



Working Paper 9112

**TROUBLED SAVINGS AND LOAN INSTITUTIONS:  
VOLUNTARY RESTRUCTURING UNDER INSOLVENCY**

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Working papers of the Federal Reserve Bank of Cleveland are preliminary materials circulated to stimulate discussion and critical comment. The views stated herein are those of the authors and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

September 1991

### Abstract

Regulatory agencies are unwilling or unable to close thrift institutions immediately upon insolvency. Instead, they have progressively reduced the thrift capital requirement, refrained from enforcing that requirement, and allowed thrifts to hold more nonmortgage loans in the hope that the industry would recover. According to this study, only 13 percent of the largest 300 firms eventually recovered between the end of 1979 and the end of 1989. When the thrift crisis surfaced in the early 1980s, the firms that ultimately recovered operated in a fashion similar to those that eventually failed. But in the mid-1980s, recovered thrifts pursued a risk-minimizing strategy, while nonrecovered thrifts pursued a risky, high-growth strategy. We find no evidence that managers of unsuccessful firms consumed more perquisites than their successful counterparts.

## 1. Introduction

Throughout the 1980s and into the 1990s, the thrift industry (savings and loans [S&Ls] and mutual savings banks) was plagued by severe problems that led to massive numbers of insolvencies and bankrupted the government fund established to insure the industry's deposits.<sup>1</sup> Public concern about the enormous cost of the cleanup, though certainly justified, obscured an important fact: Unlike industries that require insolvent institutions to renegotiate with creditors immediately or under Chapter 11 protection (see Gilson et al. [1991]), thrifts often operate in an insolvent condition for extended periods. Although most undercapitalized thrifts remain weak or eventually fail, some do successfully rebuild their capital ratios to levels exceeding the regulatory minimum. This study investigates the restructuring strategies adopted by these recovered institutions and compares them to the operating strategies of thrifts that failed.

Although many factors contributed to the thrift industry's demise, two are generally considered most important: interest-rate risk and credit risk. The industry's policy of funding long-term loans (principally mortgages) with short-term financing (principally deposits) makes it vulnerable to unexpected

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<sup>1</sup> Ely (1989) reports that as of June 30, 1989, 538 thrifts were insolvent, while taxpayer losses stemming from failure of the Federal Savings and Loan Insurance Corporation (FSLIC) are projected to be in the hundreds of billions of dollars. Pauley (1989) estimates the cost of disposing of approximately 500 insolvent institutions as \$124 billion at mid-year 1989. Other estimates range from \$50 billion (Barth et al. [1990]) to as much as \$150 billion (Kane [1989]). Benston and Kaufman (1990) point out that the \$115 billion provided by the Financial Institutions Reform, Recovery, and Enforcement Act is 50 times larger than the cost of the celebrated bailout of New York City in 1975 and 80 times larger than the cost of the Chrysler rescue in 1979.

increases in interest rates. Short-term rates reached 20 percent in 1979; three years later, according to a 1987 U.S. General Accounting Office (GAO) report, unexpected rate increases had inflicted large capital losses on thrifts having negative duration gaps. For many of these firms, however, the losses were largely offset by the unexpected decrease in rates (and the lower volatilities of those rates) later in the year.

Although interest-rate risk was the major source of thrifts' losses in the first half of the 1980s, credit risk became the dominant factor behind the industry's woes during the second half of the decade. By 1987, the deteriorating quality of assets in thrift portfolios, particularly real estate investments in the Southwest, accounted for virtually all of the industry's remaining problems.

From the late 1970s through mid-1989, regulators, gambling that unexpectedly lower interest rates would restore thrift institutions to health, progressed through several stages in their attempts to resolve the crisis. The required capital ratio was reduced from about 5 percent to virtually zero between 1980 and 1986, and regulators even permitted a number of thrifts deemed insolvent under regulatory accounting principles (RAP) to continue to operate. Despite the potential problems inherent in such a policy, this action gave the industry two important advantages: First, beginning in the early 1980s, the policy granted thrifts expanded investment and lending powers with which to restructure their business strategies. Second, although many of these new powers were restricted by early 1985, thrifts were given an extended period in which to rebuild their capital ratios.

Granting new powers and the time to implement them did not change the incentive structure that the industry faced, however. The FSLIC continued to provide deposit insurance at rates independent of risk. In addition, staffing reductions at the Federal Home Loan Bank Board (FHLBB) meant fewer examiners and thus less-stringent monitoring. Under these conditions, theory suggests that thrift managers will take larger risks, even if the expected return is not commensurate with those risks.<sup>2</sup> Therefore, it was not clear a priori that the industry would utilize its newfound advantages to retrench and restructure in an attempt to regain solvency. Thrifts could have chosen to engage in risky operations that would have eroded their portfolio quality and endangered their recovery.

Our study shows that almost all of the largest 300 thrifts posting capital deficiencies at the end of 1979 utilized the flexibility granted by the lower required capital ratio, yet only 13 percent had recovered by the end of 1989. In contrast, more than half (55 percent) of the institutions had failed or merged. The remaining thrifts continued to operate, but with less capital than required in 1979. Even with continued regulatory forbearance, we find no evidence that their condition improved.

Unlike previous studies,<sup>3</sup> which examine differences between

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<sup>2</sup> For example, see Buser et al. (1981), Marcus (1984), Ronn and Verma (1986), Flannery (1991), and Keeley (1990). John et al. (1991) and Ritchken et al. (1991) illustrate the importance of frequent monitoring.

<sup>3</sup> See, for example, Benston (1985), Barth and Bradley (1989), Barth et al. (1990), Cole et al. (1991), and Kane (1989).

insolvent and well-capitalized firms, this one looks at differences between insolvent firms that recover and those that do not. Three conclusions emerge: First, our evidence suggests that identifying which firms will eventually recover would at best be very difficult. Combining our results with those of the earlier studies, we find that although it is relatively easy to distinguish undercapitalized thrifts from safe ones, pinpointing which of the zombie institutions will ultimately recover may not be possible using only financial data. Second, differential use of the new investment policies does not distinguish recovered firms from failed institutions. However, unsuccessful firms do take on more asset risk and tend to hold a riskier deposit pool, which jeopardizes their portfolio quality and their recovery. Finally, we find no evidence that nonrecovered thrifts consume more perks than their more successful counterparts. This implies that managers of failed firms are no more susceptible to principal-agent problems than managers of successful ones; rather, they may simply be less fortunate or less adept at operating thrift institutions.

