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A study of the corporate governance of thrifts

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Abstract

We study corporate governance within the thrift industry during a period of industry distress and legally mandated regulatory vigilance. We find evidence consistent with the Office of Thrift Supervision displacing the disciplinary role of takeovers in the market for thrift control. Poorer prior thrift performance is associated with a greater likelihood of censure while better prior performance is associated with a greater likelihood of acquisition. For thrifts that are not censured or acquired, there is no relationship between current performance and managerial turnover. Replacement due to retirement rather than board discipline explains most of these turnovers. This result is consistent with the notion that regulation may deter board disciplinary behavior, also suggested by Kole and Lehr [Journal of Financial Economics 52 (1999) 79].

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1. Introduction

Corporate governance is primarily concerned with how equity investors induce managers to provide them with an appropriate return on their invested capital. [1] One solution to this agency problem is to discipline poor managers or management teams for their failure to provide investors with an adequate return on their invested

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[1] See Shleifer and Vishny (1997).

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capital. Poorly performing managers in unregulated firms face disciplinary pressures from both internal and external corporate control mechanisms. Internally, the board of directors is responsible for monitoring managers and replacing them in the event of inadequate performance. Externally, takeovers provide an opportunity for outsiders to enforce managerial discipline, including board discipline. In contrast to unregulated industries, poorly performing managers in regulated industries face disciplinary pressures from three potential sources: the board of directors, takeovers, and their regulator. Our paper is focused on the operation and interaction of these three mechanisms in the thrift industry during a period of industry distress, a period in which these mechanisms would be expected to operate most visibly.

To present evidence on the operation of these corporate control mechanisms, we organize our paper as follows. Section 2 presents a summary of prior research on the operation of corporate control mechanisms in unregulated industries and in banking, the industry most similar to thrifts in its regulatory design. Section 3 describes our research methodology, sample, and sample variables. Section 4 presents evidence on the operation of external mechanisms of corporate control during our study period. Section 5 presents evidence on the operation of internal mechanisms of corporate control during this same period. Section 6 concludes the paper with a summary of our results.

We find evidence consistent with the notion that Office of Thrift Supervision (OTS) oversight displaces the disciplinary role of takeovers in the market for thrift control. The poorer the prior performance of a thrift, the higher the likelihood of OTS censure. In contrast, the better prior performance of a thrift the more likely it will be acquired. In exercising its discipline, the OTS appears to discriminate between firms as it does not liquidate all censured thrifts. Rather, depending upon the thrift's performance, it replaces management and allows the thrift to remain publicly traded. Concerning board discipline, we find no relationship between current performance and managerial turnover for thrifts that are neither censured nor acquired. For these thrifts, most CEOs that leave the firm appear to be retiring, and for those that are not, there is no linkage between turnover and performance. Consequently, we conjecture that OTS oversight is also influencing the role of board discipline since we find no evidence of boards disciplining poorly performing CEOs prior to a thrift's censure by the OTS. Such a conclusion is consistent with the argument and evidence in Kole and Lehn (1999) that regulation deters or mitigates board discipline.

2. A selective summary of prior evidence on corporate control mechanisms

There have been a large number of studies to examine internal and external corporate control mechanisms in unregulated firms; many of which are discussed in Shleifer and Vishny (1997). The evidence in the United States suggests that boards of directors of unregulated firms tend to remove poorly performing managers (see, for example, Coughlan and Schmidt, 1985; Warner et al., 1988; Weisbach, 1988; Jensen and Murphy, 1990; Murphy and Zimmerman, 1991).

The evidence related to the operation of the external market of corporate control in unregulated industries is less clear. [2] While Jarrell et al. (1988) conclude from their survey of the evidence on the takeover market that it does operate to discipline poorly performing firms, it is not clear how stringent the mechanism is. For example, after correcting for methodological errors affecting previous studies that predict acquisition targets, Palepu (1986) finds that while his prediction model is statistically significant, it has low explanatory power. Such evidence suggests that while the external market operates to discipline some poorly performing management teams, it does not discipline all those for which board discipline has failed to be effective.

Morck et al. (1989), (hereafter, MSV) find that there is a complex interaction between internal and external control mechanisms in unregulated industries. They argue that hostile takeovers occur when the board fails to discipline managers. Hostile takeovers tend to occur at firms in poorly performing industries and include a disproportionate number of "one-man" management teams. Friendly acquisitions seem to occur frequently when a firm in a healthy industry is performing poorly.

In the banking industry, the most similarly regulated compared to the thrift industry, we find studies examining a selected number of issues. Concerning the external market for corporate control in banking, Hadlock et al. (1999) find that banks are less likely to be acquired when they have higher levels of management ownership. They do not find any evidence that either performance, measured by ROA, or any other variable, including the percentage of stock owned by outside directors, influences the probability of being acquired.

Concerning the interaction between internal and external mechanisms for corporate control in the banking industry, Brickley and James (1987) find no evidence of substitution between the internal and external markets for corporate control; that is, more independent boards (greater outside membership) do not arise where the market for takeovers is weaker. Concerning the issue of how regulatory discipline influences other disciplinary mechanisms, Hubbard and Palia (1995) find that CEO turnover increased after the deregulation of interstate banking.

Refining MSV's methodology, Prowse (1997) examines the effect of regulation on the interaction between the internal and external markets for corporate control for bank holding companies. Prowse concludes that bank boards respond, but appear to be less stringent in monitoring managers than the boards of manufacturing firms. He finds that this is not due to differences in outside board ownership or insider equity stakes. He also finds that hostile mergers are not an important factor in disciplining management and that friendly mergers occur among banks that are performing well. Intervention by regulators is the primary means of disciplining management.

[2] One difference between regulated and unregulated industries is the degree of product market competition, which is a major market mechanism for disciplining firms. On one hand, DeFond and Park (1999) find that the frequency of CEO turnover is greater in highly competitive industries than in less competitive industries. On the other hand, Fee and Hadlock (2000) find no evidence that the turnover-performance relationship varies with market structure.

Given this background, we focus on stock institutions in the thrift industry during the early 1990s for four reasons. First, Esty (1998) argues that stock thrifts have separable fixed and residual claims and finds that unconstrained stock thrifts increase their risk exposure after conversion from mutual thrifts. Separately, Cole and Mehran (1998) demonstrate increased performance of thrifts after mutual to stock conversion. Consequently a consideration of how thrift governance mechanisms address risk/performance trade-offs in disciplining managers is potentially interesting.

Second, this period was a period of widespread industry distress. Thus, we argue that this is an excellent period to observe the operation of different mechanisms to discipline poorly performing firms for it is less likely that such mechanisms will be as visible when an industry is doing well.

Third, this period represents the beginning of a new regulatory regime produced by a series of prior legislative actions. The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) eliminated the Federal Home Loan Bank Board as the thrift regulator and created the OTS, charging it with the responsibility of overseeing and regulating the thrift industry. [3] In executing this responsibility, the OTS can engage in a wide range of actions: ranging from approving thrift mergers to forcing the removal of managers. FIRREA enhanced enforcement powers, increased civil and criminal penalties, and allowed the FDIC to formally suspend or terminate deposit insurance with short notice. The Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICA) further enhanced regulators' incentives by mandating specific regulator responses. For example, regulators are required to take prompt corrective action (PCA) whenever a thrift's capital position declines below that of the "well-capitalized" category. [4] PCA requirements depend on the degree of under-capitalization and include limiting dividends, requiring the raising of additional capital, restricting officer pay, and forcing receivership. [5] As evidence of regime change, Cebenoyan et al. (1999) find that thrifts with high levels of managerial ownership and low charter values exhibit high risk and declining profitability in the mid-1980s but not "during the period of regulatory stringency, 1989–1993".

