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The effect of changes in ownership structure on performance: Evidence from the thrift industry[1]

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Abstract

Restrictions on stock ownership may harm a company's performance, because restrictions prevent owners from choosing an optimal structure. We examine the stock-price performance and ownership structure of a sample of thrift institutions that converted from mutual to stock ownership. We find that after conversion and the expiration of ownership-structure restrictions, firm performance improves significantly, and the portions of the firm owned by managers and the firm's employee stock ownership plan increase. Changes in performance are positively associated with changes in ownership by managers, but negatively associated with changes in ownership by employee stock ownership plans.

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1. Introduction

The separation of ownership and control in corporations, and the resulting reduction in firm performance has engaged researchers' attention for some time (see, for example, the January/March special issue of the *Journal of Financial Economics*, 1988). Their concern is due to shareholders' loss of control over the managers of public corporations, who are then able to pursue their own interests rather than shareholders' interests.

In this study, we investigate the relationship between ownership structure and firm performance, using a sample of 94 thrift institutions that converted from mutual to stock ownership between 1983 and 1987. We focus on the thrift industry for two reasons. First, a provision in the Federal Home Loan Bank Board's mutual-to-stock conversion regulations, known as the Post-Conversion Anti-Takeover Rule, prohibits any insider or outsider from owning more than 10% of a converting thrift's equity for three to five years following conversion. At the very least, the restriction on outside ownership protects incumbent managers from the discipline of the market for corporate control (see, e.g., Jensen and Ruback, 1983). The anti-takeover rule can also prevent a recently converted institution from choosing the optimal percentage of insider ownership, thereby weakening managerial incentives (see, e.g., Jensen and Murphy, 1990). Thus, regulation of the firm's ownership structure has the potential to hurt shareholders by motivating insiders to deviate from value-maximizing decisions.

The second, but less important, reason for focusing on the thrift industry is that it allows us to control for intra-industry differences across firms. The production technology and accounting practices of firms in the thrift industry are far more homogeneous than those of firms in other industries. Homogeneity of production technology is ensured by the regulatory provisions such as the qualified thrift lender (QTL) test, which requires that thrifts invest in similar assets; primarily residential mortgages and securities backed by such mortgages. Homogeneity of accounting practices is ensured by regulations requiring that each thrift file a comprehensive and standardized quarterly report of income and condition, providing the information typically found on a balance sheet and income statement.

We find a significant increase in the percentage of the firm owned by the largest inside stockholder, and a significant improvement in firm performance, after the anti-takeover provisions expire. Moreover, the greater the increase in insider ownership, the greater the improvement in performance. The latter finding is supportive of theory proposed by Jensen and Meckling (1976) and Kane (1995), who suggest that managers' incentives to maximize shareholder value increase with their ownership stake. Managers can increase shareholder value in at least two ways. First, they can reduce excess perquisite consumption. Second, managers can invest in riskier assets, effecting wealth transfers to

shareholders from creditors, including the deposit insurance fund (see Kane, 1995 for a general discussion). Our findings do not differentiate between the two strategies. Note that our findings are consistent with the existence of incentive effects, rather than signaling effects, because there are no other convincing arguments that explain why firm performance improves after expiration of the Anti-Takeover Rule.

We also find that the portion of the firm owned by the firm's employee stock ownership plan increases significantly after the anti-takeover provisions expire. Moreover, changes in firm performance are negatively associated with changes in ownership by employee stock ownership plans, consistent with the view that employee stock ownership plans are often used to impede takeovers. We do not find a link between firm performance and ownership by the largest institutional or noninstitutional outside blockholders.

Our findings have several important research and policy implications. First, they provide a direct response to questions raised by Jensen and Warner (1988), pp. 13–14, who criticize cross-sectional studies because they ignore the endogeneity of ownership structure.[2] They also point out that previous studies do not explain why ownership concentration is not chosen to maximize firm value. Evidence presented here suggests that ownership is endogenous. Our findings also provide empirical evidence regarding how political and legal restraints on ownership and control affect performance. Roe (1990) argues that political and legal considerations place constraints on ownership structure. We show that such constraints on insider ownership adversely affect firm performance.

Third, our findings contribute to the literature establishing the effects of ownership on firm performance, which with a few exceptions has ignored financial institutions. Masulis (1987) examines the mutual-to-stock conversion process for thrift institutions and concludes "that, on average, all the major claimants in the [mutual savings and loans] choosing to convert to stock charter gain from this action". Esty (1993, 1997) reports a positive relationship between insider ownership and firm risk-taking. Neither author, however, addresses the effect of anti-takeover provisions on the ownership structure and performance of the converted stock institutions (see also Lee et al., 1997).

Fourth, our findings have significant implications for the regulation of depository institutions. By providing a better understanding of managerial incentives and disincentives, they should help regulators and lawmakers as they evaluate competing arguments about how to achieve a stronger, more competitive financial system. For example, if greater insider ownership improves performance and reduces the risk of default, then regulators can encourage such

[2] A number of authors have argued that the firm's ownership structure is endogenous. See, for example, Demsetz (1983) and Fama and Jensen (1983).

ownership as a complement to, or as a substitute for, capital adequacy regulations, which generates their own inefficiencies as suggested by Koehn and Santomero (1980).

Finally, our results have important implications for research in the efficiency and expense preference behavior of mutual versus stock charter thrifts (see, e.g., Mester, 1991; Hermalin and Wallace, 1994). Studies that analyze stock thrifts prior to expiration of anti-takeover provisions can understate the efficiency and performance of stock-charter thrifts, because the performance of stock thrifts is higher after expiration of the anti-takeover rule.

The next section discusses in some detail the effect of regulation on firm ownership and performance. Section 3 describes our data and methodology, and Section 4 presents our results. Section 5 summarizes and concludes the paper.

2. The Post-conversion anti-takeover rule

The Post-Conversion Anti-Takeover Rule ('the Rule') has governed the conversion of thrift institutions for two decades. The Rule, adopted in 1976, can be found in the Code of Federal Regulations (CFR) at 12 C.F.R. § 563 b 1.40 (Code of Federal Regulations, 1986). Adoption of the Rule effectively ended a 24-year moratorium on mutual-to-stock conversions by thrift institutions. In encouraging such conversions, Congress and the Federal Home Loan Bank Board (FHLBB) sought to attract private capital to an industry that Kane (1983) estimates was insolvent by $42 billion at the end of 1976. The Rule prohibits any person from directly or indirectly acquiring more than 10% of the beneficial ownership of any class of equity issued by a savings institution during the three years following conversion from mutual to stock ownership, unless the person obtains prior written approval from the FHLBB (12 C.F.R. § 563 b.3(i)(7)(1986)). The Rule covers stock options, warrants, or other rights to purchase any class of equity securities, and any securities convertible into equity securities. The term 'person' is defined to include "an individual, a group acting in concert, a corporation, a partnership, an association, a joint stock company, a trust, an unincorporated organization or similar company, a syndicate or any other group formed for the purpose of acquiring, holding, or disposing of securities of an insured institution" (Williams et al., 1987 p. 297). Hence, the rule limits the combined ownership of any group of shareholders acting in concert, including managers, their families, and their outside business partners, to 10% of total equity.