## 2. Institutional Background and Hypotheses Testing

### 2.1 The Rise and Fall of the S&L Industry

The National Housing Act of 1934 established the FSLIC and limited deposit insurance coverage to \$5,000 per account. This limit was progressively increased to \$40,000 over the next 40 years and was then hiked to its current level of \$100,000 by the Depository Institutions Deregulation and Monetary Control Act of 1980 (DIDMCA). Because customers can establish

multiple accounts while availing themselves of technology that makes spreading funds across several insured institutions easy, essentially all thrift deposits are federally insured. Kormendi et al. (1989) report that as of September 1988, the FSLIC explicitly insured about \$1.3 trillion in S&L deposits.

The thrift industry's traditional policy of funding long-term, fixed-rate mortgages with short-term deposits was generally profitable during the relatively tranquil period that preceded the mid-1960s. Although this strategy made thrifts vulnerable to unexpected increases in interest rates, such upticks were, until then, historically unlikely. The solvency crisis of the 1960s was followed by more severe losses in the late 1970s, when rapid inflation led to unexpectedly higher interest rates. By 1982, short-funded institutions were experiencing huge capital losses that drove many into insolvency, since thrifts had traditionally operated with relatively low capital levels.

The incentive effects of flat-rate deposit insurance magnify both the potential and the realized problems connected with the factors listed above.<sup>4</sup> Merton (1977) models insurance as a put option, and it is well known that the value of options increases with volatility. Thus, although insurance is worth more to riskier thrifts, flat-rate pricing means that they pay no more for it than other institutions. Kane (1985) and Kormendi et al. (1989) argue that this incentive is particularly powerful for insolvent or

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<sup>4</sup> Emerson (1934) identified certain of these problems within a year after the Glass-Steagall Act of 1933 instituted deposit insurance.

nearly insolvent firms, and empirical evidence supports their claim. For example, Brewer (1990) finds that risky thrifts that adopted still riskier strategies obtained higher stock returns than lower-risk thrifts that pursued similar strategies. This result is consistent with the notion that owners of thinly capitalized firms would rather place the insurer's capital at risk than their own. By 1987, interest-rate-related capital losses had been mostly eliminated or restored, but the credit quality of thrift assets had deteriorated dramatically, accounting for virtually all of the industry's remaining problems.

In principle, an insurer can protect itself by charging sufficiently high premiums and by taking steps to reduce its loss exposure (for instance, by assigning staff members to supervise those thrifts most likely to take risks unacceptable to the insurer). However, as Kane (1985) and Kormendi et al. (1989) note, deposit insurance contracts do not include any of the standard methods to accomplish this, as there are no provisions for deductibles, coinsurance, or enforced limits on coverage.

The incentive problems associated with deposit insurance are also magnified by scarce regulatory resources. Benston and Kaufman (1990), among others, claim that the relatively small number of FSLIC examiners could not have prevented the plethora of financially distressed thrifts from engaging in risky operations, especially during the period examined here. Fraud and



managerial incompetence further exacerbate these problems.<sup>5</sup>

## 2.2 Resolution of the Crisis

In the early 1980s, most thrifts in financial straits suffered losses due to unanticipated increases in interest rates. Policymakers, reasoning that unexpectedly lower rates or more diversified assets would restore these institutions to health, chose to forbear and took actions to cover up emerging problems in the industry. Regulatory forbearance often took the form of capital augmentation, reductions in mandatory capital requirements, and failure to enforce existing requirements.<sup>6</sup> The government also allowed thrifts to invest in nontraditional assets such as nonmortgage loans and

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<sup>5</sup> Perhaps the most amazing example of both fraud and incompetence is Vernon Savings and Loan of Vernon, Texas. By the time regulators closed Vernon in 1987, 96 percent of its loans were in default. Most of the remaining loans contained some form of deferred interest provision; they could not possibly have been in default because the first interest payments had not yet come due. Scott Taylor, a former FSLIC deputy director of liquidations who saw more than 50 institutions placed into receivership, stated that "Those companies did not fail because of broader asset and investment powers, or because of direct investments in real estate. They failed because of fraud, incompetence and criminality ...." See Benston (1985).

<sup>6</sup> The wisdom of permitting insolvent institutions to continue to operate has been challenged by Kane (1985, 1990), Kormendi et al. (1989), and Benston and Kaufman (1990), among others. They argue that incentives to adopt risky business and investment strategies are greatest for insolvent firms. DeGennaro and Thomson (1990) estimate the cost of regulatory forbearance from 1980 through 1989. Although their preliminary evidence on the ex-post cost of such forbearance is inconclusive, it does document the massive dollar amount these regulatory gambles place at risk.

equity. We include a partial listing of regulatory forbearances below.<sup>7</sup>

In November 1980, the FHLBB both reduced thrifts' explicit capital requirement from approximately 5 percent to about 4 percent and provided for a "qualifying balance deduction" that in effect lowered the requirement still further. Beginning in November 1981, the FSLIC accepted net-worth certificates from thrifts with less than 3 percent net worth in exchange for FSLIC promissory notes, with face value guaranteed by the insurer. And in a departure from generally accepted accounting principles (GAAP), the FSLIC permitted thrifts to count these certificates as part of capital. In January 1982, the capital requirement was further reduced to 3 percent. The following July, thrift regulators permitted goodwill (an intangible component of capital) to be amortized over a 40-year period, while allowing income from unbooked gains to be realized in as little as five years. Furthermore, the FHLBB began to include "appraised equity capital" in its calculations of regulatory net worth in November 1982.<sup>8</sup>

Beginning with DIDMCA in March 1980, legislative and regulatory authorities began granting thrifts new investment powers. DIDMCA, for example, authorized federally chartered S&Ls to invest up to 20 percent of their assets in corporate bonds and consumer loans and extended their authority to make construction or acquisition loans. The Garn-St Germain

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<sup>7</sup> For a more-detailed examination, see Barth and Bradley (1989) and Kane (1989).