And finally, we know of no other study of the interaction of these three disciplinary mechanisms (board discipline, takeover discipline, and regulatory discipline) within this regulatory regime.

[3] See White (1991) for a comprehensive review and analysis of the FIRREA provisions. Of special note is the fact that White describes FIRREA as an "Act of anger": Congressional anger with the thrift industry and with thrift regulators.

[4] General Accounting Office (1996).

[5] During the 1980s, thrifts were utilizing "regulatory accounting practices" (RAP) that allowed them to defer loan losses on assets and include so-called "goodwill" from mergers as an amortizing asset. The passage of FDICIA in 1991 set in place a structured early intervention and resolution system based on generally accepted accounting principles (GAAP) capital but still did not meet the Financial Accounting Standards Board's (FASB) standards for marking securities to market. The lack of market value accounting affects all firms generally but affects thrift firms even more.

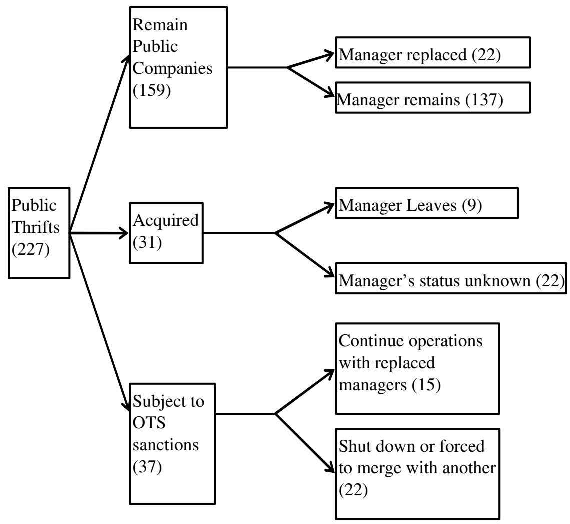

Fig. 1. Distribution of sample firms by transition states.

3. Description of research design, sample, and variables

3.1. Research design

The design of our study differs from some prior studies because we are particularly interested in the timing and sequencing of several events/states. Specifically, we are interested in what influences the likelihood of a thrift being acquired, or censured by the OTS, or continuing as a public concern, given that it was a public concern at the beginning of 1991. Given that a thrift was acquired, we want to examine what happened to the CEO of the acquired thrift. Given that a thrift was censured by the OTS, we want to know what happened to the thrift and its CEO. Finally, given that a thrift continued as a public concern, we want to know if boards removed poorly performing CEOs. Conceptually, this is like studying a Markov chain, with different states that are each contingent on the immediately prior state. [6] Fig. 1 presents a tree graph that illustrates the sequence and states of interest.

3.2. Sample and data sources

Given this design, we construct a sample of thrifts that were publicly traded at the beginning of 1991 and subject to OTS oversight. Most thrifts were unprofitable

[6] One reason for performing this type of analysis is that the literature on corporate control has focused on these transitional states. For example, studies of external corporate discipline have studied influences on the odds of a firm being acquired, conditional on it being public before the acquisition. Similarly, studies of internal corporate discipline have compared firms in which the CEO has been removed to firms in which the CEO has not, conditional on the sample firms being public during the sample period.

in 1990, resulting in a substantial number of changes in thrift control in 1991 and allowing the OTS to demonstrate its willingness to discipline poorly performing thrifts. Consequently, the time period selected is an excellent one to observe the effects of OTS oversight on external and internal processes to discipline thrift managers.

To identify our sample of thrifts whose stock was publicly traded at the beginning of 1991 we begin with a list of 370 such firms in the April 1991 issue of SNL Securities' *SNL Quarterly Thrift Report*. From this initial sample, we eliminate thrifts not subject to OTS oversight in order to focus on OTS regulated thrifts. The resulting sample represents 227 publicly traded thrifts subject to OTS oversight.

For these 227 thrifts, we collect accounting and stock data from various sources for 1987–1990. We obtain from the OTS current and three lagged years of balance sheet information from its *Thrift Financial Report: Statement of Condition* as well as the composite ratings from its internal examination process. We calculate market value and stock return measures from the Center for Research in Security Prices (CRSP) data tapes for each sample thrift during the years: 1987, 1988, 1989, and 1990. We also gather stock ownership information from *SNL Quarterly Reports* and company proxy statements.

We classify a thrift continuing as a public firm, or being acquired, or being censured based upon the initiation rather than the conclusion of external control changes during 1991. [7] For our sample thrifts, we examine news stories from *SNL Quarterly Reports*, the *Wall Street Journal Index*, Moody's financial industry reports, *Dow Jones News Retrieval Service*, and *Lexis–Nexis* related to potential takeover or censure during calendar year 1991. We then continue gathering news stories about the firm until we are able to resolve the final state if it is resolvable. For the cases we are able to resolve, all of the resolution occurs before the end of calendar year 1993.

In the case of potential takeovers, we determine whether an acquisition subsequently occurs and attempt to determine the status of the CEO. [8] If the acquisition does not occur, then we classify the firm as a continuing thrift. If a thrift was in the process of being acquired in 1990, then it is not included in our sample. We classify a thrift as censured if 1991 news first reports that it is being censured by the OTS or is subject to an OTS review that leads to censure. Censure requires the OTS to undertake a formal action to exercise control over the thrift such as removing the CEO, changing the thrift's investments, or changing the thrift's financial structure. In each of these actions, the OTS is exercising the kind of control over operations that only a

[7] Since the timing of control changes are of particular interest in this study, we focus upon the initiation of corporate control changes and follow them to their conclusion, frequently extending over a calendar year. Few thrift takeovers were initiated in 1990 and completed in 1991, while quite a number of takeovers initiated in 1991 were completed in 1992.

[8] Although publicly available information did not permit us to determine what happened to a number of the CEOs of thrifts that were acquired, the evidence from Cannella et al. (1995) suggests that the external market for managerial labor is discerning in its treatment of managers of failed Texas thrifts.

board or management would exercise in an unregulated firm. [9] If censure occurs, we attempt to ascertain the fate of the CEO. If censure does not occur, then the thrift is classified as a continuing thrift. We did not uncover any news stories in 1992 that were resolved prior to the end of 1993.

Our final sample includes 227 thrifts. Of the 227 thrifts that were public concerns at the beginning of 1991, 159 continue as public concerns, 31 are acquired, and 37 are censured by the OTS according to the classification criteria described below. These three subsets are mutually exclusive and exhaustive and will be referred to, respectively, as continuing public thrifts, acquired thrifts, and censured thrifts. We illustrate the disposition of our sample thrifts across states in Fig. 1 in parentheses.

3.3. Variables

Using the data sources cited above, we create four groups of thrift attributes for sample firms: ownership attributes, performance attributes, corporate control attributes, and miscellaneous attributes. For ownership attributes, we measure the percentage of stock held by corporate officers, institutions, outside directors, and the largest blockholder. We also measure the board representation of insiders (directors who are also members of current management), outsiders (directors who neither work for nor have extensive dealings with the firm), and greys (directors who are not employees but have extensive dealings with the firm or family relationships with management). Each of these characteristics has figured into one or more prior studies of corporate governance.

