dummy if year is 85–86	?	− 0.263 (− 1.48)	− 0.334 (− 1.54)	− 0.207 (− 1.16)	− 0.267 (− 1.23)
Dummy if year is 86–87	?	− 0.244 (− 1.37)	− 0.236 (− 1.01)	− 0.132 (− 0.75)	− 0.079 (− 0.346)
Holding-company-specific effect included?[c]		No	Yes	No	Yes
Number of observations		1550	1058	1516	1046
Likelihood-ratio index[d]		0.0344	0.0783	0.0207	0.0715

[a]Dependent variable is one if the manager leaves his holding company following a given year, and zero otherwise.

[b]Sample is restricted to the top executive in each bank. Only executives of banks which were not taken over in a given year are included.

[c]The sample used to estimate equations with fixed effects (dummy variables for individual holding companies) is restricted to holding companies for which we had data for at least ten executive-years.

[d]The likelihood-ratio index is defined as [1 − (log-likelihood for estimated model/log-likelihood with all coefficients except the intercept equal to zero)]. It provides a measure of the overall explanatory power of the model similar to an R^2 in a multiple regression.

finding suggests that differences between holding companies are not an important element of the turnover process.

The coefficient of −21.4 on *ROA* (from the first equation) implies that a manager of a bank in the bottom decile of returns ($ROA \leq -3.39$ percent) has a 30.7 percent chance of leaving the firm in the following year, compared to a manager of a bank in the ninetieth percentile of returns ($ROA \geq 1.87$ percent) who has a 12.2 percent chance of leaving the bank.[15] The difference of 18.5 percentage points is noticeably larger than the results reported in the literature for CEOs of large *industrial* corporations. For example, Warner et al. (1988)

[15]The probabilities reported here and in table 5 are obtained by averaging the implied probabilities for all managers in a given *ROA* decile.

estimate that the probabilities of a top management change varies from 12.8 percent for a firm in the bottom decile of returns to 8.6 percent for a firm in the top decile. Weisbach (1988), for a sample that excludes CEOs of ages 64, 65, and 66, estimates that the comparable probabilities range from 3.1 percent to 6.1 percent. Evidence in Barro and Barro (1990), however, indicates that the turnover/performance relation is also relatively strong for CEOs of large publicly-traded banks using stock-price performance measures. For example, they estimate that the likelihood of departure for a CEO of age 50 varies from 0.003 at two standard deviations above average stock-price performance to 25.5 for two standard deviations below average performance. This evidence suggests that the relatively high sensitivity of turnover to performance observed in this study is driven by differences between industrial and financial firms, rather than by differences between top and subunit managers.[16]

Goodness of Fit. To evaluate the extent to which the estimated model conforms to the actual data, we compare predicted and actual turnover probabilities. We calculate the implied probability of turnover for each observation using the model reported in the first column of table 4. We then rank the executives by their bank's *ROA* and average the predicted probabilities over *ROA* deciles. We present comparisons between these predicted probabilities and actual turnover for each decile in table 5. The predicted probability for the bottom decile is 0.307 compared to an actual turnover of 0.342. For the top decile, the predicted and actual probabilities are 0.122 and 0.116, respectively. The model underestimates turnover for badly-performing firms and overestimates turnover for better-performing firms. In contrast to the estimated model, actual turnover rises slightly in deciles 9 and 10. This increase potentially reflects that well-performing subsidiary bank managers are more likely to be promoted to the holding company or to receive an outside offer than average or poorly-performing managers.[17]

[16]To provide further evidence on this topic, we compare the turnover of the managers in our sample with the turnover of CEOs of a sample of independent banks in Texas containing 1,505 bank-years during the same time period. In particular, we pool our sample and the independent bank sample and estimate our basic regression model adding a dummy variable for independent banks and interacting this dummy variable with *ROA*. The results indicate that there is significantly higher turnover among subsidiary bank managers than CEOs of independent banks. However, the turnover to performance relation is similar for the two sets of bank managers (i.e., the coefficient on the interactive term is insignificantly different from zero.)