A key issue in the application of the Rule is the way in which the term 'acting in concert' is defined. For purposes of the Rule, a group is considered to be acting in concert when 'participants are aware of the common design and knowingly participate therein' (12 C.F.R. § 563 b.3(i)(8)(i) (1986), and 12 C.F.R. § 574.2(c)(1986)). Hence, the limitation generally does not apply to managers or

directors, as a group, unless they knowingly act as a group, but the decision of when the limitation does apply is ultimately left to the courts. Note, however, that a thrift's tax-qualified employee stock benefit plan may acquire up to 25% of any class of the institution's equity without prior approval of regulators (12 C.F.R. § 563 b.3(i)(5)(v) (1986)).

The Rule also allows a converting thrift to include provisions in its new stock charter that prohibit, for a period of up to five years, (1) an offer to acquire or an acquisition of more than 10% of the converted institution's securities, (2) cumulative voting for directors, and (3) shareholders' ability to call special meetings relating to a change in the control of the institution or in its charter amendments (12 C.F.R. § 563 b.3(i)7, 552.4(b)(8) (1986)). This five-year limitation on ownership is even more stringent than the three-year limitation, because it prohibits acquisition of more than 10% of equity without regard to regulatory approval. Consequently, most converting thrifts elect to include this limitation on ownership in their charters.

Congress approved these ownership restrictions for two reasons. First, it sought to encourage mutual-to-stock conversions. Because managers of a mutual thrift control the firm's assets free of direction by depositors, who are the legal owners of the firm, these managers enjoy a virtual lifetime compensation contract. They can engage in perquisite consumption that reduces firm value, as long as their actions are not so brazen as to instigate a run by depositors.[3] By protecting managers from the market for corporate control during the three-to-five year period following conversion, Congress sought to encourage managers to support proposed conversions. Recognizing that the five-year protection period might not be sufficient to induce some managers to support conversion, the FHLBB in its November 1986 amendments to the Conversion Regulation sought to reduce the uncertainty of thrift managers by emphasizing and justifying the use of employee stock ownership plans as a way to reduce exposure to unwanted takeovers.

Congress was also concerned about the potential for managerial abuses of inside information. The initial stockholders of a converted thrift gain ownership of the assets in place, as well as their initial investment. Therefore, they receive a wealth transfer from the former depositors, who previously owned assets in place, unless those depositors purchase equity in proportion to their share of deposits. Fearing that managers of mutual thrifts would use their inside information about the true value of assets in place to effect wealth transfers from depositors by acquiring large blocks of stock at undervalued prices, Congress limited managers, as well as other parties, to a 10% share in the converted firm. With the restrictions on ownership, the Rule effectively insulates converted

[3] The relative expense-acccount preferences of mutual firms compared to stock firms have been studied extensively. See, for example, Masulis (1987) or Mester (1991).

institutions from takeovers for up to five years. Thus, during this period, firms with superior management are prevented from acquiring firms with inefficient management and, thereby, from creating value for shareholders in the target firm.

The Rule also weakens managers' incentives to create value for shareholders. Jensen and Murphy (1990) argue that these incentives depend on the fraction of the firm's equity held by managers. The Rule's 10% limit on managerial equity investment in the firm is significantly lower than the average ownership by all officers and directors that Mehran (1992) and McConnell and Servaes (1990) report for nonregulated industries.

By limiting ownership, the Rule also restricts equity-based managerial compensation, thus weakening the link between pay and performance. For example, although stock options may be granted to managers at the time of conversion, subject to later shareholder approval, a manager may hold no more than 10% of the thrift's outstanding stock after conversion (see Williams et al., 1987, p. 280). Thus, the sum of a manager's direct equity ownership and potential ownership in the form of equity-based compensation is also limited to 10% for a period of three to five years after conversion. A maximum equity investment of 10% may not be large enough to motivate managers to make value-maximizing decisions, however. In fact, the limitation's effects may be felt even longer, as managers may take additional years to increase their percentage ownership share of the firm significantly.

The 10% ownership restrictions can also constrain a firm's financial policies. For example, a thrift's repurchase of its own stock that would increase a manager's ownership above 10%, or a thrift's issue of convertible debt that in the event of conversion would push the lender above 10% ownership of the firm's equity, would be a violation of the Rule.

To summarize, the Post-Conversion Anti-Takeover Rule can affect the performance of a converted thrift institution by limiting the ownership of inside and outside blockholders. By restricting insider ownership, the Rule weakens the link between effort and reward. By restricting outside block ownership, the Rule also weakens the disciplinary role of the market for corporate control, thus entrenching managers.

Because the observed pre-expiration ownership is lower than that reported in previous studies of nonfinancial firms, such as in McConnell and Servaes (1990) and Mehran (1992), these restrictions lead us to hypothesize that, following the expiration of the ownership limitations: (1) managerial ownership should increase, (2) outside block ownership should increase, and (3) firm performance should improve. In this study, we test whether expiration of the Rule does in fact lead to increased firm ownership by insiders and by outside blockholders and whether any such increases are linked to improved performance. We also test a fourth hypothesis, testing whether increases in ESOP ownership after the expiration of the anti-takeover provisions are linked to inferior performance.

3. Data and methodology

Our analysis is based on the performance and ownership characteristics of 94 thrift institutions insured by the Federal Savings and Loan Insurance Fund (FSLIC) and converting from mutual to stock ownership during the period between 1983 and 1987 and that, following conversion, were publicly traded on the New York Stock Exchange, the American Stock Exchange, or in the over-the-counter market, for at least eight years. We identified the firms from an initial listing of 486 mutual-charter thrifts that filed applications for conversion with the FHLBB during 1983–87. FHLBB regulations required all thrifts seeking to convert from mutual to stock ownership to file an application with, and obtain the approval of, the FHLBB prior to conversion. Table 1 shows the disposition of these 486 thrifts. Panel A shows the disposition of all 486 converting thrifts while Panel B shows the disposition of 230 converting thrifts that were publicly traded. We identified publicly traded thrifts by cross-referencing the list of 486 converting thrifts against a list of publicly traded thrifts compiled by SNL Securities of Charlottesville, VA, and against thrifts identified by standard industrial classification on the 1996 Center for Research in Security Prices (CRSP) database. We confirmed each firm's status as a publicly traded thrift with an active thrift subsidiary as of the end of 1994, using information from the Bloomberg Financial News Network.

Regulators closed 40 of the 230 publicly traded thrifts, and other firms acquired 79 additional thrifts prior to year-end 1994, leaving an initial sample of 111 publicly traded thrifts. We eliminated three thrifts that traded at less than \$1.00 per share and 11 thrifts for which we were unable to obtain ownership data for at least one year in both the pre-expiration and post-expiration periods. We also eliminated three thrifts that exceeded the 10 percentage point limitation on pre-expiration ownership, as follows.