To proxy for performance attributes, we use two different annual return measures, the OTS composite rating, and an efficiency measure. For the first thrift performance measure, we compute a thrift's annual stock return as a geometric average of its monthly stock returns. For the second performance measure, we calculate a thrift's annual return on average assets, where average assets is the average of a thrift's beginning and ending book values of total assets. We compute each of these return measures for 1987, 1988, 1989, and 1990 subject to data availability. For the third thrift performance measure, we use the OTS' rating of each thrift for the above years. The OTS composite rating incorporates FDICIA mandated standards, using accounting data available to the OTS, into a single summary measure of a thrift's health.

For the fourth, and final, thrift performance measure we calculate the technical and allocative X-efficiencies of individual thrifts for 1990 using a standard cost efficiency methodology. We assume that thrifts are multi-product, multi-input financial

[9] Due to data availability, our definition of censure is a "formal" censure which is announced in published reports. Thus, we do not classify thrifts as censured if the OTS acts informally and does not disclose its actions. It is conceivable that we have classified as continuing public thrifts some that may be subject to an informal OTS action. However, such actions would probably still allow a thrift's board to take action. Further, the number of such instances must be small given our finding of rather significant differences between continuing public thrifts and censured thrifts. For further discussion of the differences between formal and informal censure see Peek and Rosengren (1995).

intermediaries. We follow most thrift cost studies in treating deposits as an input in the production process, although there exists a debate as to its inclusion as an input or an output. Output can be measured by either the number of loans (the production approach) or by the level of earning assets (the intermediation approach) for each product. We use the latter approach, and follow the convention in the literature of using stock measures of thrift output. Policy prescriptions based on stock measures of output have been shown by Humphrey (1992) to be robust. To formalize this model, we use the translog specification and fit its parameters by assuming that inefficiencies follow a half-normal distribution, that random errors follow a symmetric normal distribution, and that both are orthogonal to the cost function exogenous variables (Ferrier and Lovell, 1990; Bauer et al., 1992).

For corporate control attributes, we measure the extent to which sample thrifts are protected from outside takeovers. In order to induce mutual thrifts to convert to stock ownership, while preventing an immediate transfer of wealth from depositors to stockholders, the Federal Home Loan Bank Board adopted a number of regulatory requirements including the Post-Conversion Anti-Takeover Rule. This rule allows thrifts to adopt stock charter provisions that prohibit for a period of three years (or extended to five years) (1) an offer to acquire more than 10% of the converted thrift's securities, (2) cumulative voting for the election of directors, and (3) the ability of shareholders to call special meetings concerning a change in control or charter amendments. [10] The thrift may adopt any or all of these additional bylaw provisions as acquisition deterrents. Therefore, in the case of newly converted thrifts, acquisitions that do occur are most likely "friendly". In our sample, 107 of the 227 thrifts were under the three-year regulatory protection. Of these, 106 also opted for the five year charter provision. We use a dummy variable and set it equal to one when charter protection is in effect. State protection is a dummy variable that is set equal to one when no thrift outside the state can acquire the firm. Dummy variables are also set equal to one when the thrift has a staggered board provision and when the thrift has a super-majority provision.

In addition to the above attributes, we also measure selected miscellaneous thrift attributes. Specifically, we measure the proportion of a thrift's investment in non-traditional assets (e.g. non-traditional lending, mortgage derivatives, etc.), the thrift's size (natural log of the thrift's book value of total assets), and the age of the thrift's CEO.

4. The external market for corporate control

As noted above the thrift industry is regulated by an agency with a legal mandate to discipline poorly performing thrifts. Consequently, OTS oversight might displace, supplement, or have no effect on the external disciplining of poorly performing thrifts.

[10] See Williams et al. (1987) for further discussion and analysis of this rule.

In the case where regulatory oversight displaces external managerial discipline, one should observe the OTS disciplining poorly performing thrifts and private sector participants acquiring better performing thrifts for potential synergies. If regulatory oversight supplements external managerial discipline, then one should observe the OTS disciplining managers where there are some impediments (e.g., entrenched managers) to takeover and one should encounter some disciplinary takeovers where there are no such impediments. Finally, the OTS would have no effect on the market for corporate control if one observes it simply liquidating failed thrifts and leaving all other thrifts for acquisition by another, whatever the target's pre-acquisition performance. Such an outcome would indicate the OTS' unwillingness to discipline an interest group that has the most incentive to influence it.

To discern which effect OTS oversight has on the external market for corporate control, we begin by examining selected characteristics of those thrifts that were subsequently acquired, censured, or continued as public thrifts. We begin this analysis with a series of pairwise *t*-tests for differences in means to examine whether select thrift attributes distinguish acquired thrifts, censured thrifts, or continuing public thrifts from each other. We report the results in Table 1. [11] There are no significant differences in any ownership attributes between censured and acquired thrifts. The officers of continuing thrifts have higher levels of shareholdings than either the censured or the acquired thrifts. Relative to acquired thrifts; continuing thrifts have a larger percentage of ownership by the largest blockholders; a higher representation of insiders and a lower representation of outsiders on the board of directors. Continuing thrifts also have a higher level of insider representation than censured thrifts.

Based upon stock returns and return on assets, we find that censured thrifts perform worse than both acquired and continuing thrifts not only in the current year, but also in the two prior years. Acquired thrifts have a better stock return performance than continuing thrifts in the current year, but there is no significant difference in prior years. Also, there is no difference between acquired and continuing thrifts with regards to return on assets. Finally, there is no significant difference across groups in their efficiency scores. These performance results are consistent with the OTS disciplining poorly performing thrifts while allowing takeovers of better performing thrifts to occur. The OTS composite ratings (a higher rating corresponds to poorer health) confirm the result that the censured thrifts are less healthy than either the acquired or continuing thrifts.

The pairwise *t*-tests also reveal significant differences between thrift groups in terms of their investment in non-traditional assets, in 1988–1990, and in terms of their size (market value of equity). Pairwise tests show (at the 1% level) that censured thrifts are, on average, smaller firms with a persistently higher proportion of their assets in non-traditional investments than either continuing public thrifts or acquired thrifts. Acquired thrifts have a lower investment in non-traditional assets than either censured or continuing public thrifts. This last result, along with the above results,

[11] Non-parametric tests on Wilcoxon scores and median scores produce results that are qualitatively similar to the pairwise *t*-tests.

Table 1
Statistics for the 227 OTS-regulated thrifts that were public at the beginning of 1991 of which, during 1991, 37 were censured by the OTS, 31 were acquired, and 159 continued as public thrifts[a]