<sup>8</sup> Appraised equity capital is the difference between the appraised market value and the book value of certain assets.

Depository Institutions Act of December 1982 expanded the limits on commercial mortgage and consumer loans still further.

Even though interest rates had fallen substantially by 1985, the S&L industry remained troubled.<sup>9</sup> In March 1985, the FHLBB issued new regulations that limited the amount of direct investment thrifts could undertake and reinstated higher capital standards (Kane [1989, table 2-4]). Later that year, FHLBB Chairman Edwin Gray testified before Congress that both regulations were needed to protect the FSLIC fund from ever-increasing credit risks. However, these actions were motivated in large part by the FHLBB's desire to maintain the S&L industry's "It's a Wonderful Life" image, thus protecting its own regulatory turf and buying time to allow the industry to recover. During the second half of the decade, the FHLBB continued its policy of forbearance, but rather than augmenting capital through accounting adjustments or reduced capital requirements, regulators simply ignored the requirements after 1987.<sup>10</sup>

In brief, regulatory and legal action taken during the 1980s produced

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<sup>9</sup> Kane (1990) reports that the interest-rate decline was less helpful than it might have appeared because many mortgage borrowers exercised their option to refinance at the lower rates.

<sup>10</sup> According to the GAO (1987, pp. 3 and 8), the FHLBB announced on February 25, 1987 that "...the Bank Board is unlikely to take administrative action to enforce the minimum capital requirements for ... basically sound, well-managed thrifts with regulatory capital above 0.5 percent, and with problems in the energy, agricultural, natural resources or other distressed sectors [of] the economy." In large part, the change in the forbearance rationale was borne of necessity. Barth and Bradley (1989) report that the FSLIC lacked the reserves to close and resolve all of the insolvent thrift institutions.

both lower capital requirements and increased investment powers, providing thrifts with additional time to improve their business strategies and to regain solvency. For example, regulators gave troubled thrifts the opportunity to restructure their assets towards shorter-term commercial or consumer loans, which in turn allowed these firms to reduce their risk and to raise their asset quality. But the FHLBB also scaled back regulatory supervision and left intact the risk-taking incentive structure for insured thrifts. Given these perverse incentives, there could be no guarantee that regulatory forbearance and new investment powers would be profitably utilized rather than abused.

### 2.3 Testable Hypotheses

Our interest centers on whether the S&L industry did in fact seize this opportunity to restructure itself. During the additional operating time provided by regulatory forbearance, did thrift managers effectively utilize their new powers? If so, we hypothesize that recovered institutions may have diversified their asset portfolios and restructured their liabilities in order to achieve a more effective funding mix. However, less-frequent monitoring, coupled with the perverse incentives inherent in flat-rate deposit insurance, may have resulted in thrifts taking on *more* asset and liability risk. Our empirical evidence suggests that successful institutions took on less risk than those that failed, a finding that is consistent with Cole et al. (1990), Benston (1985), Barth and Bradley (1989), Barth et al. (1990), and Kane (1989). Given this, we hypothesize that firms in financial distress at the

beginning of a sample period might also have taken steps to reduce or to manage risk by switching to a less-risky portfolio, changing their funding mix, or increasing their capital to provide a cushion against losses.

Clearly, these options are not mutually exclusive.

Another strategy distressed thrifts could have employed is based on the theoretical work of Merton (1977) and Marcus (1984). Modeling the equity of an insured banking firm as a call option, these studies show that the firm's equity value is a decreasing function of capital and an increasing function of portfolio risk. Although this behavior is opposite that of the observed risk-minimizing or risk-managing strategies noted above, it may be an optimal strategy for undercapitalized firms. In fact, deterioration of the credit quality of thrift portfolios during the second half of the 1980s is likely a consequence of this restructuring strategy.

Our null and alternative hypotheses are as follows:

- H0: Recovered thrifts pursued a different restructuring strategy than nonrecovered thrifts.
- H1: Recovered thrifts pursued the same risky restructuring strategy as nonrecovered thrifts, but were luckier.

We also ask whether managers of failing firms consumed more perks. If not, then perhaps self-dealing by management was not a material factor in the industry's demise.

### 3. Data and Sample Selection

We obtained data from the FHLBB Thrift Financial Reports (call reports). These reports, which the FHLBB uses in off-site examinations, contain financial information on balance-sheet and income-statement items, as well as on items such as regulatory capital and rates paid on accounts. The data pertain to FSLIC-insured S&Ls and mutual savings banks.

Our sample period begins December 31, 1979 and extends through December 31, 1989. Because the FHLBB required thrifts to file these reports semiannually through December 31, 1983 and quarterly thereafter, our sample covers 33 call reports. To permit meaningful comparisons through time, we semiannualize the data beginning in 1984, resulting in 21 semiannual observations.

We chose December 31, 1979 as our starting date for several reasons. First, 998 thrifts were unable to meet capital requirements at that time. Second, the date precedes the 1980 and 1982 legislative changes and the explicit adoption of forbearance policies by thrift regulators. Third, it provides a full 10-year period to track the progress of thrifts in financial difficulty. Finally, December 31, 1979 marks the transition date from one call report format to another. As one might expect, specific data items included in these reports evolve through time, with substantial changes introduced periodically. By beginning our sample immediately after such a change, we minimize the number of variables lost. In a few cases, we are able to reconstruct variables by combining others according to information contained in the *Microdata Reference Manual* (see Board of Governors of the

Federal Reserve System [1989]). Because we wanted to focus on the most important thrifts, we selected the 300 largest firms having GAAP net worth/total asset ratios of less than 5 percent at the end of 1979.<sup>11</sup>

Table 1 gives the time profile of the sample. Firms may disappear from the sample for any of several reasons. First, they may have failed and been closed by regulatory authorities. Second, regulators may have forced them to merge with other institutions. Finally, they may have been acquired by other firms without federal intervention. Barth et al. (1990) claim that most thrift failures prior to 1983 resulted from unexpected interest-rate increases. They further argue that 1983 and 1984 were characterized by relatively few failures and that most thrifts failing after 1985 did so because of poor asset quality. The relative paucity of failed thrifts in the mid-1980s is somewhat misleading, because the number of surviving firms in our sample declines in each period. This drop-off makes the large number of failures from January 1988 through 1989 still more substantial, as it reflects more than 23 percent of the total number of firms in the sample at the beginning of 1988.