United Savings Bank of Montana reported that a noninstitutional blockholder, First Montana Title Insurance Company, owned more than 10% of its stock in each of the three pre-expiration years. According to a company spokesperson, United Savings Bank did not adopt the optional five-year charter protection, which is more restrictive than the standard three-year regulatory protection (see discussion in Section 2), and the blockholder had obtained prior written approval from the FHLBB to exceed the 10% regulatory maximum. Palfed Inc. of South Carolina, reported that a partnership led by Weldon Wyatt had acquired 20.7% of its stock in 1989 (year -1). Palfed sued Mr. Wyatt, and in a subsequent settlement Mr. Wyatt agreed to sell his shares. Chester Valley Bancorp of Pennsylvania reported that an institutional blockholder, Meridian Bancorp Inc., owned in excess of 10% of its stock in year -1. Closer review reveals that Meridian's ownership was unchanged from year -2 to -1 at 115,000 shares, but that Chester Valley engaged in a stock repurchase of 208,000 shares during year -1, pushing Meridian's ownership share to 12.2%.

Table 1
Conversions by thrift institutions from mutual to stock ownership 1983–87

The total number of converting thrifts is the number of thrift conversions approved by the Federal Home Loan Bank Board during each year 1983–87. Thrifts closed by regulators and thrifts acquired by other firms during 1983–94 were identified using the Federal Reserve System's National Information Center (NIC) depository institution database. Thrifts surviving through 1994 are defined as those converting from mutual to stock ownership, removing those closed by regulators or acquired by other firms. Publicly traded thrifts were identified by cross-referencing the list of converting thrifts with thrifts identified by the Center for Research in Securities Prices as being traded on the New York Stock Exchange, the American Stock Exchange, or the over-the-counter market. The number of thrifts in the sample is the subset of thrifts surviving through 1994 for which ownership data were available for the eight years subsequent to conversion. Percentages are row percentages.

Year	Total number of converting thrifts	Number and % closed by regulators 1985–94		Number and % acquired 1985–94		Number and % surviving through 1994		Number and % converting thrifts in sample	
Panel A: *All converting thrifts*									
1983	85	37	43.5%	22	25.9%	26	30.6%	12	14.1%
1984	92	24	26.1%	34	37.0%	34	37.0%	13	14.1%
1985	83	27	32.5%	28	33.7%	28	33.7%	10	12.0%
1986	90	14	15.6%	27	30.0%	49	54.4%	30	33.3%
1987	136	21	15.4%	54	39.7%	61	44.9%	29	21.3%
1983–87	486	123	25.3%	165	34.0%	198	40.7%	94	19.3%
Panel B: *Publicly traded converting thrifts*									
1983	35	8	22.9%	9	25.7%	18	51.4%	12	34.3%
1984	27	6	22.2%	7	25.9%	14	51.9%	13	48.1%
1985	32	6	18.8%	12	37.5%	14	43.8%	10	31.3%
1986	57	8	14.0%	16	28.1%	33	57.9%	30	52.6%
1987	79	12	15.2%	35	44.3%	32	40.5%	29	36.7%
1983–87	230	40	17.4%	79	34.3%	111	48.3%	94	40.9%

Apparently, this violation was not noticed or challenged by other shareholders, management, or regulators.

For the remaining 94 firms, we are able to construct market-based performance measures for each of the three years before and after expiration of the anti-takeover provisions. While adoption of the 5-year limitation on ownership was standard practice for converting thrifts, we were not able to confirm that each thrift in our sample adopted this charter provision. Officials at the Office of Thrift Supervision were unresponsive to our requests for this information. We contacted senior analysts at SNL to discuss how they obtained their data. They indicated that SNL's charter information was obtained directly from offering circulars, but, since SNL was only founded in 1987, they do not have offering circulars for many conversions occurring in earlier years. Finally, we contacted officers at our sample thrifts, but often no one could remember whether their charters contained the five-year protection.

We define the pre-expiration measurement period, which we denote years -3, -2, and -1 in relation to expiration, as the three full calendar years preceding the expiration of the anti-takeover provisions. Fig. 1 depicts the availability of thrift information. Because conversion occurred during year -5 relative to expiration, this procedure excludes any stock-price effects associated with the firm's initial public offering. We define the post-expiration measurement period, which we denote years 1, 2, and 3 in relation to expiration, as the first, second, and third full calendar years after expiration of the anti-takeover

				Ownership data available								
1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
C		-3	-2	-1	E	+1	+2	+3				
	C		-3	-2	-1	E	+1	+2	+3			
		C		-3	-2	-1	E	+1	+2	+3		
			C		-3	-2	-1	E	+1	+2	+3	
				C		-3	-2	-1	E	+1	+2	+3

Note: **C** denotes the year of conversion, and **E** denotes the year that antitakeover protection expired.

Fig. 1. Availability of ownership data before and after expiration of five-year anti-takeover protection for thrifts converting from mutual to stock ownership in 1983–87.

Ownership data were collected for calendar years 1987–95, so that at least one year of ownership data is available before, and at least three years of ownership data are available after, expiration of the anti-takeover protection for each converting thrift. Years -3, -2, and -1 comprise the pre-expiration period, and years $+1$, $+2$, and $+3$ comprise the post-expiration period.

provisions. Excluded from both measurement periods is the calendar year during which the anti-takeover provisions expired. Therefore, the firm's ownership structure is restricted throughout our pre-expiration measurement periods, but unrestricted throughout our post-expiration measurement period. Moreover, this procedure excludes any stock price effects associated with expiration of the anti-takeover provisions in year 0. We construct our annual performance measures using stock-price data obtained from CRSP for 1984–95. Our performance measure is the annual return, which is calculated by exponentiating the yearly sum of the logs of CRSP daily returns.

Because we focus on conversions occurring during a small number of years, the performance of our sample firms in the pre- and post-expiration periods is likely to have been affected by changes in the thrift industry, and in the economy as a whole. In the late 1980s, the thrift industry suffered large losses as a result of lax underwriting practices, coupled with declining commercial real estate prices. Associated with those losses were large declines in the share prices of most thrifts. In the early 1990s, share prices rose significantly as the commercial real estate market stabilized, and the most financially troubled thrifts were sold or closed.

We created a control group of firms by combining lists of publicly traded thrifts obtained from SNL Securities and the Office of Thrift Supervision (OTS), with a list of thrifts compiled from SIC information on CRSP. From this list, we deleted the 230 thrifts converting from mutual to stock ownership during 1983–87. To control for survivorship bias, we require that control group firms were in existence throughout the analysis period of 1987–94, eliminating all thrifts that were closed by regulators or acquired during this period. This produced a final control group of 76 thrifts.

As shown in Table 2, the median stock returns for the control group of publicly traded thrifts were negative in 1987, 1989, and 1990, with a low of -45.3% in 1990, but were positive in 1988 and the period 1991–95, with a high of 81.8% in 1992. To control for influences that produced these wide swings in industry performance, we calculate the median annual return from our control group of publicly traded thrifts, and subtract that amount from the annual stock return for each observation in our sample group of thrifts, where annual returns are measured from year-end to year-end.