	(1) Thrifts under OTS censure	(2) Thrifts acquired	(3) Continuing thrifts	(1)–(2) Mean difference	(1)–(3) Mean difference	(2)–(3) Mean difference
Ownership attributes						
Officers' shareholdings (%)	5.803	6.366	8.843	−0.563	−3.040	−2.477
				(−0.43)	(−2.12)**	(−2.01)**
Institutions' shareholdings (%)	11.367	14.169	15.552	−2.803	−4.186	−1.383
				(−0.78)	(−1.45)	(−0.41)
Outside directors' shareholdings (%)	11.055	10.466	10.946	0.589	0.108	−0.481
				(0.24)	(0.05)	−(0.34)
Largest blockholder's shareholdings (%)	13.544	9.052	11.838	4.492	1.706	−2.786
				(1.54)	(0.57)	(2.98)***
Insider board representation (%)	23.423	18.915	24.981	0.045	−0.016	−0.061
				(1.54)	(0.58)	(−3.00)***
Grey board representation (%)	8.313	7.404	6.740	0.009	0.016	0.007
				(0.30)	(0.65)	(0.27)
Outsider board representation (%)	68.263	73.681	68.444	−0.054	−0.002	0.052
				(−1.37)	(−0.05)	(1.99)**
Performance attributes						
Stock returns, 1990	−75.115	−18.729	−34.081	−56.949	−41.034	15.352
				(−10.64)***	(−9.62)***	(3.21)***
Stock returns, 1989	−22.708	16.719	11.396	−39.427	−34.104	5.323
				(−4.67)***	(−5.26)***	(0.78)
Stock returns, 1988	6.465	23.628	17.697	−17.163	−11.232	5.931
				(−2.31)**	(−1.84)*	(0.95)
Stock returns, 1987	−18.393	−13.304	−17.605	−5.089	−0.788	4.301
				(−0.75)	(−0.15)	(0.64)
Return on assets, 1990	−1.604	0.354	0.092	−1.958	−1.696	0.262
				(−5.85)***	(−5.37)***	(1.57)
Return on assets, 1989	−0.532	0.325	0.360	−0.857	−0.892	−0.035
				(−3.41)***	(−4.16)***	(0.24)
Return on assets, 1988	0.346	0.645	0.549	−0.299	−0.203	0.096
				(−2.25)**	(−1.84)*	(1.08)
Efficiency score, 1990	0.128	0.116	0.131	0.012	−0.003	−0.015
				(0.93)	(−0.26)	(−1.13)
OTS rating, 1990	3.864	2.258	2.411	1.607	1.454	−0.153
				(8.00)***	(9.75)***	(−0.94)
OTS rating, 1989	2.649	2.065	2.240	0.584	0.409	−0.176
				(3.43)***	(3.16)***	(−1.34)
OTS rating, 1988	2.432	1.968	2.160	0.465	0.272	−0.192
				(4.46)***	(2.67)***	(−3.50)***
OTS rating, 1987	2.459	2.000	2.148	0.459	0.312	−0.148
				(4.08)***	(3.20)***	(−1.88)*
Miscellaneous attributes						
Non-traditional assets (%), 1990	37.559	23.930	28.765	0.136	0.088	−0.048
				(4.57)***	(3.48)***	(−1.82)*
Non-traditional assets (%), 1989	40.756	24.235	29.601	0.165	0.112	−0.054
				(5.17)***	(4.32)***	(−2.01)**

Table 1 (*continued*)

	(1) Thrifts under OTS censure	(2) Thrifts acquired	(3) Continuing thrifts	(1)–(2) Mean difference	(1)–(3) Mean difference	(2)–(3) Mean difference
Non-traditional assets (%), 1988	40.469	22.995	28.969	0.175	0.115	−0.060
				(5.34)***	(4.31)***	(−2.83)***
Non-traditional assets (%), 1987	31.293	23.043	25.732	0.083	0.056	−0.027
				(1.92)*	(1.63)	(−0.92)
ln(book value of assets)	8.423	9.473	9.542	−1.050	−1.119	−0.069
				(−3.79)***	(−4.74)***	−(0.35)
CEO's age	53.056	55.613	53.563	−2.557	−0.508	2.050
				(−1.22)	−(0.32)	(1.20)
Corp. Control Attributes						
Charter Protection (%), 1990	29.730	70.968	45.912	−41.238	−16.182	25.056
				(−3.66)***	(−1.80)*	(2.58)***
State Protection (%), 1990	21.622	51.613	27.673	−29.991	−6.051	23.940
				(−2.67)***	(−0.75)	(2.66)***
Staggered Board (%), 1990	86.486	83.871	91.824	2.615	−5.338	7.953
				(0.30)	(−1.01)	(1.13)
Super-majority (%), 1990	21.622	22.581	35.849	−0.959	−14.227	−13.268
				(−0.09)	(−1.66)*	(−1.43)

*, **, *** indicates significance of z-values at the 10%, 5%, and 1% level, respectively.

[a] All thrifts are public at the beginning of 1991. Thrifts are classified as under OTS censure if 1991 news reports indicate that the thrift is being censured by the OTS or is subject to an OTS review that leads to censure. Censure requires the OTS to undertake a formal action to exercise control over the thrift. Thrifts are classified as acquired if 1991 news reports indicate that the thrift is subject to takeover interest that results in its ultimate acquisition. Remaining thrifts are classified as continuing. Insiders are directors who are also members of current management. Outsiders are directors who do not work for nor have extensive dealings with the firm. Greys are directors who are not employees but have extensive dealings with the firm or family relationships with management. Annual stock returns are the geometric average of the thrift's monthly percentage returns. Annual return on assets is based on the average of a thrift's beginning and ending book values of total assets. The annual efficiency score is an X-efficiency measure subject to a translog functional form. The OTS rating variable is examination based and ranges from 1 to 5 with higher values signifying poorer firms. A thrift's non-traditional assets represents the proportion of a thrift's total assets in 1990 accounted for by non-traditional lending (where non-traditional lending = construction loans + mortgages on non-residential property and land + non-mortgage loans + equity securities [except FHLB stock] + mortgage derivative securities + mortgages on 5 or more units + equity investment in subs + margin accounts + unamortized option fees). Charter protection occurs when there is a provision in the charter that prevents acquisition or director cumulative voting. State protection is in place when no thrift outside the state can acquire the firm, z-values are in parenthesis below coefficients.

suggests that better performing thrifts investing in a less risky, more traditional portfolio, are the primary takeover targets of acquiring thrifts.

The prevalence of corporate control defenses across groups indicates that a significant number of thrifts are concerned with protection against the external market for corporate control. For example, the percentage of thrifts that employ a staggered board ranges from 84% to 92%. Interestingly, 71% of the acquired thrifts were under the protection of the 5-year Post-Conversion Anti-Takeover Rule. This is significantly greater (at the 1% level) than either the continuing or censured thrifts.

Similarly, 52% of the acquired thrifts have charter protection that prohibited out-of-state thrifts from acquiring the firm. Again, this result is significantly greater (at the 1% level) than either the continuing or censured thrifts.

The above pairwise t-tests are simply suggestive as they may fail to properly account for the joint variations between variables. To address this issue, we use multinomial logistic regression analysis. In a multinomial logit model (MNLM), the coefficients are interpreted as the log of odds ratio against a base case. [12] For example, in estimating the probability for $y = 2$ (censured thrift) relative to the base case $y = 1$ (continuing firm) for coefficients $B^{(1)}$ and $B^{(2)}$ we have: $\Pr(y = 2)/\Pr(y = 1) = e^{xB^{(2)}}$. Therefore, the effect of x on the logit of being censured versus continuing as a public thrift is the log of the ratio of the probabilities (log of odds ratio). We examine the influence of selected variables on the odds of a thrift either being censured or acquired, relative to continuing as a public thrift.

For all logistic regressions reported in this paper, we test for the appropriate lag specification of prior performance on the outcomes in question by estimating each logistic regression in a serial fashion. First, we estimate the equation with four years of prior performance data, then three years, then two years, and then one year. However, since no lags beyond one year were significant, we only report results using the current year and one lagged year.

Another concern that we address is the relationship among the shareholdings of various investor groups and the mix of board members. Since theory suggests that board composition is driven by ownership distribution, including ownership and board composition variables in the same regression can result in serious collinearity among regressors. To address this concern we calculate correlations among shareholding and board representation variables and report the results in Table 2. We find a high correlation between officers' shareholdings and insider board representation, between greys' shareholdings and greys' board representation, and between outsider board representation and both insider and grey board representation. Therefore, we run three separate regression models in Table 3 first using shareholdings, then insider board representation, and then grey/outsider representation. In Table 4 we vary the performance measure using stock returns, return on assets, and OTS rating.