#### 4. Empirical Evidence and Discussion

The appropriate measure of thrift net worth depends on the intended use of the information. When available, market-based measures are preferred, but because relatively few thrifts in our sample have publicly traded equity,

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<sup>11</sup> The 5 percent selection criterion approximates the statutory capital requirement in force in December 1979.

we are limited to using financial data. Three measures using historical cost are most commonly employed. First, net worth may be computed according to GAAP net worth. This measure is useful for standard auditing purposes. Second, tangible net worth can be derived by subtracting goodwill from GAAP. This measure is often used as an estimate of liquidation value, since goodwill is lost in liquidation. Third, RAP net worth, which is useful for judging whether thrifts are in conformity with regulatory standards, can be derived by adding GAAP net worth to various items designed to augment thrifts' apparent capital positions. Examples include net-worth certificates, appraised equity capital, income-capital certificates, accrued net-worth certificates, qualifying subordinated debentures, and qualifying mutual-capital certificates. From these three cost measures, we have selected GAAP net worth for this analysis because it best represents a firm's going-concern value. The exact construction of GAAP net worth from call report data is discussed in the appendix.

To ensure that thrifts were correctly classified in the sample, we matched all firms not filing a complete series of call reports over the sample period against the merger history file and the list of thrift failures published by the Office of Thrift Supervision. Using these two files, we were able to classify all but 10 institutions as failed or merged over the sample period. We then hand-checked these 10 against various issues of The U.S. Savings Institution Directory (published by Rand McNally) and were able to classify seven as either mergers or failures. The remaining three thrifts (two of which recovered) were found to be in existence, but were reporting



call data under a different docket number than in 1979.<sup>12</sup>

Of the 300 thrifts in our sample, failing firms that were closed by regulators account for 25 percent, institutions merged (with or without federal assistance) account for 30 percent, and surviving thrifts account for 32 percent. Thus, recovered thrifts represent only 13 percent of the total sample. These firms were not only in existence in December 1989, but had rebuilt their average capital-to-asset ratios to 5 percent or more. Because the patterns of most variables for failing, merged, and surviving thrifts are similar, we combine these three groups to form the nonrecovered sample.

By including merged thrifts in the nonrecovered sample, we implicitly assume that they would not have survived had they remained independent. Ideally, the merged thrifts should be separated into two types: private mergers (which may include firms that would have survived) and supervisory mergers (which should be treated as failures). Unfortunately, with the exception of assisted mergers (classified here as failures), we cannot distinguish private mergers from unassisted supervisory mergers. Thus, including merged firms in the nonrecovered sample may bias us against finding differences between the recovered and nonrecovered samples.

To check the sensitivity of our merged-sample results, we reran the tests after excluding thrifts that disappeared because of a merger. Overall, we found that the results are not sensitive to inclusion of the merged thrifts

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<sup>12</sup> We extend special thanks to Michael Bradley and the Office of Thrift Supervision for providing us with the merger history file and the list of thrift failures through the end of 1989.

in the nonrecovered sample. This suggests that the majority of thrifts in the merged sample entered into merger agreements (either voluntarily or under supervisory pressure) because their prospects for recovery, and even survival, would have been dim had they remained independent.

Before presenting our empirical results, a discussion of our sample sizes is in order. Although 261 firms failed to recover, we include only 255 in the first portion of our sample (December 1979 to June 1985) when reporting comparisons through time. This is because six firms failed between December 1979 and June 1980, leaving us with only one observation for each. We treat the second subperiod (June 1985 through December 1989) in a similar manner. Although 160 of the nonrecovered firms were in existence in June 1985, we include only 158 because two failed before December 1985. For comparisons between groups (recovered versus nonrecovered), the sample sizes depend on the particular semiannual period examined, since some thrifts failed in each.

We split the sample period in June 1985 because in March of that year the FHLBB issued new regulations restricting S&L growth and investment powers -- a policy change that certainly affected thrift behavior in the second half of the decade. In addition, the critical restructuring decisions that ultimately determined whether a thrift recovered, survived, or failed were likely to have been made in the early 1980s. Therefore, simply comparing thrifts included in the sample at the beginning with those in existence at the end could be misleading.

Table 2 reports average total assets and GAAP net-worth ratios for both subperiods. One striking feature is that although recovered firms were,

on average, initially larger than nonrecovered firms, they generally grew more slowly. During the first subsample, which is characterized by increased investment powers, total assets of successful thrifts grew an average of 28.3 percent annually, compared to 37.4 percent for unsuccessful thrifts. During the second subperiod, this trend reversed. Recovered thrifts grew 7.6 percent annually, while nonrecovered thrifts grew only 4.0 percent.

Kaufman (1989) reports that the S&L industry expanded faster than the commercial banking industry between 1980 and 1987, a finding that is consistent with the high growth rate we observe for our total sample. But this pattern runs counter to that of most industries, which typically shrink during times of financial stress. Levy et al. (1988) cite excessive growth as an important factor in thrift failure, suggesting that the 37.4 percent growth rate of nonrecovered firms in our first subsample may have played a significant role in these institutions' demise.

The differences in the average GAAP net worth to total asset ratios are impossible to ignore. Initially, both recovered and nonrecovered firms had similar capital levels (as well as similar retained earnings and paid-in surplus). However, in both subsamples, nonrecovered thrifts experienced continuous earnings problems that eroded their retained earnings and net worth. In contrast, successful thrifts had higher earnings in both periods (especially the second), and their net-worth ratios were boosted by substantially larger capital infusions, reflected in paid-in surplus.