[17]We have attempted to capture this nonlinearity allowing for the effect of *ROA* on turnover probabilities to vary at very high performance levels, either by including an additional dummy variable indicating that *ROA* is in the top two deciles, or interacting *ROA* with this dummy variable. In either case, the additional variables were insignificantly different from zero, although the point estimate on the interaction term is suggestive that extremely good performance does increase turnover. We also estimate the model including higher-order terms of *ROA* (ROA^2, ROA^3, etc.). These variables are generally significantly different from zero and improve the fit of the model, particularly for very poorly-performing banks. However, they do not give the implication that turnover probabilities increase at high levels of *ROA* as is suggested by table 5; if anything, they perform worse than the table 4 equations at high levels of *ROA*. For example, when ROA^2 is included into the model, the average predicted probability at the top decile of *ROA* is 0.0977, compared to 0.1221 from the basic model. [The actual turnover probability for this decile is 0.1161.]

Table 5

Predicted and actual probabilities of executive turnover – Executives of subsidiary banks of Texas multi-bank holding companies: 1984–1986.[a]

Decile ranked by return on assets	Average return on assets for decile	Average predicted probability of executive departure[b]	Fraction of executives who actually depart
1	− 0.0339	0.307	0.342
2	− 0.0064	0.180	0.219
3	0.0001	0.164	0.187
4	0.0039	0.154	0.168
5	0.0065	0.140	0.161
6	0.0083	0.139	0.116
7	0.0099	0.134	0.084
8	0.0118	0.128	0.090
9	0.0141	0.128	0.110
10	0.0187	0.122	0.116

[a]Sample is restricted to the top executive in each bank. Only executives of banks which were not taken over or liquidated in a given year are included.

[b]This column contains the average departure probabilities predicted by the estimated equation in the first column of table 4 for all firms in a given *ROA* decile.

Out-of-Sample Predictive Ability. An additional way of gauging the fit of the model is to examine its out-of-sample predictive ability. To do so, we randomly select half the executive-years and re-estimate the basic equation (from column 1 of table 4) on this subsample. We then consider the predictive power of the estimated equation on the other half of the sample. We classify executives as either 'likely to turn over' or 'unlikely to turn over' according to whether the predicted probabilities fall above or below various cutoffs. Given that we are not using this procedure to make decisions to maximize some objective function [as in Palepu (1986)], there is no *a priori* 'correct' cutoff. We present the results for a variety of different cutoffs as a general way of testing the predictive power of our model.

Table 6 presents the results of these out-of sample predictions using three different cutoffs: 50 percent, 25 percent, and 14.6 percent (which is the point that equalizes the number of observations with predicted probabilities above and below it). The predicted number of turnovers in each category is generally just slightly higher than the actual turnover rates, which probably reflects the fact that the estimation subsample has a slightly higher turnover rate than the prediction subsample (127 turnovers out of 775 potential turnovers for the estimation sample, compared to 120 for the prediction sample). In addition, the fraction of actual turnovers falls within the predicted area in each case. (For example, the fraction of turnovers in the 'greater than 50 percent category' is in fact greater than 50 percent.)

Table 6

Out-of-sample predictions of turnover[a] – Executives of subsidiary banks of multi-bank holding companies: 1984–1986.[b]

	Likely to turn over[c]			Unlikely to turn over[c]			
Cut-off probability	Number in category	Expected number (fraction) to turn over	Actual number (fraction) that turn over	Number in category	Expected number (fraction) to turn over	Actual number (fraction) that turn over	*P*-value from chi-squared test[d]
50%	7	4.6 (0.652)	4 (0.571)	768	122.1 (0.159)	116 (0.151)	< 0.01
25%	61	22.5 (0.369)	19 (0.311)	714	104.2 (0.146)	101 (0.141)	< 0.01
14.6%	387	81.2 (0.210)	74 (0.191)	388	45.8 (0.118)	46 (0.119)	< 0.01

[a]Of the 1550 executive-years in the entire sample, 775 are chosen randomly as an 'estimation' subsample, on which the following turnover equation is estimated:

$$\frac{\text{Log (Probability of Turnover)}}{\text{(1 – Prob. (Turnover))}} = 1.21 - 21.0\,ROA - 0.233 \text{ Log (Assets)} - 0.342 \text{ Dummy} \quad \text{if Year} = 85, \quad - 0.387 \text{ Dummy} \quad \text{if Year} = 86.$$

This table presents the predictive ability of this equation on the remaining 775 observations.