Together, the regression results reported in Tables 3 and 4 suggest that the different groups of thrifts are distinguished by their performance. Acquired thrifts performed significantly better than continuing public thrifts in the prior year while censured firms performed significantly worse. Results are robust across market (stock returns) and accounting (return on assets) measures. The OTS composite rating distinguishes censured thrifts, but does not distinguish acquired thrifts from continuing thrifts.

These outcomes are consistent with our univariate results and suggest that OTS discipline displaces market discipline since we do not find evidence of disciplinary takeovers. Rather, as in the univariate results, acquired thrifts are more likely to be protected by the 5-year Post-Conversion Anti-Takeover Rule and to engage in

[12] Using the base case solves the identification problem in the MLM.

Table 2
Correlations of ownership attributes for 227 OTS-regulated thrifts that were public at the beginning of 1991

	CEOs' shares (%)	Off/director shares (%)	Officers' shares (%)	Out director shares (%)	Institutions' shares (%)	Largest block shares (%)	Greys' shares (%)	Insider board rep (%)	Grey board rep (%)	Out board rep (%)	Outsiders' shares (%)
CEOs' shareholdings (%)	1.0000										
Officers'/directors' sharehholdings (%)	0.6979 (0.0000)	1.0000									
Officers' shareholdings (%)	0.8741 (0.0000)	0.7691 (0.0000)	1.0000								
Outside directors' shareholdings (%)	−0.0321 (1.0000)	0.5754 (0.0000)	−0.0791 (1.0000)	1.0000							
Institutions' shareholdings (%)	−0.1218 (1.0000)	−0.3461 (0.0000)	−0.1703 (0.7034)	−0.3252 (0.0001)	1.0000						
Largest blockholder's shareholdings (%)	0.5286 (0.0000)	0.4621 (0.0000)	0.4374 (0.0000)	0.1666 (1.0000)	−0.1084 (1.0000)	1.0000					
Greys' shareholdings (%)	0.1843 (0.5448)	0.2783 (0.0028)	0.1937 (0.2900)	0.1866 (0.3981)	−0.1297 (1.0000)	0.0340 (1.0000)	1.0000				
Insider board representation (%)	0.2277 (0.0730)	0.1692 (0.8151)	0.2641 (0.0066)	−0.0789 (1.0000)	0.0353 (1.0000)	0.1019 (1.0000)	−0.1169 (1.0000)	1.0000			
Grey board representation (%)	0.1424 (1.0000)	0.1902 (0.3326)	0.1229 (1.0000)	0.1358 (1.0000)	0.0363 (1.0000)	0.1363 (1.0000)	0.6263 (0.0000)	−0.0599 (1.0000)	1.0000		
Outsider board representation (%)	−0.2667 (0.0087)	−0.2600 (0.0085)	−0.2884 (0.0014)	−0.0303 (1.0000)	−0.0509 (1.0000)	−0.1707 (1.0000)	−0.3473 (0.0000)	−0.7315 (0.0000)	−0.6337 (0.0000)	1.0000	
Outsiders' shareholdings (%)	−0.0584 (1.0000)	0.5109 (0.0000)	−0.1164 (1.0000)	0.9662 (0.0000)	−0.2833 (0.0034)	0.2062 (0.3935)	−0.0729 (1.0000)	−0.0484 (1.0000)	−0.0243 (1.0000)	0.0581 (1.0000)	1.0000

The coefficients are product–moment correlations coefficients. The p values associated with null hypothesis that the correlation is zero are reported within parenthesis below the coefficients. Note that these tests employ Bonferroni's correction for multiple comparisons.

Table 3
Multinominal logistic regression analysis of 227 OTS-regulated thrifts that were public at the beginning of 1991 of which, during 1991, 37 were censured by the OTS, 31 were acquired, and 159 continued as public thrifts with the reference case being those thrifts that continue as public companies[a]

	Odds of being censured by the OTS	Odds of being acquired	Odds of being censured by the OTS	Odds of being acquired	Odds of being censured by the OTS	Odds of being acquired
Constant	−3.259	5.059	−4.905	4.675	−7.201	0.609
	(−0.69)	(1.12)	(−1.28)	(1.22)	(−1.70)	(0.14)
Officers' shareholdings (%)	−0.084	0.002				
	(−1.68)*	(0.04)				
Outsiders' shareholdings (%)	−0.015	−0.068				
	(−0.42)	(−1.55)				
Institutions' shareholdings (%)	−0.011	−0.013				
	(−0.40)	(−0.62)				
Total board members			−0.199	0.015	−0.192	0.015
			(−1.47)	(0.14)	(−1.44)	(0.14)
Insider board representation (%)			−2.454	−4.185		
			(−0.94)	(−1.87)*		
Grey/out board representation (%)					2.141	4.008
					(0.85)	(1.83)*
Charter protection	0.079	1.286	0.084	1.224	0.084	1.234
	(0.12)	(2.10)**	(0.13)	(1.99)**	(0.13)	(2.00)**
State protection	−0.438	0.754	−0.119	0.839	−0.121	0.841
	(−0.62)	(1.37)	(−0.18)	(1.66)*	(−0.19)	(1.67)*
Staggered board	−1.610	−0.400	−0.970	−1.106	−0.940	−1.117
	(−1.52)	(−0.30)	(−1.01)	(−1.04)	(−0.98)	(−1.06)
Super-majority	−0.259	−0.544	0.005	−0.515	−0.003	−0.521
	(−0.36)	(−0.90)	(0.01)	(−0.88)	(−0.00)	(−0.89)
Non-traditional assets (%), 1990	1.269	−1.700	2.008	−1.967	2.048	−1.969
	(0.53)	(−0.78)	(0.95)	(−0.97)	(0.97)	(−0.98)

ln(book value of assets)	−0.019		−0.268	0.170		−0.230	0.170		−0.228
	(−0.06)		(−0.84)	(0.68)		(−0.90)	(0.67)		(−0.89)
Efficiency score, 1990	−4.509		−11.473	−7.410		−8.391	−7.426		−8.501
	(−0.70)		(−1.29)	(−1.31)		(−1.12)	(−1.31)		(−1.14)
Stock returns, 1990	−8.262		3.253	−8.083		2.712	−8.059		2.727
	(−4.35)***		(2.71)***	(−4.61)***		(2.36)**	(−4.61)***		(2.39)**
Stock returns, 1989	−1.650		−0.734	−1.364		−0.511	−1.377		−0.511
	(−1.63)*		(−0.91)	(−1.48)		(−0.67)	(−1.49)		(−0.67)
Chi square (p value)		110.89			113.02			112.62	
		(0.000)			(0.000)			(0.000)	
Pseudo R square		0.375			0.360			0.359	

*, **, *** indicates significance of z-values at the 10%, 5%, and 1% level, respectively.