As shown in table 3, we find no evidence that the asset structures of recovered and nonrecovered thrifts differed significantly in December 1979.

This is not surprising given the role of the industry at that time. Traditionally, thrifts made mortgage loans that matured in 30 years. But in the early 1980s, legislation was adopted that allowed these institutions to make commercial and consumer loans as well as traditional mortgage loans. Both commercial and consumer loans typically mature much quicker than traditional mortgages and afford thrifts the opportunity to spread their assets among a wider range of investments. Given these new powers, one would expect to find a shift in asset structure from traditional mortgage loans to nonmortgage investments.

Table 3 shows that this expected shift was under way by the mid-1980s. Importantly, the asset structure of nonrecovered firms diverged from that of recovered thrifts over time, with nonrecovered thrifts holding more risky assets. Holdings of nonresidential loans, land loans, service corporation investments, and junk bonds by nonrecovered thrifts were significantly higher than for their successful counterparts, while holdings of other assets (mortgage, commercial, and consumer loans) did not differ significantly across groups.<sup>13</sup> By June 1985, the single-family mortgage investments of both types of thrifts had been significantly reduced, whereas investment in commercial loans, consumer loans, and mortgage-backed securities had risen. However, the increase in commercial and consumer loans for successful firms was not statistically significant.

In the second subsample, the proportion of total assets in

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<sup>13</sup> For evidence that these activities are riskier than traditional mortgage lending, see Brewer (1990).

single-family mortgages continued to decline, as both groups of thrifts invested more heavily in mortgage-backed securities; however, no other substantial investment changes were evident over time. This does not mean that thrifts collectively opted to hold safer portfolios. In fact, the drift toward riskier investments continued: Nonrecovered institutions held more junk bonds and invested more in service corporations in December 1989 than in June 1985. Importantly, the unsuccessful firms' riskier portfolios did not yield significantly more total income than the safer portfolios of the recovered firms.

Table 4 shows that the liability structures of both recovered and nonrecovered thrifts were largely the same in December 1979. Foreclosed assets for nonrecovered thrifts were statistically larger than for recovered thrifts. However, the difference is not important economically.

Increases in FHLBB advances in the mid-1980s are significant both statistically and economically for nonrecovered thrifts, signaling the deteriorating financial condition of these firms. However, this finding also indicates that nonrecovered thrifts were utilizing an important government subsidy. Firms that are members of the Federal Home Loan Bank (FHLB) system are afforded the privilege of borrowing from their district FHLB. These borrowings provide liquidity and a subsidized source of funds.

During the first subsample, recovered thrifts shifted from higher-risk wholesale deposits to retail deposits more than did failed thrifts. In June 1985, retail deposits of recovered firms accounted for 75 percent of total assets, while for nonrecovered firms the corresponding figure was only 54

percent. Successful firms' reorientation toward a retail focus is also reflected in their diminishing reliance on brokered deposits. Although the flow of brokered deposits to successful firms had grown slightly by the mid-1980s, it had increased substantially for nonrecovered thrifts.<sup>14</sup>

Clearly, recovered firms used the funding flexibility afforded depository institutions by DIDMCA and the Garn-St Germain Act (1982) more successfully than nonrecovered thrifts. The difference in the two groups' funding strategies reflected on their 1985 balance sheets suggests that while both types of institutions grew during the first half of the decade, the recovered thrifts pursued more conservative growth strategies than their unsuccessful counterparts. Recovered thrifts pursued a core-deposit growth strategy by expanding their assets at a rate they could primarily fund with inexpensive retail deposits. Therefore, the asset growth of recovered thrifts is consistent with the natural market growth associated with successful firms.

Nonrecovered firms' continued reliance on large, interest-sensitive wholesale deposits and nondeposit liabilities indicates a more speculative pattern of growth. Although these institutions used the new funding flexibility to increase their retail deposits, they expanded their asset portfolios even faster. This suggests that nonrecovered thrifts pursued a speculative growth strategy, since it is likely that the retail-deposit growth

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<sup>14</sup> Brokered deposits are similar to wholesale deposits in that they are raised in regional and national money markets and thus tend to be a volatile and interest-sensitive source of funds. Unlike wholesale deposits, which thrifts raise directly, brokered deposits are placed in thrifts by a money broker, who divides the deposits into pieces small enough to be fully insured.

rate is closely linked to the growth rate of income, which in turn is linked to the growth rate of the economy.

The FHLBB attempted to stop the flow of brokered deposits during the second portion of our sample, a policy that Kaufman (1989) claims was a mistake. Because insolvent institutions pursuing high-risk strategies must pay higher rates to attract deposits, the FHLBB, he argues, could have used the rates thrifts were willing to pay for these deposits as a guide for identifying troubled institutions. Our evidence supports Kaufman's contention, especially during the second subperiod. Thrifts in the nonrecovered sample held nearly five times as many brokered deposits per dollar of assets as the recovered thrifts over this period, and their reliance on brokered deposits more than doubled.

The differences between the second and third columns of table 4 are worth noting for nonrecovered thrifts. The second column includes 255 firms: 103 that failed or merged prior to June 1985 (less six that failed/merged before June 1980), 62 that failed/merged between June 1985 and December 1989, and 96 that continued to operate but had not rebuilt their capital ratios to 5 percent of total assets. The third column includes only 156 firms: the 62 that failed/merged between June 1985 and December 1989 (less two that disappeared before December 1985) and the 96 that survived but did not recover. In brief, the third column contains a lower proportion of exceedingly weak firms. During the sample period, thrift regulators incorporated funding mix and asset composition into their closure rules. Nonrecovered thrifts whose restructuring strategies differed most from the

successful samples were more likely to be shut down by thrift regulators. Therefore, it is reasonable for this column to more nearly approximate the values of the 39 successful thrifts. This is indeed the case. For example, retail deposits for nonrecovered thrifts are only 53.5 percent of total assets in column 2, while in column 3, that figure rises to 72.4 percent -- quite close to the 74.7 percent figure obtained for recovered thrifts.<sup>15</sup>

Interestingly, while nonrecovered thrifts spent more for advertising than recovered firms during the first sample period, the opposite was true during the second period. The difference is not statistically significant, however.