For our analysis, we took data on insider ownership from firm proxy statements, data on institutional block ownership from schedule 13F filings compiled by CDA Technologies of Rockville, MD, and data on ESOP and noninstitutional block ownership, which is ownership by a noninstitutional outside investor holding at least 5% of the firm's shares, from Schedule 13D and 13G filings. Institutional investors that manage more than $100 million in assets file Schedule 13F with the Securities and Exchange Commission (SEC). Each stockholder, whether an individual or corporation, that owns 5% or more of a publicly held U.S. corporation files Schedule 13D or 13G with the SEC or OTS, depending on

Table 2
Median annual stock returns for a control group of thrift institutions, 1987–95

Stock return data are taken from the Center for Research in Securities Prices. The control group of thrifts was created from a list of thrifts identified by CRSP as trading during 1994. To minimize survival bias, control group thrifts were required to have at least eight full years of return data including 1994. This restriction eliminates all publicly traded thrifts that failed or were acquired during the period 1987–94. The control group also excludes the 486 thrifts identified by the Office of Thrift Supervision as converting from mutual to stock during 1983–87.

Year	Number of firms	Control group median stock return
1987	76	− 15.0%
1988	76	18.4%
1989	76	− 13.1%
1990	76	− 45.3%
1991	76	24.3%
1992	76	81.8%
1993	76	32.1%
1994	76	1.36%
1995	72	48.0%

with which agency the company files. Schedule 13D also requires disclosure of the stockholder's intent, which could be, for example, for purposes of investment or for purposes of control. We construct separate measures for institutional and noninstitutional block ownership because Holderness and Sheehan (1988) suggest that the motivations of these two groups of blockholders may differ.

4. Results

In this section, we examine changes in the ownership structure and changes in the stock price performance of our sample of thrifts. We then test whether firm performance improves following expiration of the anti-takeover provisions, and whether changes in ownership structure influence firm performance.

4.1. Changes in firm ownership structure

We evaluate four measures of changes in insider and outsider ownership from the pre-expiration to the post-expiration period: (1) the largest percentage ownership by a single officer or director, (2) the largest percentage ownership by a single institutional blockholder, (3) the largest percentage ownership by a single noninstitutional blockholder, and (4) the percentage ownership by the firm's employee stock ownership plan. In most cases, either the chief executive officer or the chairman of the board of directors held the largest percentage

Table 3
Average ownership of publicly traded thrifts for the three years preceding and the three years following the expiration of regulatory restrictions on firm ownership structure

These restrictions limit ownership by any person or group of persons acting in concert to 10% of the firm's outstanding shares during the five years following conversion from mutual to stock organization. Pre-expiration years are denoted as years −1, −2, and −3, and post-expiration years are denoted as years 1, 2, and 3. Ownership statistics are shown for the insider with the largest ownership share, the noninstitutional outside blockholder with the largest ownership share, the institutional blockholder with the largest ownership share, and for the firm's ESOP. For firms converting during 1983 and 1984, fewer than three years of ownership data are available before expiration of the anti-takeover provisions. Test statistics for significant differences between the mean for pre-expiration years −3, −2, and −1 and the mean for post-expiration years 1, 2, and 3 are given, and significant results at the 1% and 5% levels are marked with a ** and *, respectively.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		Insider ownership		Noninstitutional ownership		Institutional ownership		ESOP ownership	
Years relative to expiration of limitations on ownership structure	Number offirms	Number where an insider owned stock	Mean insider ownership	Number where a non-institutional blockholder owned stock	Mean non-institutional ownership	Number where an institutional blockholder owned stock	Mean institutional blockholder ownership	Number where an ESOP owned stock	Mean ESOP ownership
Panel A: *Pre-expiration years*									
−3	64	60	3.13%	34	4.01%	56	4.51%	5	0.44%
−2	81	81	3.98%	48	4.93%	72	4.65%	8	0.69%
−1	94	94	3.81%	63	5.60%	87	4.66%	11	0.91%
Mean for years −3, −2 and −1	94	94	3.59%	76	5.05%	87	4.62%	11	0.68%

Panel B: Post-expiration years

1	94	94	5.95%	54	5.54%	89	4.90%	13	1.25%
2	94	94	6.41%	64	6.00%	89	5.31%	14	1.41%
3	94	94	6.73%	59	4.72%	85	5.80%	17	1.40%
Mean for years 1, 2 and 3	94	94	6.31%	78	5.41%	89	5.28%	17	1.35%
Percentage point difference between pre- and post-expiration means	94	94	2.72	78	0.36	89	0.66	17	0.67
t-statistic			3.91**		0.82		2.23*		3.02**

ownership by any single officer or director. The percentage ownership for insiders includes stock options that can be exercised within 60 days. We choose to evaluate the largest percentage of ownership for insiders as well as outsiders because the largest shareholder has the most incentive as well as the opportunity to influence other shareholders.

For each measure, we obtain firm-specific values in the three years before and the three years after expiration of the anti-takeover provisions, and then test for differences in pre- and post-expiration ownership structure, using the t-statistic:

$$t = \left(\sum_{i=1}^{N} (ownership_{\text{pre-expiration}} - ownership_{\text{post-expiration}})/N \right) / (\sigma/N), \qquad (1)$$

where $ownership_{\text{pre-expiration}}$ is the average percentage ownership in the pre-expiration period and $ownership_{\text{post-expiration}}$ is the average percentage ownership in the post-expiration period, σ is the standard deviation of the distribution of the change in ownership, and N is the number of firms. We calculate the average ownership percentages in the pre- and post-expiration periods by averaging, across firms, the three-year period mean for each firm.

In interpreting the results, it is important to remember that the 10% limitation on ownership applies to any group of persons acting in concert. This language means that the constraint can be, and often was, binding, even when the largest reported percentage ownership by a single investor is less than 10%. It also means that the combined ownership by all insiders or institutional investors can exceed 10% without imposing a binding constraint, so long as the FHLBB does not consider the group to be acting in concert. In practice, the ultimate decision about whether a group of investors are constrained by the 10% limitation rests with thrift regulators and the courts.

Table 3 presents descriptive statistics on each of the four ownership measures: the largest individual share ownership by an insider, by an institutional blockholder, by a noninstitutional blockholder, and by the firm's ESOP. Column 2 displays the number of firms for which ownership information was available in each year. Columns 3 and 4 show the number of firms where an insider owned at least some stock and the average ownership by the insider with the largest shareholdings, respectively. Comparison of Columns 2 and 3 reveals that insider ownership was positive for all firms in each period except year -3, when four firms reported zero insider ownership. The maximum ownership percentage, which is not reported in Table 3, in each of the three pre-expiration years was 10%, indicating that the anti-takeover rule's constraint was binding for at least one firm in each year. Further analysis of the data for individual firms reveals that the largest percentage ownership by an insider was more than 9% in at least one of the three pre-expiration years for eight different firms.