[b]Sample is restricted to the top executive in each bank. Only executives of banks which were not taken over in a given year are included.

[c]Executives are classified in the 'likely to turn over' category if the predicted probability from the estimated equation is greater than the 'cutoff probability' for the given row.

[d]The null hypothesis is that predicted and actual turnover are independent for the given cut-off. For this test all executives above the cut-off are predicted to depart while executives below the cut-off are predicted to stay.

The percentages of correct classifications (hit rates) for the 50, 25, and 14.6 percent cut-offs are easily calculated from the data in table 6. For example, for the 50 percent cut-off the hit rate is 84.65 percent.[18] Since only seven executives have predicted probabilities above 0.5, this hit rate is only trivially larger than the hit rate for predicting that all executives will not turn over (84.52). The percentage of correct classifications is lower for the 25 and 14.6 percent cut-offs (81.55 and 53.08 percent, respectively). This decline is expected since at low cut-offs a relatively large proportion of those predicted to depart would be misclassified even if the model were exactly correct. The percentage of correct predictions for the stayer category, however, increases as the cut-off is lowered (84.89, 85.85, and 88.14 percent, respectively). A chi-squared test rejects the null hypothesis that the actual and predicted turnover are unrelated for all three cut-offs at better than the 1 percent level.

Sensitivity Checks. To check if our results are being driven by firms in extreme financial distress that are correspondingly downsizing, we re-estimate the equation (in column 1 of table 4) for the 630 executive-years for which the bank's total employment increased in the year during which the manager potentially leaves. The coefficient of -21.6 on *ROA* is virtually unchanged from the entire sample and is significantly different from zero at the 1 percent level. This result suggests that there is monitoring of bank managers that is independent of overall growth or shrinkage of the bank.

Another possible factor that could explain the turnover/performance relation is regulatory pressures on banks that are near or below their required capital ratios [see Houston and James (1992)]. To examine this possibility, we re-estimate the equation for the subsample of 1,414 executive-years for which the bank had a primary capital ratio of over 6 percent.[19] The coefficient of -25.5 on *ROA* is actually larger in absolute value than for the full sample and again is significantly different from zero at the 1 percent level. This result suggests that regulatory pressure is not the driving force behind the basic result.

As previously discussed, we would like to focus exclusively on firings. However, at least some of the turnover in our sample is likely to be due to ordinary retirements or voluntary job changes. We would like to use CEO age at departure as a proxy for ordinary retirement, as has been done in the literature on the turnover of CEOs of large industrial corporations, but we are unable to obtain the ages of executives in our sample. We are, however, able to examine

[18]This percentage is equal to the number of correct classifications for those predicted to stay (4) plus the number of correct classifications for those predicted to stay (652) all divided by the total number of executives (775) multiplied by 100: $[(4 + 652)/775] \times 100 = 84.65$

[19]Federal bank examiners evaluate capital adequacy using accounting-based ratios. The primary capital-adequacy ratios equal: [stockholders' equity + loan loss allowance + qualifying debt]/[total assets + loan loss allowance]. Required primary capital varies across bank regulators and time but is typically below 6 percent [see Moyer (1990)].

separately executives who were not officers in the same holding company in 1984 and who were newly appointed to their positions after the start of our sample period. Presumably, a bank is unlikely to appoint a new executive officer from outside the firm who is expected to reach ordinary retirement within a short time period (recall that the last year in our sample period is 1987). For this subsample of 244 'recent appointments', the estimated coefficient on *ROA* is −15.5 and is significantly different from zero at the 1 percent level. This result provides at least some assurance that our results are not solely a function of ordinary retirements.