Benston (1985), among others, reports that fraud is often an important determinant of thrift failure. Although we cannot measure fraud directly with our data, we are able to study a related factor: perquisite consumption. Table 5 includes three proxies for perk consumption -- directors' fees, office expenses, and travel expenses -- and reports that no significant differences occurred across recovered and nonrecovered firms. Although fraud may well have been important in *individual* thrift failures, our evidence lends little support to the hypothesis that overconsumption of perks was an important factor in the industry's demise. Instead, failed thrifts' poor performance may have been due to bad business judgment, bad luck, or both.

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<sup>15</sup> Thomson (1987a) finds that the value of forbearance embedded in thrifts' stock-market values is a function of the funding mix and the diversification of the asset portfolio.



## 5. Sensitivity Tests

To investigate the robustness of the univariate analysis presented in tables 2 to 5, we perform discriminant analysis to select variables that distinguish recovered from nonrecovered thrifts in December 1979, June 1985, and December 1989. Similar results are obtained.

As is typically the case in economics and finance studies, the hypothesis tests presented here represent tests of joint hypotheses. That is, our univariate tests are really an examination of 1) the null hypothesis that capital-deficient thrifts which recovered pursued a different operating strategy during the 1980s than those which did not and 2) the maintained hypothesis that both groups of thrifts were essentially the same in December 1979. Without testing the maintained hypothesis, our univariate tests cannot accept the null hypothesis; they can only fail to accept the alternative hypothesis.

To test this ancillary hypothesis, we performed a number of logit regression experiments to determine whether we could statistically discriminate between the two samples in December 1979. Variables for these regressions were chosen in three different ways. First, we constructed variables shown to be significant predictors of thrift failure. Second, we used stepwise discriminant analysis to select regressors from the variables used in this study and in Cole et al. (1991).<sup>16</sup> Finally, we employed factor

\* \* \* \* \*

<sup>16</sup> We performed stepwise discriminant analysis using stepwise, forward, and backward elimination. Stepwise and forward selection indicated one logit footnote continues next page

analysis to construct factor loadings from the combined set of variables used here and in Cole et al. Logit analysis was then performed using these factor loadings as regressors.

Regardless of the model specification, logit analysis was unable to discriminate between successful and unsuccessful thrifts, indicating a significant group overlap between the two samples. Thus, we cannot reject the maintained hypothesis that the capital-deficient thrift samples were relatively homogeneous in 1979.

Our inability to statistically distinguish between recovered and nonrecovered thrifts at the beginning of the sample period calls into question the wisdom of capital forbearance policies. It is doubtful that policymakers could have predicted which thrifts would use their additional time and powers to recover and which would optimally choose to maximize the value of their deposit guarantees by pursuing high-risk strategies. This implies that the adoption of capital forbearance policies in the early 1980s was at best a long-shot bet that exposed taxpayers to enormous financial risk.

\* \* \* \* \*

continued footnote  
regression specification, while backward elimination suggested another. However, neither specification proved capable of discriminating between successful and unsuccessful thrifts in December 1979.

## 6. Conclusion

Unexpected increases in interest rates during the early 1980s and decreases in asset quality in the late 1980s caused massive losses throughout the S&L industry. Insolvency was common, if not the rule. But because of bureaucratic forbearance, funding constraints, and federal deposit insurance, hundreds of insolvent thrifts continued to operate. These factors, coupled with the expanded investment and lending powers granted to the industry in the early 1980s, gave thrift managers the opportunity to restructure their firms and to regain profitability and solvency.

The model in Buser et al. (1981) suggests that the combination of expanded powers, flat-rate deposit insurance, and lower capital requirements implied the need for more effective monitoring. But in fact, the number of examiners was reduced as the potential for abuse was increased. Furthermore, regulators left intact the incentives for thrifts to take risks. As a result, it is not surprising that the condition of the industry does not appear to have improved.

Most thrifts in our sample shifted away from traditional mortgage assets between December 1979 and December 1989. Only 13 percent of the 300 thrifts studied both survived and rebuilt their capital ratios to the 5 percent regulatory minimum in effect at the beginning of the sample period. We found that these thrifts held less-risky portfolios than their unsuccessful counterparts. Overall, our empirical tests support the null hypothesis that the successful thrifts pursued a different restructuring strategy than those

that failed.

Finally, because there was little difference between the initial asset and liability structures of thrifts that were ultimately successful and those that were not, it is unlikely that regulators would have been able to predict in December 1979 which of the firms in our sample would eventually recover.

## Appendix

Perhaps surprisingly, GAAP net worth is generally not reported in the call reports. Because the data are collected for regulatory purposes, RAP values are used instead. We are able to compute GAAP net worth for the years in which data are unavailable, however, by using the following procedures:

- ▶ Prior to June 30, 1981: "Total net worth" minus deferred losses on securities sold and accounts receivable secured by pledged savings.
- ▶ For December 31, 1981: "Total net worth" minus qualifying mutual-capital certificates minus deferred losses on securities sold and accounts receivable secured by pledged savings.
- ▶ For June 30, 1982: Same as for December 31, 1981, although the call report variable number for qualifying mutual-capital certificates is different.
- ▶ For 1983: RAP net worth minus the sum of qualifying mutual-capital, income-capital, and net-worth certificates, qualifying subordinated debentures, appraised equity capital, deferred losses on loans sold, and accounts receivable secured by pledged savings.
- ▶ For March 31, 1984 to December 31, 1986: The sum of preferred stock, permanent reserve or common stock, capital contributions, and undivided profits, less the sum of deferred net losses (gains) on loans sold, deferred net losses (gains) on other assets sold, and accounts receivable secured by pledged savings, plus the sum of reserves for contingencies and other capital reserves, plus net retained earnings.
- ▶ For March 31, 1987 through December 31, 1988: Perpetual preferred stock plus the sum of permanent reserve or common stock, capital contributions, and undivided profits, less the sum of deferred net losses (gains) on loans sold, deferred net losses (gains) on other assets sold, and accounts receivable secured by pledged savings.
- ▶ For 1989: GAAP net worth is reported directly on the call reports.