[a] We examine the influence of selected variables on the odds of a thrift either being censured or acquired, relative to continuing as a public thrift. In a multinomial logit model (MNLM), the coefficients are interpreted as the log of odds ratio against a base case (Using the base case solves the identification problem in the MLM.). For example, in estimating the probability for $y = 2$ (censured thrift) relative to the base case $y = 1$ (continuing firm) for coefficients $B^{(1)}$ and $B^{(2)}$ we have: $\Pr(y = 2)/\Pr(y = 1) = e^{xB^{(2)}}$. Therefore, the effect of x on the logit of being censured versus continuing as a public thrift is the log of the ratio of the probabilities (log of odds ratio). All thrifts are public at the beginning of 1991. Thrifts are classified as under OTS censure if 1991 news reports indicate that the thrift is being censured by the OTS or is subject to an OTS review that leads to censure. Censure requires the OTS to undertake a formal action to exercise control over the thrift. Thrifts are classified as acquired if 1991 news reports indicate that the thrift is subject to takeover interest that results in its ultimate acquisition. Remaining thrifts are classified as continuing. Insiders are directors who are also members of current management. Outsiders are directors who do not work for nor have extensive dealings with the firm. Greys are directors who are not employees but have extensive dealings with the firm or family relationships with management. Grey/outs are grey and outsider directors. Charter protection occurs when there is a provision in the charter that prevents acquisition or director cumulative voting. State protection is in place when no thrift outside the state can acquire the firm. A thrift's non-traditional assets represents the proportion of a thrift's total assets in 1990 accounted for by non-traditional lending (where non-traditional lending = construction loans + mortgages on non-residential property and land + non-mortgage loans + equity securities [except FHLB stock] + mortgage derivative securities + mortgages on 5 or more units + equity investment in subs + margin accounts + unamortized option fees). The annual efficiency score is an X-efficiency measure subject to a translog functional form. Annual stock returns are the geometric average of the thrift's monthly percentage returns. Annual return on assets is based on the average of a thrift's beginning and ending book values of total assets. The OTS rating variable is examination based and ranges from 1 to 5 with higher values signifying poorer firms, z-values are in parenthesis below coefficients.

Table 4
Multinominal logistic regression analysis of 227 OTS-regulated thrifts that were public at the beginning of 1991 of which, during 1991, 37 were censured by the OTS, 31 were acquired, and 159 continued as public thrifts with the reference case being those thrifts that continue as public companies[a]

	Odds of being censured by the OTS	Odds of being acquired	Odds of being censured by the OTS	Odds of being acquired	Odds of being censured by the OTS	Odds of being acquired
Constant	4.905	4.675	−5.106	4.474	−11.617	6.647
	(−1.28)	(1.22)	(−1.48)	(1.17)	(−2.79)***	(1.75)
Total board members	−0.199	0.015	−0.278	0.021	−0.093	−0.031
	(−1.47)	(0.14)	(−2.30)**	(0.20)	(−0.76)	(−0.32)
Insider board representation (%)	−2.454	−4.185	−1.563	−5.339	−3.129	−5.004
	(−0.94)	(−1.87)*	(−0.73)	(−2.34)**	(−1.39)	(−2.27)**
Charter protection	0.084	1.224	−0.090	1.288	0.586	1.366
	(0.13)	(1.99)**	(−0.15)	(2.19)**	(0.93)	(2.28)**
State protection	−0.119	0.839	−0.224	0.910	0.402	0.867
	(−0.18)	(1.66)*	(−0.37)	(1.89)*	(0.63)	(1.82)*
Staggered board	−0.970	−1.106	−1.286	−1.041	−1.830	−1.615
	(−1.01)	(−1.04)	(−1.56)	(−1.15)	(−2.04)**	(−1.83)*
Super-majority	0.005	−0.515	−0.524	−0.463	−0.497	−0.318
	(0.01)	(−0.88)	(−0.85)	(−0.83)	(−0.78)	(−0.57)
Non-traditional assets (%), 1990	2.008	−1.967	3.383	−2.513	4.363	−3.081
	(0.95)	(−0.97)	(1.74)*	(−1.22)	(2.00)**	(−1.47)
ln(book value of assets)	0.170	−0.230	0.503	−0.277	0.439	−0.310
	(0.68)	(−0.90)	(2.25)**	(−1.06)	(1.91)*	(−1.22)
Efficiency score, 1990	−7.410	−8.391	−5.994	−6.331	−2.420	−6.589
	(−1.31)	(−1.12)	(−1.07)	(−0.91)	(−0.45)	(−0.97)
Stock returns, 1990	−8.083	2.712				
	(−4.61)***	(2.36)**				

Stock returns, 1989	−1.364	−0.511				
	(−1.48)	(−0.67)				
Return on assets, 1990			−110.079	73.116		
			(−4.02)***	(1.64)*		
Return on assets, 1989			−62.616	−65.921		
			(−2.23)**	(−1.63)*		
OTS rating, 1990					2.165	0.348
					(5.23)***	(−0.78)
OTS rating, 1989					−0.335	−0.750
					(−0.78)	(−1.53)
Chi square (p value)	113.02		100.62		110.88	
	(0.000)		(0.000)		(0.000)	
Pseudo R square	0.360		0.310		0.342	

*, **, *** indicates significance of z-values at the 10%, 5%, and 1% level, respectively.

[a] We examine the influence of selected variables on the odds of a thrift either being censured or acquired, relative to continuing as a public thrift. In a multinomial logit model (MNLM), the coefficients are interpreted as the log of odds ratio against a base case (Using the base case solves the identification problem in the MLM.). For example, in estimating the probability for $y = 2$ (censured thrift) relative to the base case $y = 1$ (continuing firm) for coefficients $B^{(1)}$ and $B^{(2)}$ we have: $\Pr(y = 2)/\Pr(y = 1) = e^{xB^{(2)}}$. Therefore, the effect of x on the logit of being censured versus continuing as a public thrift is the log of the ratio of the probabilities (log of odds ratio). All thrifts are public at the beginning of 1991. Thrifts are classified as under OTS censure if 1991 news reports indicate that the thrift is being censured by the OTS or is subject to an OTS review that leads to censure. Censure requires the OTS to undertake a formal action to exercise control over the thrift. Thrifts are classified as acquired if 1991 news reports indicate that the thrift is subject to takeover interest that results in its ultimate acquisition. Remaining thrifts are classified as continuing. Insiders are directors who are also members of current management. Charter protection occurs when there is a provision in the charter that prevents acquisition or director cumulative voting. State protection is in place when no thrift outside the state can acquire the firm. A thrift's non-traditional assets represents the proportion of a thrift's total assets in 1990 accounted for by non-traditional lending (where non-traditional lending = construction loans + mortgages on non-residential property and land + non-mortgage loans + equity securities [except FHLB stock] + mortgage derivative securities + mortgages on 5 or more units + equity investment in subs + margin accounts + unamortized option fees). The annual efficiency score is an X-efficiency measure subject to a translog functional form. Annual stock returns are the geometric average of the thrift's monthly percentage returns. Annual return on assets is based on the average of a thrift's beginning and ending book values of total assets. The OTS rating variable is examination based and ranges from 1 to 5 with higher values signifying poorer firms, z-values are in parenthesis below coefficients.

"friendly" in-state acquisitions. [13] Nevertheless, thrifts with a high proportion of insiders on their board are less likely to be acquired, and thrifts with a high representation of a grey/outsider coalition on the board are more likely to accept an acquisition offer. Non-traditional lending is no longer a distinguishing characteristic in the multivariate framework.

In order to gauge whether the OTS is discerning in its disciplining of poorly performing thrifts, we follow censured thrifts through 1993. As noted in Fig. 1, we find that 15 censured thrifts continue as public thrifts but with new management while the remaining 22 are subsequently liquidated or forced to merge. These figures suggest that the OTS treats censured thrift differentially. To address what might account for this differential treatment, we used logistic regressions to examine for differences between these two groups of censured thrifts. While not reported, we find that the thrifts that are liquidated or forced to merge primarily differ from those that are allowed to continue in their current and lagged performance, whether measured by stock returns, annual return on average assets, or OTS composite rating. Consequently the OTS appears to reallocate the assets of only those thrifts that perform the worst.