We also estimate models where we include the first, second, third, and fourth lags of *ROA* in addition to the *ROA* from the year prior to the potential resignation. The coefficients on lagged values are all small and insignificantly different from zero at conventional levels. These results are consistent with previous work [Warner et al. (1988) and Weisbach (1988)] which documents that replacements of CEOs occur rather quickly relative to the timing of poor performance.

In addition, we estimate models including contemporaneous *ROA* (in the year of the potential departure) into the model. The coefficient on this variable is −12.5 and is significantly different from zero at the 1 percent level, while the coefficient on lagged *ROA* drops to 12.7, but is still significantly different from zero at the 1 percent level. There are two potential interpretations for this effect: Managers could be penalized for poor performance during the first part of the year and hence fired during the same year, or new managers could take a 'big bath' during the first year of their new tenure [see Murphy and Zimmerman (1993) for discussion of the 'big bath' hypothesis and the related evidence]. Since we do not know exact departure dates nor do we have information on performance within a year, we cannot distinguish between these explanations.

As an alternative to including holding-company fixed effects in the equation, we also estimate the model by only including one bank from each holding company. We also estimate models where we control for the general level of turnover throughout the holding company by including the fraction of executives in the holding company subsidiaries that turned over (excluding the bank in question). In all cases, the results are similar to the table 4 results.

Because of potential bank-specific dependence over time, we re-estimate our equation using separate models for each year (eliminating the year effects from the specification). In each case the coefficient on *ROA* is negative and significantly different from zero at the 1 percent level. It is also possible that exogenous changes in the banking environment occurring during our sample period could be affecting our results. Since Texas significantly altered its banking regulations in 1988, it is possible that some of the observed turnover in the latter part of our sample period is caused by shifts in corporate strategy induced by the anticipated changes in regulation. Also, the latter part of our sample period was a time of economic distress for Texas banks. The relation between turnover and

performance does vary across years. The coefficient of −42.3 on *ROA* for 1984 is significantly more negative than the coefficient of −15.1 for 1986. This result suggests that the 'unusual' events in the Texas banking industry in 1986 works against our finding a strong relation between turnover and performance.

Given that there is no compelling theoretical reason for including firm size into the equation, we re-estimate the results in table 4 and throughout the paper without firm size in the equation. The results are virtually identical to the ones we report.

We are also concerned that the results might be solely a function of turnover at the lead bank of the holding company. Officers in the lead bank are sometimes officers in the holding company, and therefore might be more appropriately classified as top executive officers than subsidiary bank managers. The results, however, are essentially identical when we eliminate the lead bank (as measured either by asset size or employment) from the analysis.

As a final sensitivity check, we estimate the model including the 83 cases where ownership of the subsidiary bank is transferred between holding companies (these banks were excluded in the table 4 estimations). The coefficient on *ROA* is −20.24 and is significantly different from zero at the 1 percent level. The turnover rate for the top officers of the 83 acquired subsidiary banks (during the year following acquisition) is slightly higher than for banks that are not acquired (18.1 percent compared to 16.0 percent). However, the difference is not significantly different from zero (p-value = 0.61). Within the acquired bank sample, the median *ROA* for the 15 banks with top-management turnover is 0.0038, compared to 0.0019 for the 68 banks without turnover. The Wilcoxon rank-sum test does not reject the null hypothesis of equal medians for the two subsamples (p-value = 0.50).

5.2. *Relative-performance evaluation*

The analysis of Holmstrom (1982) suggests that it can be efficient to filter common shocks from the evaluation of employee performance. Filtering common shocks can provide a more precise measure of the agent's actions and correspondingly lower the costs of imposing risk on the agent. For example, basing the executive's compensation on the performance relative to some benchmark, such as the performance of banks in similar circumstances, can provide incentives without exposing executives to risk-increasing factors beyond their control.