Column 4 of Table 3 gives averages of insider ownership by year for all pre- and post-expiration years, as well as the t-statistics for the differences between

the pre-expiration and the post-expiration period means. The annual pre-expiration insider ownership means range from 3.13% to 3.98%, with a three-year average of 3.59%, whereas the annual post-expiration means range from 5.95% to 6.73%, with a three-year average of 6.31%. The *t*-statistic for the 2.72 percentage point difference between the period means is 3.91, significant at the 1% level. The bulk of this difference arises from year -1 to year $+1$, when the mean percentage ownership by the largest insider increases from 3.81% to 5.95%. The 2.14 percentage point difference between these individual years significant at the 1% level.

Earlier studies show that CEO compensation in the thrift industry (Cole and Mehran, 1991) and the banking industry (Houston and James, 1993) relies less on stock options than it does in other industries. Therefore, we speculate that most of the increase in ownership by insiders resulted from their direct purchase of their firm's stock through dealers or brokers rather than from accumulation of shares through the exercise of stock options. This assumption is important because Yermack (1997) finds evidence consistent with the view that CEOs receive stock options shortly before favorable corporate news. Thus, we speculate that an increase in ownership, as well as performance, following expiration of the Rule should not be the result of changes in the firm's compensation policy.

Columns 5 and 6 of Table 3 present descriptive statistics on the largest percentage ownership by a single noninstitutional blockholder. We define a noninstitutional blockholder as a noninstitutional outside investor holding at least 5% of the firm. Outside investors holding less than 5% are exempt from filing the 13D and 13G schedules, which we used to obtain our ownership data.

Comparisons of Columns 2 and 5 of Table 3 reveal that the largest noninstitutional ownership was positive in each year for only about half of the firms. Of the 94 firms in our sample, 42 reported that the largest noninstitutional blockholder owned more than 9% of the firm in at least one of the three pre-expiration years.

As shown in Column 6 of Table 3, the pre-expiration means for the largest percentage ownership by a noninstitutional blockholder range from 4.01% to 5.60%, with a three-year average of 5.05%, whereas the post-expiration means range from 4.72% to 6.00%, with a three-year average of 5.41%. The *t*-statistic for the 0.36 percentage point difference between the pre-expiration and the post-expiration period means is 0.82, indicating that the difference is not significantly different from zero.

Columns 7 and 8 of Table 3 present descriptive statistics on the largest percentage ownership by a single institutional investor. Comparisons of columns 2 and 7 reveal that institutional investors held shares in most, but not all, firms in each year. Analysis of data for individual firms shows that, for 25 firms, the largest percentage ownership by an institutional investor was more than 9% in at least one of the three pre-expiration years.

The pre-expiration means for the largest percentage ownership by an institutional investor, shown in Column 8, range from 4.51% to 4.66%, with a three-year average of 4.62%, whereas the post-expiration means range from 4.90% to 5.80%, with a three-year average of 5.28%. The *t*-statistic for the 0.66 percentage point difference between the pre-expiration and the post-expiration period means is 2.23, statistically significant at the 5% level.

Columns 9 and 10 of Table 3 present descriptive statistics on the percentage ownership by the firm's employee stock ownership plan when that percentage is greater than 5%. Like noninstitutional outside investors, ESOPs with investments of less than 5% do not have to file the 13D and 13G schedules from which we obtained our ownership data.

Comparison of Columns 2 and 9 of Table 3 reveals that ESOPs owned more than 5% of the firm's equity in only a small portion of the sample firms. ESOPs for 11 firms in the pre-expiration period and for 13 firms in the post-expiration period held at least 5% of the firm's equity. Consequently, the average ESOP ownership percentages for the entire sample are quite small. The pre-expiration means for percentage ownership by ESOPs, shown in Column 10, range from 0.44% to 0.91%, with a three-year average of 0.68%, whereas the post-expiration means range from 1.25% to 1.41%, with a three-year average of 1.35%. The *t*-statistic for the 0.67 percentage point difference between the pre-expiration period and the post-expiration period means is 3.02, significant at the 1% level. More meaningful are the ownership percentages for the 15 firms where ESOP ownership changed from the pre- to the post-expiration period. For these firms, the pre- and post-expiration mean ESOP ownership percentages are 2.62% and 7.56%, respectively. The *t*-statistic for the 4.94 percentage point difference in the pre-expiration and the post-expiration period means is 6.81, significant at the 1% level.

Although the percentages of shares held by these ESOPs do not appear large enough to deter a takeover threat, this measure is biased downward because these are the percentages actually allocated to employees, rather than the percentages allowed under the adopted plans. For example, a firm with a leveraged ESOP can purchase shares for the ESOP with borrowed funds, but only allocate the shares to the ESOP as the debt is retired. Also, thrifts can speed up the allocation of shares to employees, or use a previously established ESOP to secure loans to purchase additional employer stock in an effort to defeat a tender offer. The IRS could argue, however, that neither the loan nor the subsequent purchases of employer stock was for the exclusive benefit of ESOP participants and beneficiaries, so that the ESOP trust would lose its tax qualification, rendering any contributions to the ESOP nondeductible, and rendering earnings of the trust taxable.

In summary, we find significant changes in firm ownership structure following expiration of the anti-takeover provisions. Ownership by insiders, by noninstitutional outside blockholders, by institutional blockholders, and by ESOPs

increased, and except for noninstitutional outside blockholders, these increases are statistically significant.

4.2. Changes in firm performance

Table 4 presents statistics on the average annual stock returns of the 94 sample firms for the three years preceding and the three years following expiration of the regulatory restrictions on ownership structure. Panels A and B of Column 2 in Table 4 display the unadjusted average stock returns for the sample firms. The mean for the pre-expiration period is 6.59%, whereas the mean for the post-expiration period is 36.86%, where the mean returns for years -3, -2, and -1 and for years 1, 2, and 3 are calculated as each firm's three-year mean averaged across the 94 sample firms. The 30.27 percentage point difference in performance between the two periods is statistically significant at the 1% level. These results should be viewed with caution, however, because they are heavily influenced by trends that influenced the performance of the thrift industry as a whole.

Panels A and B of Column 3 of Table 4 display the average industry-adjusted stock returns for years -3 to -1 and years 1 to 3. The performance of the sample firms exceeded that of the firms in the control group in both the pre-expiration and post-expiration periods, but was slightly higher before the anti-takeover provisions expired. The mean industry-adjusted return for the pre-expiration period is 11.07%, whereas the mean for the post-expiration period is 9.70%. The -1.37 percentage point difference between the two periods is not statistically different from zero. Hence, for the full sample of firms, the evidence in Table 4 does not show an improvement in industry-adjusted performance from the pre-expiration period to the post-expiration period.