Cumulatively, the above results suggest that the OTS disciplines poorly performing thrifts, while the external market focuses on better performing targets. [14] Interestingly, the better performing thrifts that are acquired also possess regulatory protection from hostile takeovers. [15] Despite this pattern, board composition matters as there is a tendency for strong insider board representation to impede takeovers. And finally, the OTS appears discriminating in its discipline as it does not always liquidate thrifts. Rather, in some cases, it forces the removal of poorly performing managers and allows their thrifts to continue as public concerns.

5. The internal market for thrift control

We now examine evidence on board discipline within the thrift industry. To conduct this analysis we, like similar studies, focus only on those that continued as public firms and compare the firms that replaced their CEO to the firms that did not. To begin our analysis, we use a series of pairwise *t*-tests to test for mean differences in attributes between these two sets of thrifts and report results in Table 5. We find that

[13] Although we do not have data that indicates the acquisitions are friendly and in-state, we do know that 71% of the acquired firms are under protection of the 5-year Post-Conversion Anti-Takeover Rule (significantly more than either the continuing or censured thrifts). We also know that 52% of the acquired thrifts are prohibited from being acquired by out-of-state thrifts (again, significantly more than either the continuing or censured thrifts). Therefore, it seems to us that given these effective charter protections, acquisitions would have to be mutually agreeable (friendly) and the acquirer would have to be in the same state.

[14] This result is similar to Prowse (1997) who finds that the most important corporate control mechanism in banks is regulatory intervention.

[15] We find that the characteristics of our censured thrifts are similar to the characteristics of the hostile takeover targets in Morck et al. (1989) and the characteristics of our acquired thrifts are similar to those of their friendly takeover targets.

Table 5
Statistics for the 159 OTS-regulated thrifts that were public at the beginning of 1991 and remained public during 1991 of which during 1991–1993, 22 replaced their CEOs while 137 did not replace their CEOs[a]

	(1) Public thrifts that replaced their CEOs	(2) Public thrifts that did not replace their CEOs	(1)–(2) Mean difference
Ownership attributes			
Officers' shareholdings (%)	6.860	9.162	−2.302
	(3.92)***	(8.38)***	(−1.12)
Institutions' shareholdings (%)	13.705	15.867	−2.163
	(6.00)***	(10.71)***	(−0.79)
Outside directors' shareholdings (%)	13.851	10.480	3.371
	(9.76)***	(16.74)***	(2.03)**
Largest blockholder's shareholdings (%)	12.882	11.676	1.206
	(6.96)***	(13.96)***	(0.54)
Insider board representation (%)	22.903	25.353	−0.025
	(7.76)***	(20.12)***	(−0.76)
Grey board representation (%)	9.322	6.278	0.030
	(4.10)***	(5.43)***	(1.05)
Outsider board representation (%)	67.78	68.56	−0.008
	(18.19)***	(41.75)***	(−0.19)
Performance attributes			
Stock returns (%), 1990	−36.840	−33.638	−3.202
	(−6.24)***	(−16.59)***	(−0.57)
Stock returns (%), 1989	−2.376	13.839	−16.215
	(−0.36)	(4.44)***	(−2.05)**
Stock returns (%), 1988	31.616	15.233	16.383
	(3.79)***	(4.79)***	(1.89)*
Stock returns (%), 1987	−17.968	−17.531	−0.437
	(−2.77)***	(−6.59)***	(−0.07)
Return on assets (%), 1990	0.012	0.104	−0.092
	(0.07)	(1.34)	(−0.44)
Return on assets (%), 1989	0.236	0.379	−0.81
	(1.53)	(5.87)***	(−3.41)***
Return on assets (%), 1988	0.523	0.553	−0.030
	(5.00)***	(10.49)***	(−0.21)**
Efficiency score, 1990	0.152	0.128	0.024
	(6.22)***	(25.03)***	(0.97)
OTS rating, 1990	2.550	2.389	0.161
	(15.02)***	(33.02)***	(0.82)
OTS rating, 1989	2.263	2.237	0.027
	(17.55)***	(36.58)***	(0.16)
OTS rating, 1988	2.053	2.176	−0.123
	(39.00)***	(43.32)***	(−1.69)*
OTS rating, 1987	2.158	2.146	0.012
	(25.11)***	(44.95)***	(0.12)
Miscellaneous attributes			
Non-traditional assets (%), 1990	26.636	29.090	−2.454
	(9.42)***	(23.56)***	(−0.73)
Non-traditional assets (%), 1989	27.665	29.897	−2.232
	(9.49)***	(24.22)***	(−0.66)

(*continued on next page*)

Table 5 (*continued*)

	(1) Public thrifts that replaced their CEOs	(2) Public thrifts that did not replace their CEOs	(1)–(2) Mean difference
Non-traditional assets (%), 1988	25.183	29.548	−4.365
	(9.47)***	(23.78)***	(−1.30)
Non-traditional assets (%), 1987	24.808	25.847	−1.039
	(5.11)***	(17.89)***	(−0.23)
ln(book value of assets)	9.731	9.512	0.219
	(34.79)***	(87.14)***	(0.74)
CEO's age	61.33	52.37	8.961
	(33.12)***	(76.60)***	(4.74)***
Corp. control attributes			
Charter Protection (%), 1990	36.364	47.445	−11.081
	(3.46)***	(11.09)***	(−0.96)
State Protection (%), 1990	31.818	27.007	4.811
	(3.13)***	(7.09)***	(0.47)
Staggered Board (%), 1990	95.455	91.241	4.214
	(21.00)***	(37.64)***	(0.67)
Super-majority (%), 1990	36.364	35.766	0.598
	(3.46)***	(8.70)***	(0.05)

*, **, *** indicates significance of z-values at the 10%, 5%, and 1% level, respectively.

[a] All thrifts are public at the beginning of 1991. Thrifts are classified as under OTS censure if 1991 news reports indicate that the thrift is being censured by the OTS or is subject to an OTS review that leads to censure. Censure requires the OTS to undertake a formal action to exercise control over the thrift. Thrifts are classified as acquired if 1991 news reports indicate that the thrift is subject to takeover interest that results in its ultimate acquisition. Remaining thrifts are classified as continuing. Insiders are directors who are also members of current management. Outsiders are directors who neither work for nor have extensive dealings with the firm. Greys are directors who are not employees but have extensive dealings with the firm or family relationships with management. Annual stock returns are the geometric average of the thrift's monthly percentage returns. Annual return on assets is based on the average of a thrift's beginning and ending book values of total assets. The annual efficiency score is an X-efficiency measure subject to a translog functional form. The OTS rating variable is examination based and ranges from 1 to 5 with higher values signifying poorer firms. A thrift's non-traditional assets represents the proportion of a thrift's total assets in 1990 accounted for by non-traditional lending (where non-traditional lending = construction loans + mortgages on non-residential property and land + non-mortgage loans + equity securities [except FHLB stock] + mortgage derivative securities + mortgages on 5 or more units + equity investment in subs + margin accounts + unamortized option fees). Charter protection occurs when there is a provision in the charter that prevents acquisition or director cumulative voting. State protection is in place when no thrift outside the state can acquire the firm, z-values are in parenthesis below coefficients.

thrifts that replaced their CEOs had greater outside director percentage shareholdings, poorer prior year stock performance, better OTS ratings, and older CEOs than thrifts that did not replace their CEOs.

While these results suggest that some thrift boards are acting to discipline CEOs, this impression is misleading for when we account for the joint variation of the different explanatory variables using logistic regression analysis, we derive different inferences. The evidence on the linkage between turnover and performance is weak. Current stock performance is not a significant explanatory, though lagged stock performance. The results reported in Table 6 suggest that the primary distinguishing feature of thrifts that replaced their CEOs from those that did not is that their CEOs were older. In fact, the coefficient for the dummy variable for CEOs older than 60 suggests that these CEOs were being replaced due to retirement.