To examine the empirical validity of these arguments, we estimate relative-performance models in table 7. The first two equations use the *ROA* of the median bank *within the same holding company* (excluding the bank of interest) as the potential benchmark. In the first model, we include the actual benchmark

Table 7

Logit equations testing for relative performance evaluation in management turnover[a] – Executives of subsidiary banks of multi-bank holding companies: 1984–1986.[b]

Independent variable	Predicted sign	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Constant	?	− 0.115 (− 0.16)	0.111 (0.15)	0.471 (0.61)	0.531 (0.70)
Return on assets	−	− 21.2 (− 4.87)	− 12.6 (− 2.85)	− 18.4 (− 4.34)	− 15.8 (− 3.38)
Return on assets for median bank in the holding company[c]	+	11.9 (1.46)	—	—	—
Dummy equal to 1 if *ROA* is above the median bank in the holding company[c]	−	—	− 0.625 (− 3.76)	—	—
Return on assets for median bank in the county[c]	+	—	—	2.86 (0.24)	—
Dummy equal to 1 if *ROA* is above the median bank in the county[c]	−	—	—	—	− 0.203 (− 1.15)
Log of assets	?	− 0.130 (− 2.01)	− 0.122 (− 1.90)	− 0.179 (− 2.59)	− 0.175 (− 2.55)
Dummy if year is 85–86	?	− 0.247 (− 1.35)	− 0.249 (− 1.36)	− 0.304 (− 1.55)	− 0.301 (− 1.54)
Dummy if year is 86–87	?	− 0.209 (− 1.08)	− 0.223 (− 1.19)	− 0.176 (− 0.81)	− 0.171 (− 0.87)
Number of observations[d]		1475	1475	1309	1309
Likelihood-ratio index[e]		0.0279	0.0373	0.0306	0.0317

[a]Dependent variable is one if the manager leaves his holding company following a given year, and zero otherwise.

[b]Sample is restricted to the top executive in each bank. Only executives of banks which were not taken over in a given year are included.

[c]Medians are computed excluding the bank in question, so for a given bank it equals the median *ROA* of all other banks in the holding company or county in the same year. Banks for which we do not have data for other banks in the same holding company or county are eliminated from the analysis.

[d]The number of observations varies across columns because there are some counties or holding companies with only one bank in our sample. Multi-bank holding companies can have only one bank in our sample if there is missing data or if one of the banks is not listed in the *American Bank Directory*.

[e]The likelihood-ratio index is defined as [1 - (log-likelihood for estimated model/log-likelihood with all coefficients except the intercept equal to zero)]. It provides a measure of the overall explanatory power of the model similar to the R^2 in a multiple regression.

ROA as an explanatory variable.[20] Theory predicts a positive coefficient on this variable, so that holding own-bank performance constant, the likelihood of turnover is expected to increase with the performance of other banks within the holding company.[21] In the second model, we include a dummy variable equal to one if the subsidiary outperforms the benchmark bank. We include this ordinal measure because of the observation that firms often employ incentive schemes that are characterized as rank-order tournaments (rewards are based on ordinal performance of co-workers). For example, Baker et al. (1988) argue that promotion schemes are the most common incentive devices in American corporations. In addition, companies frequently reward salespeople for having the highest sales in the region, etc.[22] If holding companies use this type of ordinal measure in their retainment decision, we would expect a negative coefficient on this dummy variable.

The empirical results generally support the relative-performance arguments. The coefficient for the benchmark *ROA* is positive and marginally significant (one-tailed p-value = 0.07). The coefficient on the ordinal measure of performance is negative and highly significant.[23] These results indicate that turnover of subsidiary bank managers is not only a function of own-bank performance, but also a function of how the bank performs relative to other banks within the same holding company.

As a second potential benchmark, we use the *ROA* for the median bank in the same county (excluding the bank of interest). If all banks in the county are affected by similar regional shocks to profitability, efficiency gains are possible by filtering these shocks when evaluating the managers' performance. We estimate two models to test for filtering of regional shocks. The first includes the

[20]This specification is similar to that of Gibbons and Murphy (1990) who test for relative-performance evaluation of CEOs by regressing the change in CEO compensation against the firm's own stock return, the return on the S&P 500, and the return for the industry.

[21]Without additional restrictions the theory is silent on the relative magnitude of the coefficients for own-bank and benchmark-bank performance. Generally the weight on the coefficient for the benchmark bank is expected to increase with the covariance between benchmark-bank and own-bank performance and decrease with the variance of benchmark-bank performance [see Milgrom and Roberts (1992, p. 219)].