In Table 5, we examine industry-adjusted performance for four pairs of firm portfolios constructed on the basis of changes in ownership from the pre-expiration period to the post-expiration period. We constructed each pair of portfolios by dividing the sample of 94 firms into two groups based on the median change in ownership from the pre-expiration period to the post-expiration period. We examine each of our four measures of ownership using these two groups. For ESOP ownership, however, we divide the sample into the 15 firms that reported a change in ESOP ownership from the pre-expiration period to the post-expiration period, and the remaining 79 firms that reported no change in ESOP ownership.

For firms that exhibit an increase in insider ownership greater than the median change in insider ownership, the difference between pre- and post-expiration mean performance is 9.87 percentage points, significantly different from zero at the 10% level. For firms with a change in insider ownership below the median, the difference between pre- and post-expiration mean performance is -12.15 percentage points, significantly different from zero at the 1% level.

Table 4
Average annual stock returns of 94 publicly traded thrifts for the three years preceding, and the three years following, the expiration of regulatory restrictions on firm ownership structure

These restrictions limit ownership by any person or group of persons acting in concert to 10% of the firm's outstanding shares during the five years following conversion from mutual to stock organization. Industry-adjusted annual returns are calculated as each firm's annual return less the median annual return for the industry control group of firms. Standard errors are shown in parentheses, and statistical significance at the 1% and 5% levels are noted with ** and *, respectively.

(1) Years relative to expiration of restrictions on ownership structure	(2) Mean unadjusted return	(3) Mean industry-adjusted-return[a]	(4) Percentage of industry-adjusted mean returns that were positive	(5) Number of firms
Panel A: *Pre-expiration years*				
− 3	19.85%** (3.46%)	8.43%** (3.17%)	64%	94
− 2	− 5.01% (3.32%)	11.78%** (2.58%)	64%	94
− 1	5.33% (5.10%)	13.05%** (3.39%)	64%	94
Mean for years − 3, − 2 and − 1	6.59%** (2.02%)	11.07%** (1.97%)	73%	94
Panel B: *Post-expiration years*				
1	35.84%** (5.47%)	5.16% (4.20%)	54%	94
2	30.12%** (5.91%)	12.81%* (4.78%)	61%	94
3	41.26%** (6.92%)	8.11% (6.19%)	45%	94
Mean for years 1, 2 and 3	36.86%** (3.42%)	9.70%[c] (2.68%)	60%	94
Percentage point difference between pre- and post-expiration means	30.27	− 1.37		94
t-statistic[a]	6.54**	− 0.38		94

[a] Test statistic for significant differences between the means for years − 3, − 2 and − 1 and years 1, 2 and 3.

Table 5
Average annual industry-adjusted stock returns of four groupings of publicly traded thrifts for the three years preceding and the three years following the expiration of regulatory restrictions on firm ownership structure. Industry-adjusted annual returns are calculated as each firm's annual return less the median annual return for an industry control group of firms. Each pair of portfolios is constructed by dividing 94 thrifts into two groups, based on change in ownership shares from the pre-expiration period to the post-expiration period by whether the firm experiences ownership changes above or below the sample medians. Four measures of change in ownership are examined: change in ownership by the insider with the largest shareholdings, change in ownership by the noninstitutional outside blockholder with the largest shareholding, change in ownership by the institutional blockholder with the largest shareholdings, and change in ownership by the firm's ESOP. Because only 17 of the sample firms reported ESOP ownership, we divided the sample for comparison as the 15 firms with higher post-expiration ESOP ownership and the remaining 79 firms without higher post-expiration ESOP ownership. The test statistic for a significant difference between the means for years -3, -2 and -1 and years 1, 2 and 3 is shown, with statistical significance at the 1% and 10% levels denoted by ** and *, respectively

	Change in insider ownership		Change in non-institutional ownership		Change in institutional ownership		Change in ESOP ownership	
	Below median	Above median	Below median	Above median	Below median	Above median	Zero ownership	Positive ownership
Number of firms in portfolio	47	47	47	47	47	47	79	15
Percentage point difference between pre- and post-expiration mean performance	−12.15%	9.87%	−4.26%	1.39%	−4.75%	2.01%	2.74%	−24.85%
t-statistic	−2.84**	1.83*	−0.78	0.29	−1.06	0.36	0.68	−6.83**

Hence, it appears that industry-adjusted performance is an increasing function of changes in insider ownership.

For firms with a change in noninstitutional blockholder ownership above the median, industry-adjusted performance increased by 1.39 percentage points while, for firms with change in noninstitutional ownership below the median, industry-adjusted performance decreased by 4.26 percentage points, but neither of these changes are significantly different from zero. Similarly, for firms with a change in institutional ownership above the median, industry-adjusted performance increased by 2.01 percentage points, while for firms with a change in institutional ownership below the median, industry-adjusted performance decreased by 4.75 percentage points, but neither change is significantly different from zero. Thus, there does not appear to be a relationship between industry-adjusted performance and changes in ownership by noninstitutional or institutional blockholders.

For firms with no change in ESOP ownership, industry-adjusted performance increased by 2.74 percentage points, but this change was not significantly different from zero. For the 15 firms where ESOP ownership changed, however, industry-adjusted performance declined by 24.85 percentage points. The t-statistic for this difference in pre- and post-expiration period industry-adjusted performance is -6.83, statistically significant at the 1% level. Hence, it appears that industry-adjusted performance is negatively related to changes in ESOP ownership.

4.3. Abnormal industry-adjusted performance

To test whether firm performance improves following expiration of the anti-takeover provisions, we employ a variation of the methodology used by Healy et al. (1992), who examine post-acquisition performance of large industrial firms involved in mergers. Healy et al. (1992) observe that the appropriate benchmark for post-merger performance depends on the relation, if any, between pre- and post-merger performance. Similar logic applies to the relation, if any, between the performance of firms before and after expiration of the anti-takeover provisions. If there is no relation, the appropriate benchmark for measuring post-expiration performance is zero. If there is a relation, the appropriate benchmark is the pre-expiration industry-adjusted return. We regress the post-expiration return against the pre-expiration return as follows:

$$IAR_{\text{post-expiration},\,i} = \alpha + \beta IAR_{\text{pre-expiration},\,i} + \varepsilon_i, \tag{2}$$

where $IAR_{\text{post-expiration},\,i}$ is the mean annual industry-adjusted stock return for company i during the post-expiration years (years 1, 2, and 3), and $IAR_{\text{pre-expiration},\,i}$ is the mean for the pre-expiration years (years -3, -2 and -1). The intercept term α is our industry-adjusted measure of excess performance. As Healy et al. (1992) point out, the slope coefficient β measures the

correlation between returns in the pre- and post-expiration periods, so that $\beta\ IAR_{\text{pre-expiration},\ i}$ measures the effect of pre-expiration performance on post-expiration performance. Hence, the intercept α is independent of pre-expiration returns. Further, by imposing the restriction that $\beta = 1$, Eq. (2) can be transformed into

$$\Delta IAR_i = \alpha + \varepsilon_i, \tag{3}$$

where ΔIAR_i is the change in industry-adjusted performance from the pre-expiration to the post-expiration period. Here, α is equivalent to the difference in performance from the pre- to the post-expiration period appearing at the bottom of Table 4. We can reject this restriction at standard significance levels.