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**Table 1: Time profile of the sample**

Failures and mergers of the 300 largest FSLIC-insured S&Ls and mutual savings banks with capital ratios of less than 5 percent on December 31, 1979. Sample period is December 31, 1979 to December 31, 1989. Data are taken from the FHLBB call reports.

	Number of Failures/Mergers	Remaining Firms
Beginning sample	-	300
1/1/80-12/31/80	10	290
1/1/81-12/31/81	18	272
1/1/82-12/31/82	48	224
1/1/83-12/31/83	16	208
1/1/84-12/31/84	6	202
1/1/85-12/31/85	5	197
1/1/86-12/31/86	11	186
1/1/87-12/31/87	12	176
1/1/88-12/31/88	17	159
1/1/89-12/31/89	24	135
<b>Total</b>	<b>165</b>	<b>135</b>

Source: Authors.

**Table 2: Summary statistics of asset and net-worth structure**

Includes the 300 largest thrifts with GAAP net worth/total asset ratios of less than 5 percent in 1979. Recovered thrifts are defined as those that survive the entire sample period (December 31, 1979 through December 31, 1989) and have GAAP net worth/total asset ratios in excess of 5 percent in 1989. Nonrecovered thrifts are defined as those that either do not survive the entire sample period or have GAAP net worth/total asset ratios of less than 5 percent in 1989. The data are taken from the FHLBB call reports. All numbers are reported by first subsample (December 1979 to June 1985) and second subsample (June 1985 to December 1989). All variables except total assets and growth rates are scaled by total assets. If a variable is not reported on the call reports or cannot be constructed for a given period, that item is denoted by -.

Layout of the data is as follows:

**First subsample:** Data in the column headed 12/1979 pertain to those firms surviving on December 1979. Data in the column headed 6/1985 are the latest data available through June 1985 for those firms. Sample sizes are 39 for the recovered firms and 255 and for the nonrecovered firms.

**Second subsample:** Data in the column headed 6/1985 pertain to those firms surviving on June 1985. Data in the column headed 12/1989 are the latest data available through December 1989 for those firms. Sample sizes are 39 for the recovered firms and 156 for the nonrecovered firms.

		First subsample		Second subsample	
		12/1979	6/1985	6/1985	12/1989
Total Assets		643.787	1175.931#	1175.931	1585.860
• Annual Growth		-	0.283	0.283	0.076##
Recovered Thrifts	GAAP Net Worth	0.044	0.034	0.034	0.067##
	• Retain Earning	0.013	0.007#	0.007	0.035##
	• Paid-in Surplus	0.000	0.015#	0.015	0.030#
Total Asset		542.490	1173.702##	1554.864	1966.014
• Annual Growth		-	0.374	0.528**	0.040##*
Non-recovered Thrifts	GAAP Net Worth	0.041	0.006###	0.007**	-.033###
	• Retain Earning	0.010	-.002###	0.002**	-.042###
	• Paid-in Surplus	0.001	0.005###	0.006**	0.014###

## or \*\*: Significant at the 1 percent level.

# or \*: Significant at the 5 percent level.

# and ## measure the significance level of the difference between variables at the end versus the beginning of the subperiods.

\* and \*\* measure the significance level of the difference between variables across recovered thrifts and nonrecovered thrifts in a given period.

Source: Authors.

**Table 3: Mortgage and nonmortgage investment**

Includes the 300 largest thrifts with GAAP net worth/total asset ratios of less than 5 percent in 1979. Recovered thrifts are defined as those that survive the entire sample period (December 31, 1979 through December 31, 1989) and have GAAP net worth/total asset ratios in excess of 5 percent in 1989. Nonrecovered thrifts are defined as those that either do not survive the entire sample period or have GAAP net worth/total asset ratios of less than 5 percent in 1989. The data are taken from the FHLBB call reports. All numbers are reported by first subsample (December 1979 to June 1985) and second subsample (June 1985 to December 1989). All variables except total assets and growth rates are scaled by total assets. If a variable is not reported on the call reports or cannot be constructed for a given period, that item is denoted by -.

Layout of the data is as follows:

**First subsample:** Data in the column headed 12/1979 pertain to those firms surviving on December 1979. Data in the column headed 6/1985 are the latest data available through June 1985 for those firms. Sample sizes are 39 for the recovered firms and 255 and for the nonrecovered firms.

**Second subsample:** Data in the column headed 6/1985 pertain to those firms surviving on June 1985. Data in the column headed 12/1989 are the latest data available through December 1989 for those firms. Sample sizes are 39 for the recovered firms and 156 for the nonrecovered firms.

		First subsample		Second subsample	
		12/1979	6/1985	6/1985	12/1989
Recovered Thrifts	Mortgage Loans				
	• Single Family	0.675	0.490##	0.490	0.470
	• Multiple Family	0.058	0.064	0.064	0.061
	• Nonresidential	0.067	0.067	0.067	0.067
	• Land Loans	0.007	0.010	0.010	0.015
	• Mortgage-Backed Securities	0.038	0.116##	0.116	0.143
	Nonmortgage Loans				
	• Commercial Loans	0.004	0.017	0.017	0.013
	• Consumer Loans	0.025	0.033	0.033	0.048
	Other Risky Investments				
	• Real Estate	0.002	0.002	0.002	0.002
	• Service Corp.	0.005	0.010#	0.010	0.011
	• Junk Bonds	-	0.000	0.000	0.000
	Total Income	0.045	0.054##	0.054	0.050##
Non- Recovered Thrifts	Mortgage Loans				
	• Single Family	0.659	0.512##	0.466	0.417##
	• Multiple Family	0.055	0.056	0.060	0.056
	• Nonresidential	0.073	0.089###	0.098*	0.100**
	• Land Loans	0.008	0.021###**	0.028**	0.019#
	• Mortgage-Backed Securities	0.051	0.107##	0.102	0.149##
	Nonmortgage Loans				

• Commercial Loans	0.007	0.013##	0.014	0.018
• Consumer Loans	0.026	0.034##	0.042	0.047
<b>Other Risky Investments</b>				
• Real Estate	0.001	0.003##	0.004	0.004
• Service Corp	0.005	0.014##	0.017*	0.020*
• Junk Bonds	-	0.003**	0.003**	0.005**
<b>Total Income</b>	<b>0.045</b>	<b>0.054##</b>	<b>0.056</b>	<b>0.048##</b>

## or \*\*: Significant at the 1 percent level.

# or \*: Significant at the 5 percent level.

# and ## measure the significance level of the difference between variables at the end versus the beginning of the subperiods.