[22]Why firms would base incentives on rank order rather than the distance from some standard (such as average performance) is not clear in the case of continuous variables such as sales revenue or accounting performance. However, if measurement problems (e.g., accounting numbers are subject to some manipulation, etc.) are severe enough, the rank is potentially more informative about the underlying effort or ability of the manager than the actual distance from some standard. This possibility, however, seems somewhat unlikely. Alternatively, rank-order tournaments might proxy for some underlying optimal incentive scheme that is nonlinear in the performance indicator. Here the rank-order tournament might be chosen because it is less expensive to implement or because the optimal scheme is not known with precision.

[23]We obtain similar results when we include higher-order terms for own-bank *ROA* (e.g., ROA^2 and ROA^3). Hence the results for the ordinal measure do not appear to be driven by potential nonlinearities between turnover and own-bank *ROA*.

actual benchmark *ROA* as an explanatory variable, while the second contains a dummy variable equal to one if the bank outperforms the benchmark. Relative-performance arguments predict a positive coefficient on the *ROA* of the benchmark bank and a negative coefficient for the dummy variable.

The results do not support the view that performance relative to some regional benchmark is used when evaluating bank managers. In both specifications, the coefficient on the benchmark variable is insignificantly different from zero. One possible explanation for these findings is that the *ROA* for the median bank in the county is not highly correlated with individual bank performance. In this case, there would be little to gain by including it (or a related proxy) in the evaluation scheme. However, the data suggest that regional shocks are clearly present in our sample since the correlation coefficient between individual bank *ROA* and *ROA* for the median bank in the county (other than the bank in question) is 0.214 (p-value = 0.00).

Janakiraman et al. (1992) suggest an additional test of the relative-performance argument. In particular, complete filtering of the performance of other banks within the same holding company implies that the executive is evaluated on a measure that is orthogonal to our holding-company performance measure. In this case, turnover should be unrelated to holding-company performance in an equation that does not include own-bank performance. Based on this idea, we re-estimate the equation from the first column of table 7 omitting own-bank performance. The results are consistent with the relative-performance hypothesis – the coefficient on holding company becomes small and insignificantly different from zero (coefficient = 3.74, p-value = 0.60). This additional test also suggests complete filtering for the county-bank benchmark. When the *ROA* of the median bank in the county is included without own-bank *ROA*, the coefficient is 2.06 with a p-value of 0.85.

5.3. *Promotions and performance*

The possibility of a performance-based promotion is commonly considered to be a major source of incentives to employees in most American organizations [see, e.g., Baker et al. (1988, p. 600)]. Yet, little empirical work documents the extent to which performance, in addition to other factors such as seniority, plays a role in determining promotions.

Given the data available to us, measurement of promotions and associated performance is not trivial. We can trace movements of executives across positions within a bank so that we can determine when an executive changes to a higher title (using the title definitions discussed in section 4). The only performance data available to us, however, are for the entire subsidiary bank. Earnings for a bank are likely to be a function of the performance of the lower-level employee who is being promoted as well as other executives in the

bank. Most commonly, we expect promotions to occur where a lower-level employee has performed well and there was an open position for him to fill. Yet, the results from section 5.1 suggest that openings occur on average following poor performance. Thus, even if all promotions were based entirely on good performance of the lower-level managers, performance for the banks as a whole could be below average. We would expect this to be the case if promotions of lower-level managers tend to occur after the firing of a higher-level manager (who due to position is more likely to affect overall bank performance). We can, however, construct a test of the hypothesis that promotions are based on performance by considering only the cases where an opening higher in the bank exists. By considering only the banks where there was an opening, we can control for this type of selection bias. If internal promotion decisions are based on performance, we would expect better performance for the banks in which the lower-level executives were promoted than for the banks in which they were not promoted.[24]