Because our sample consists of mutual-to-stock conversions occurring in the four years 1983–87, there may be significant differences in industry-adjusted performance across conversion years. To control for this possibility, we include a set of conversion-year dummy variables in our regression. The results of this base line regression appear in Line 1 of Table 6.

The estimated intercept, our measure of industry-adjusted excess performance, is 19%, significant at the 1% level. This indicates that stock returns increased 19% per year during the three years following expiration of the anti-takeover provisions, after controlling for pre-expiration performance. This finding provides strong evidence of significant improvement in performance following the removal of restrictions on firm ownership structure.

The -0.36 estimate of the slope coefficient, β, is significant at the 5% level, indicating that industry-adjusted returns for our sample of thrifts revert toward the mean. Healy et al. (1992) similarly report a positive and significant estimate of β, but they model accounting cash flows whereas we model market-value stock returns. Our observed coefficient is consistent with the findings of DeBondt and Thaler (1985), who report that firms with large equity losses in one three-year period experience large positive excess returns in the next three-year period. Even after adjusting for trends throughout the thrift industry, our sample contains firms that experienced large negative returns in the pre-expiration period, followed by large positive returns in the post-expiration period. One explanation for such performance behavior is that the thrifts with the most severe agency problems perform worse in the pre-expiration period and best in the post-expiration period.

Of our conversion-year dummy variables, only the 1983 dummy is significant at even the 10% level. The negative sign indicates that post-expiration returns were significantly lower for firms converting during 1983 than for other firms. The adjusted R^2 for this specification is only 0.017, and the regression F-Statistic of 1.33 indicates that the observed R^2 is not significantly different from zero. In Line 2 of Table 6, we delete the dummy variables for later-year conversions, including only the dummy for 1983 conversions. For this specification, the adjusted R^2 increases to 0.035, and the F-statistic of 2.69 indicates that the

Table 6
The effect of changes in ownership structure on firm performance

Results of regressions that test the effect on firm performance of changes in ownership of 94 publicly traded thrifts, from the three years preceding to the three years following the expiration of regulatory restrictions on firm ownership structure. These restrictions limit ownership by any person or group of persons acting in concert to 10% of the firm's outstanding shares, and by the firm's ESOP to 25% of outstanding shares, during the five years following conversion from mutual to stock organization. The dependent variable $IAR_{\text{post-expiration},i}$ is the mean annual industry-adjusted stock return for company i during the post-expiration years (years 1, 2, and 3). $IAR_{\text{pre-expiration},i}$ is the mean for the pre-expiration years (years -3, -2 and -1), $\Delta largest\ insider's\ ownership_i$ is the percentage point change in ownership by the officer or director with the largest shareholdings, $\Delta largest\ non\text{-}institutional\ ownership_i$ is a dummy variable indicating an increase in ownership by the noninstitutional blockholder with the largest shareholdings, $\Delta largest\ institutional\ ownership_i$ is the percentage-point change in ownership by the institutional blockholder with the largest shareholdings, and $\Delta ESOP\ ownership_i$ is a dummy variable indicating an increase in ownership by the firm's employee stock ownership plan. The change in ownership percentages is measured as the mean ownership during the post-expiration years, minus the mean ownership in the pre-expiration years. Industry-adjusted returns are calculated as the firm-specific annual return, minus the median industry annual return. The intercept terms in these regressions is the industry-adjusted measure of excess performance. The t-statistic for each coefficient appears in parentheses directly below it. Coefficients that are significantly different from zero at the 1%, 5%, and 10% levels are noted with ***, **, and *, respectively.

	Intercept	Ownership variables				$IAR_{\text{pre-expiration},i}$	Control variables				Adjusted R^2	Regression F-statistic
		Δlargest insider's ownership$_i$	Δlargest non-institutional ownership$_i$	Δlargest institutional ownership$_i$	ΔESOP ownership$_i$		1983 conversion	1984 conversion	1985 conversion	1986 conversion		
1	0.19***					−0.36**	−0.17*	−0.04	−0.03	−0.08	0.017	1.33
	(3.10)					(−2.24)	(−1.77)	(−0.40)	(−0.31)	(−1.04)		
2	0.14***					−0.29**	−0.12				0.035	2.69*
	(4.33)					(−2.06)	(−1.52)					
3	0.11***	1.21***				−0.28**	−0.13*				0.125	5.45***
	(3.34)	(3.22)				(−2.04)	(−1.73)					
4	0.18***		−0.06			−0.34**	−0.13				0.038	2.21*
	(3.94)		(−1.11)			(−2.28)	(−1.63)					
5	0.12***			0.04		−0.29**	−0.13				0.029	1.94
	(2.81)			(0.68)		(−2.06)	(−1.60)					
6	0.16***				−0.15**	−0.24*	−0.14*				0.066	3.19**
	(4.78)				(−2.00)	(−1.66)	(−1.76)					
7	0.13**	1.14***	−0.06	0.06	−0.13*	−0.27*	−0.17**				0.148	3.70***
	(2.40)	(3.03)	(1.10)	(1.08)	(−1.82)	(−1.94)	(−2.18)					

regression model is statistically significant at the 10% level. Consequently, in subsequent specifications, we only include the 1983 dummy.

4.4. The effect of ownership structure on abnormal industry-adjusted performance

In Section 4.1, we established that ownership by insiders increased after the anti-takeover provisions expire. In Section 4.3, we established that firm performance, as measured by industry-adjusted excess returns, improved in the post-expiration period. Although these findings are consistent with the theory that increases in insider ownership has a positive influence on firm performance, these findings provide only indirect evidence. In this section, we expand the model of abnormal industry-adjusted stock returns to provide more direct evidence. Specifically, we augment Eq. (2) with an additional regressor measuring the percentage-point change in ownership by the largest insider from the pre-expiration to the post-expiration period, as follows:

$$IAR_{\text{post-expiration, } i} = \alpha + \beta_1 IAR_{\text{pre-expiration, } i} + \beta_2 \Delta \textit{largest insider ownership}_i + \varepsilon_i, \quad (4)$$

where $IAR_{\text{post-expiration, } i}$ and $IAR_{\text{pre-expiration, } i}$ are the median annual industry-adjusted stock returns in the pre- and post-expiration period for firm i, and $\Delta \textit{largest insider ownership}_i$ is the percentage-point change in ownership by the officer or director with the largest shareholdings. In calculating the percentage point change in ownership, the insider with the largest percentage ownership in the pre-expiration period need not be the same as the insider with the largest percentage ownership in the post-expiration period. Percentage point changes in ownership by institutional and noninstitutional blockholders are calculated in an analogous manner.