\* and \*\* measure the significance level of the difference between variables across recovered thrifts and nonrecovered thrifts in a given period.

Source: Authors.

**Table 4: Liabilities, bad loans, and advertisement expenses**

Includes the 300 largest thrifts with GAAP net worth/total asset ratios of less than 5 percent in 1979. Recovered thrifts are defined as those that survive the entire sample period (December 31, 1979 through December 31, 1989) and have GAAP net worth/total asset ratios in excess of 5 percent in 1989. Nonrecovered thrifts are defined as those that either do not survive the entire sample period or have GAAP net worth/total asset ratios of less than 5 percent in 1989. The data are taken from the FHLBB call reports. All numbers are reported by first subsample (December 1979 to June 1985) and second subsample (June 1985 to December 1989). All variables except total assets and growth rates are scaled by total assets. If a variable is not reported on the call reports or cannot be constructed for a given period, that item is denoted by -.

Layout of the data is as follows:

**First subsample:** Data in the column headed 12/1979 pertain to those firms surviving on December 1979. Data in the column headed 6/1985 are the latest data available through June 1985 for those firms. Sample sizes are 39 for the recovered firms and 255 and for the nonrecovered firms.

**Second subsample:** Data in the column headed 6/1985 pertain to those firms surviving on June 1985. Data in the column headed 12/1989 are the latest data available through December 1989 for those firms. Sample sizes are 39 for the recovered firms and 156 for the nonrecovered firms.

		First subsample		Second subsample	
		12/1979	6/1985	6/1985	12/1989
Recovered Thrifts	Deposit Structure				
	• Retail Deposits	0.218	0.747##	0.747	0.720
	• Wholesale Deposits	0.583	0.064##	0.064	0.076
	• Brokered Deposits	0.001	0.004	0.004	0.008
	• FHLBB Advances	0.084	0.059#	0.059	0.067
	Bad Loans				
	• Slow Loans	0.009	0.015##	0.015	0.027#
	• Foreclosed Assets	0.000	0.005##	0.005	0.010
	Advertisements	0.00063	0.00039##	0.00039	0.00043
	Non- Recovered Thrifts	Deposit Structure			
• Retail Deposits		0.196	0.535###	0.724	0.734
• Wholesale Deposits		0.603	0.265###	0.087*	0.073
• Brokered Deposits		0.001	0.014###	0.018**	0.038###
• FHLBB Advances		0.089	0.107###	0.093**	0.109**
Bad Loans					
• Slow Loans		0.009	0.020##	0.023**	0.080###
• Foreclosed Assets		0.001**	0.006##	0.008*	0.037###
Advertisements		0.00062	0.00050###	0.00044	0.00033

## or \*\*: Significant at the 1 percent level.

# or \*: Significant at the 5 percent level.

# and ## measure the significance level of the difference between variables at the end versus

the beginning of the subperiods.

\* and \*\* measure the significance level of the difference between variables across recovered thrifts and nonrecovered thrifts in a given period.

Source: Authors.

**Table 5: Perk consumption**

Includes the 300 largest thrifts with GAAP net worth/total asset ratios of less than 5 percent in 1979. Recovered thrifts are defined as those that survive the entire sample period (December 31, 1979 through December 31, 1989) and have GAAP net worth/total asset ratios in excess of 5 percent in 1989. Nonrecovered thrifts are defined as those that either do not survive the entire sample period or have GAAP net worth/total asset ratios of less than 5 percent in 1989. The data are taken from the FHLBB call reports. All numbers are reported by first subsample (December 1979 to June 1985) and second subsample (June 1985 to December 1989). All variables except total assets and growth rates are scaled by total assets. If a variable is not reported on the call reports or cannot be constructed for a given period, that item is denoted by -.

Layout of the data is as follows:

**First subsample:** Data in the column headed 12/1979 pertain to those firms surviving on December 1979. Data in the column headed 6/1985 are the latest data available through June 1985 for those firms. Sample sizes are 39 for the recovered firms and 255 and for the nonrecovered firms.

**Second subsample:** Data in the column headed 6/1985 pertain to those firms surviving on June 1985. Data in the column headed 12/1989 are the latest data available through December 1989 for those firms. Sample sizes are 39 for the recovered firms and 156 for the nonrecovered firms.

		First subsample		Second subsample	
		12/1979	6/1985	6/1985	12/1989
	Perk Consumption				
Recovered Thrifts	• Directors' Fees	0.00007	0.00006	0.00006	0.00008
	• Travel Expenses	0.00011	0.00016	0.00016	0.00011
	• Office Expenses	0.00062	0.00086##	0.00086	0.00106#
	Perk Consumption				
Non- Recovered Thrifts	• Directors' Fees	0.00008	0.00006	0.00006	0.00006
	• Travel Expenses	0.00010	0.00008	0.00009	0.00009
	• Office Expenses	0.00064	0.00089##	0.00096	0.00110##

## or \*\*: Significant at the 1 percent level.

# or \*: Significant at the 5 percent level.

# and ## measure the significance level of the difference between variables at the end versus the beginning of the subperiods.

\* and \*\* measure the significance level of the difference between variables across recovered thrifts and nonrecovered thrifts in a given period.

Source: Authors.