Table 6
Logistic regression analysis of thrifts that replaced their CEO relative to thrifts that did not replace their CEO for the set of 159 OTS-regulated thrifts that were public at the beginning of 1991 and remained public during 1991. During the period 1991–1993, 22 thrifts replaced their CEO while 137 did not[a]

Constant	−4.313	−3.549	−5.097
	(−0.96)	(−0.90)	(−1.25)
Insider board representation (%)	−1.773	−1.715	−2.093
	(−0.53)	(−0.55)	(−0.76)
Charter protection	−0.400	−0.653	−0.776
	(−0.72)	(−1.16)	(−1.31)
State protection	0.220	0.075	0.284
	(0.34)	(0.11)	(0.44)
Staggered board	0.364	0.457	0.400
	(0.22)	(0.30)	(0.27)
Super-majority	0.439	0.362	0.052
	(0.75)	(0.57)	(0.09)
ln(book value of assets)	0.058	0.007	0.043
	(0.25)	(0.03)	(0.19)
Older CEO	2.697	2.729	2.603
	(4.13)***	(3.92)***	(4.02)***
Efficiency score, 1990	5.793	6.787	3.943
	(1.59)	(1.81)*	(0.72)
Stock returns, 1990	−0.423		
	(−0.40)		
Stock returns, 1989	−2.001		
	(−2.03)**		
Return on assets, 1990		−18.844	
		(−0.53)	
Return on assets, 1989		−50.780	
		(−1.12)	
OTS rating, 1990			0.133
			(0.37)
OTS rating, 1989			0.540
			(1.18)
Chi square (p value)	32.02	26.95	28.72
	(0.0004)	(0.0027)	(0.0014)
Pseudo R square	0.253	0.233	0.214

*, **, *** indicates significance of z-values at the 10%, 5%, and 1% level, respectively.

[a] Insiders are directors who are also members of current management. Charter protection occurs when there is a provision in the charter that prevents acquisition or director cumulative voting. State protection is in place when no thrift outside the state can acquire the firm. Older CEO is a dummy variable equal to one when the CEO is 60 years or older. The annual efficiency score is an X-efficiency measure subject to a translog functional form. Annual stock returns are the geometric average of the thrift's monthly percentage returns. Annual return on assets is based on the average of a thrift's beginning and ending book values of total assets. The OTS rating variable is examination based and ranges from 1 to 5 with higher values signifying poorer firms, z-values are in parenthesis below coefficients.

To further examine the issue of whether thrift boards act to discipline poorly performing CEOs, we drop all thrifts whose CEO was older than 60 from our sample of public thrifts that continued as public thrifts. We use a logistic model to compare thrifts that replaced their CEOs to those that did not for this reduced sample and report the results in Table 7. Examining the evidence in Table 7 reveals that there are no significant differences between these two groups for any of the thrift characteristics that we measured. Consequently, we conclude that thrift boards are not

Table 7
Logistic regression analysis of thrifts that replaced their CEO relative to thrifts that did not replace their CEO for the set of 99 OTS-regulated thrifts that were public at the beginning of 1991 and remained public during 1991 and whose CEO was younger than 60 years. 9 thrifts replaced their CEO while 112 did not[a]

Constant	−6.233	−5.934	−8.761*
	(−1.27)	(−1.27)	(−1.68)
Insider board representation (%)	−0.533	−0.147	−0.736
	(−0.16)	(−0.05)	(−0.24)
Charter protection	−1.283	−1.157	−1.107
	(−1.06)	(−0.96)	(−0.88)
State protection	1.292	1.102	1.526*
	(1.54)	(1.30)	(1.73)
Staggered board	0.325	0.379	0.120
	(0.24)	(0.27)	(0.08)
Super-majority	0.334	0.148	0.169
	(0.32)	(0.16)	(0.17)
ln(book value of assets)	0.184	0.142	0.232
	(0.58)	(0.46)	(0.70)
Efficiency score, 1990	5.045	6.814	2.957
	(1.27)	(1.75)*	(0.58)
Stock returns, 1990	−0.095		
	(−0.06)		
Stock returns, 1989	−2.036		
	(−1.51)		
Return on assets, 1990		−22.853	
		(−0.52)	
Return on assets, 1989		−33.049	
		(−0.55)	
OTS rating, 1990			0.527
			(0.93)
OTS rating, 1989			0.393
			(0.60)
Chi square (p value)	11.34	10.29	9.14
	(0.253)	(0.328)	(0.424)
Pseudo R square	0.204	0.181	0.177

*, **, *** indicates significance of z-values at the 10%, 5%, and 1% level, respectively.

[a] Insiders are directors who are also members of current management. Charter protection occurs when there is a provision in the charter that prevents acquisition or director cumulative voting. State protection is in place when no thrift outside the state can acquire the firm. The annual efficiency score is an X-efficiency measure subject to a translog functional form. Annual stock returns are the geometric average of the thrift's monthly percentage returns. Annual return on assets is based on the average of a thrift's beginning and ending book values of total assets. The OTS rating variable is examination based and ranges from 1 to 5 with higher values signifying poorer firms, z-values are in parenthesis below coefficients.

fulfilling a disciplinary role in any significant way since thrift boards do not act before OTS censure and because they replace CEOs who are mainly retiring. Such a conclusion also suggests the possibility that OTS oversight displaces the disciplinary role of thrift boards.

6. Summary

Prior research on corporate governance has primarily focused on unregulated industries in which either boards or takeovers can act to discipline poorly performing managers. We examine how regulatory discipline in the thrift industry influences the action of these disciplinary mechanisms on thrifts during a period in which managerial discipline was most likely to occur. Unlike some regulatory agencies, the OTS had significant disciplinary powers and a mandate to discipline poorly performing thrifts during our period of study.

The basic questions that we address in this paper are how OTS oversight affects the takeover market as a disciplinary mechanism, and how OTS oversight influences board action to discipline poorly performing managers. With respect to the first question, like Prowse's (1997) evidence for the banking industry (the industry most similar to the thrift industry in its regulatory regime), we find that OTS oversight substitutes for takeover discipline. Specifically, we find that the odds of a thrift being censured are negatively correlated with prior performance, while the odds of a thrift being acquired are positively correlated with prior performance. Further, we find evidence that the OTS appears to be discriminating in its exercise of regulatory discipline as it allows some thrifts to continue as public concerns, except with new CEOs.

With respect to the second question, we find evidence that the main determinant of CEO replacement in thrifts that continue as public concerns is having older CEOs. Consequently, we infer that most of these replacements are for retirement. Lacking evidence of any board disciplinary action, we further refine our analysis by dropping thrifts with older CEOs and comparing those that replaced their CEO to those that did not. We find that none of our measured thrift characteristics differentiate between these two groups. This result, in conjunction with our prior evidence that the OTS was disciplining poorly performing thrifts, suggests that thrift boards were not acting to discipline poorly performing managers during our study period. This conclusion is consistent with regulatory oversight displacing board discipline, which is consistent with Kole and Lehn's (1999) evidence that regulation deters or mitigates board action.

Despite these conclusions, we should note that we do find evidence that a high representation of insiders on the board of directors impedes the external market for corporate control. On the other hand, a grey/outsider coalition favorably influences the decision to accept acquisition offers. Thus, we would suggest that the OTS might consider the type of restrictions on board composition and, especially, insider board representation that are currently being suggested for non-regulated firms.

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