We similarly expand the model of excess industry-adjusted stock returns in an effort to provide evidence about the relation between changes in outside blockholder ownership and firm performance. We augment Eq. (2) with one of two additional regressors measuring the percentage point change in outside blockholder ownership from the pre-expiration to the post-expiration period, as follows:

$$IAR_{\text{post-expiration, } i} = \alpha + \beta_1 IAR_{\text{pre-expiration, } i} + \beta_2 \Delta \textit{largest noninstitutional ownership}_i + \varepsilon_i, \quad (5)$$

and

$$IAR_{\text{post-expiration, } i} = \alpha + \beta_1 IAR_{\text{pre-expiration, } i} + \beta_2 \Delta \textit{largest institutional ownership}_i + \varepsilon_i, \quad (6)$$

where $IAR_{\text{post-expiration, } i}$ and $IAR_{\text{pre-expiration, } i}$ are the median annual industry-adjusted stock returns in the pre- and post-expiration periods for firm i, *Δlargest non-institutional ownership*$_i$ is a dummy variable indicating an increase in ownership by the noninstitutional investor with the largest shareholdings, and *Δlargest institutional ownership*$_i$ is the percentage point change in ownership by the institutional investor with the largest ownership. We use a dummy variable to measure changes in ownership by noninstitutional blockholders, because these blockholders, as well as ESOPs, are identified in Schedule 13D and 13F filings only when they own at least 5% of the firm's shares. This censoring below 5% ownership introduces a nonlinearity into the observed ownership percentage for these two groups of shareholders.

In Section 4.1, we showed that ESOP ownership increased significantly from the pre- to the post-expiration period. To provide evidence on the relation between changes in ESOP ownership and firm performance, we augment Eq. (1) with an additional regressor measuring the change in ESOP ownership from the pre-expiration to the post-expiration period, as follows:

$$IAR_{\text{post-expiration, } i} = \alpha + \beta_1 IAR_{\text{pre-expiration, } i} + \beta_2 \Delta ESOP\ ownership_i + \varepsilon_i, \tag{7}$$

where $IAR_{\text{post-expiration, } i}$ and $IAR_{\text{pre-expiration, } i}$ are the median annual industry-adjusted stock returns in the pre- and post-expiration periods for firm i, and *ΔESOP ownership*$_i$ is a dummy variable indicating an increase in ownership by the firm's employee stock ownership plan. Again, we use a dummy variable to measure ownership because of the limited information available from Schedules 13D and 13F. By imposing the restriction that $\beta_1 = 1$, Eqs. (4)–(7) can be transformed into

$$\Delta IARi = \alpha + \beta_2 \Delta ownership_i + \varepsilon_i, \tag{8}$$

where ΔIAR_i is the change in industry adjusted performance from the pre-expiration to the post-expiration period. We can reject this restriction at standard significance levels for each specification. Results obtained while imposing this restriction, however, are not qualitatively different from those presented here.

In all cases, the percentage point changes in ownership are calculated as the mean percentage ownership during the post-expiration years (years 1, 2, and 3), less the mean percentage ownership during the pre-expiration years (years -3, -2, and -1). The dummy variables for positive changes in ownership are equal to 1 when the percentage point change in ownership is positive, and zero otherwise.

Estimates of Eq. (4), shown in Line 3 of Table 6, include a coefficient for the change in the largest insider ownership variable of 1.21, which is statistically significant at the 1% level, with a t-statistic of 3.22. This result indicates that, on

average, sample firms earned an extra 1.21%, per year, during the post-expiration period for each percentage point increase in ownership by the insider with the largest shareholdings. Thus, there is a positive correlation between post-expiration performance and changes in insider ownership.

The results from estimating Eqs. (5) and (6), shown on Lines 4 and 5, respectively, of Table 6, indicate that the coefficients of the change in largest noninstitutional and institutional ownership variables are not statistically different from zero. Thus, we are unable to demonstrate any effect on firm performance from changes in outsider blockholder ownership. We speculate that the institutional blockholders, who by definition manage more than $100 million in assets, held shares of our sample thrifts solely for investment purposes. Indeed, a review of the blockholders' reasons for filing reveals no case in which institutions filed for purposes of control. Moreover, newly converted thrifts are, for the most part, small-capitalization stocks with market values in the $5 million to $50 million range, which trade infrequently. It is costly for institutional investors to monitor such small firms, so they are likely to act only as passive investors. As for noninstitutional blockholders, we can only speculate that regulatory restrictions on changes in control of financial institutions inhibit the external market for corporate control. Even after the expiration of the anti-takeover provisions, any investor seeking to acquire more than 10% of a depository institution's outstanding stock is required by the Acquisition of Control of Savings Associations Act to obtain prior regulatory approval, and this approval is often vehemently opposes by existing management (see 12 C.F.R. § 574.1–574.100 (1986)). These are interesting issues that we leave for future research.

Estimation of Eq. (7) (Line 6 of Table 6) yields a coefficient for the change in ESOP ownership variable of -0.15, significant at the 5% level, indicating that during the post-expiration period the annual return of sample firms was 15% less per year when ownership by the firm's ESOP increased. This finding suggests that our sample firms adopted ESOPs as an impediment to potential acquirers, weakening the market for corporate control. Further, this result is consistent with a number of studies that find a negative stock market reaction when an ESOP is adopted in the presence of takeover activity (see, for example, Gordon and Pound, 1990).

In Line 7 of Table 6, we test a final specification that includes all four of our variables measuring changes in blockholder ownership. The results of this test confirm our previous findings, in that changes in insider ownership are positively related to firm performance, whereas changes in ESOP ownership are negatively related to firm performance, and changes in outside blockholder ownership are unrelated to firm performance. In this specification, the change in insider ownership variable is statistically significant at better than the 1% level, while the change in ESOP ownership variable is significant at better than the 10% level.

5. Summary and conclusions

In this study, we investigate whether regulatory restrictions on the ownership of public companies harm performance by preventing firms from choosing the best ownership structure. Using a sample of thrift institutions that converted from a mutual to a stock form of organization, we examine ownership structure and stock-price performance before and after the expiration of regulatory anti-takeover provisions that limit the percentage of a firm's stock that may be owned by an inside or outside investor.

These anti-takeover provisions, which Congress and regulators put in place to induce the managers of mutual thrifts to convert to stock ownership, create a natural laboratory for testing the impact of regulatory restrictions on ownership structure, and the market for corporate control. The anti-takeover rule discussed here typifies a pattern of legislative and regulatory interference in capital markets (see Roe, 1990). Regulations often have subtle and unintended effects that, in some cases, turn out to be of considerable importance. Although our findings do not resolve the debate over whether the net economic effect of the anti-takeover provisions is positive or negative, they do provide evidence that the provisions interfere with the firm's ownership structure and, in turn, firm performance.

We find that after the anti-takeover provisions expire, insider ownership increases and firm performance improves significantly. Moreover, we link increases in insider ownership to improvement in firm performance. By constraining insider ownership, the anti-takeover rule weakens the link between reward and performance.

We also find significant changes in percentage ownership by ESOPs following expiration of the anti-takeover provisions, and a negative relation between such ownership changes and changes in firm performance. This relation is consistent with the hypothesis that firms adopt ESOP plans as a means of impeding the market for corporate control.

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