To test this hypothesis, we consider the 82 executive-years for which we observe a number-two officer in a bank for which the number-one officer departs in the subsequent year. At the end of departure year, the 82 number-two executives can be classified as follows: 46 were promoted to be the top officer, six left to take higher-ranking jobs at other Texas banks, and 30 were not promoted and did not take higher-ranking jobs at other Texas banks. We define the 'promotion subsample' as the 46 cases where the executive was promoted. We define the 'nonpromotion subsample' as the 30 cases where the executive was not promoted and did not take a higher-ranking job elsewhere. The mean *ROA* (in the final full year before the opening) is 0.0018 for the promoting subsample, compared to -0.0095 for the nonpromotion subsample.[25] The median returns are 0.0056 and 0.0021, respectively. The returns for the two subsamples are significantly different (p-values for the standard F-test and Wilcoxon rank-sum test of 0.025 and 0.079, respectively). This basic result also holds when we control for year and size effects using a regression of *ROA* on a dummy variable indicating a promotion occurred, year dummies, and the log of assets. With this specification, the coefficient on the promotion dummy variable is positive and significantly different from zero at the 7 percent level.

In the nonpromotion subsample, nine of the replacement top officers were other internal managers from the same bank, two were officers of other banks within the same holding company, and 19 were not officers at any bank in the

[24]The assumption is that subsidiary *ROA* is a function of performance of both the number-one and number-two officers. Holding the performance of the top officer constant across firms with turnover, *ROA* is expected to be higher when the number-two officer performs well.

[25]The mean and median *ROAs* for the six cases where the executive left for a higher-ranking position at an other bank are 0.0122 and 0.0124, respectively. These relatively high returns suggest that the labor market values executives of banks with good accounting performance.

holding company. Since it is not clear how one should interpret the bank performance in the case when the replacement is not the number-two officer but is another officer from the same bank, we also compare the performance of the promotion sample to the 21 cases where the new officer was chosen from outside the same bank. Once again, the *ROA*s are significantly different from one another using a test of means, a Wilcoxon rank-sum test, and a regression controlling for year and size.[26] Overall, the results suggest that performance of the individual is one determinant in the promotion decision.

Another potential source of within-organization promotions is through movements within the same holding company. In our sample, we observe 21 movements to other banks within the same holding company. Presumably, a movement to a larger bank is most likely to be perceived as a promotion. The median *ROA* for the banks of the 12 executives that move to smaller banks is 0.044 percent, compared to 0.78 percent for the nine executives who move to larger banks. However, the difference in the median *ROA*s is not significantly different from zero (p-value on Wilcoxon test = 0.75). An alternative way of characterizing cross-bank movements as promotions or demotions is to consider the change in position the executive has within the new bank. For the eight cases where the executive moves to a higher-ranked position (using the rankings listed in table 2), the median *ROA* of his bank is 1.06 percent, compared to 0.16 percent for the 13 cases where the executive moves to a lower position. The difference between these *ROA*s is significantly different from zero using a Wilcoxon test (p-value = 0.003). Because of the small sample size, we are reluctant to interpret this result too strongly, but it certainly is suggestive that cross-bank transfers are based on performance.

6. Summary

This paper analyzes personnel policies for a sample of Texas banks. We analyze Texas banks because of reporting regulations that allow access to data that commonly are not available for other organizations. These data allow us to examine the use of accounting-based performance measures for lower-level managers (where relevant stock-price data is not available for assessing performance).

We find that there is a strong and negative relation between turnover probabilities of subsidiary bank managers and own-bank *ROA*. In addition, our results are consistent with the theory of relative-performance evaluation. Controlling for own-bank performance, the likelihood of turnover falls if the bank

[26]Within the nonpromoting subsample, the returns for the 21 banks appointing outside replacements are indistinguishable from the returns of the nine banks appointing lower-level officers (below number-two). The mean returns are − 0.0095 for each subsample.

outperforms the median bank *within* the same holding company. Finally, given an opening, the decision to promote internally rather than hire a manager from outside the subsidiary is positively related to the performance of a subsidiary bank. While the inability to observe the reason for departure potentially clouds the interpretations of our results, the findings are nonetheless consistent with the view that firings and promotions are used as incentive devices for subsidiary managers and that accounting data contain information about subsidiary manager performance. More generally, they suggest that accounting information plays an important role in the performance measurement system for making personnel decisions within the banks in our sample.

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