Journal of Financial Services Research 8:5–28 (1994)

Asymmetric-Information and Principal-Agent Problems as Sources of Value in FSLIC-Assisted Acquisitions of Insolvent Thrifts

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Abstract

This study uses a two-factor market-model to estimate excess returns around 43 announcements of FSLIC-assisted thrift mergers and 66 announcements of unassisted thrift mergers. These estimated excess returns are then used to test hypotheses about asymetric-information and principal-agent problem in the thrift resolution process as sources of value in these mergers. The results show that acquirers in assisted transactions earned positive and statistically significant excess returns of approximately 2 percent, whereas acquirers in unassisted transactions earned excess returns that are not significantly different from zero; however, the excess returns in the assisted mergers are quantitatively small. For the 43 assisted mergers, estimated excess returns imply aggregate wealth transfers of only $13 million as compared with $2.3 billion in FSLIC assistance that were granted in these transactions. These findings suggest that the FSLIC-assisted transactions were reasonably well structured and that the assistance granted did not result in large wealth transfers to acquirers of insolvent institutions. Finally, the study provides evidence that informational asymmetries and principal-agent problems in the thrift resolution process were significant sources of excess returns for the acquirers receiving FSLIC assistance.

Faced with a serious shortage of funds during the late 1980s, the Federal Home Loan Bank Board (FHLBB) attempted to maximize the number of troubled thrift institutions that it resolved while minimizing the drain of liquid assets from the Federal Savings and Loan Insurance Corporation (FSLIC) deposit insurance fund. To accomplish this goal, the FHLBB disposed of thrifts through mergers, sales, and other assistance arrangements that postponed actual payments from the FSLIC to acquirers, depositors, and others.[1,2]

At the end of 1988, the FHLBB accelerated its resolution efforts because the Tax Reform Act of 1986 reduced valuable federal tax exemptions on assisted transactions by

The views reflected in this paper are those of the authors and do not necessarily represent policies of the Board of Governors of the Federal Reserve System or the Federal Housing Finance Board. Helpful comments were received from participants in the Finance Workshop at the University of North Carolina at Chapel Hill, George Benston, Richard Brown, Jennifer Conrad, Sally Davies, Mark Flannery, Edward Kane, David Ravenscraft, and Lawrence J. White.

one half (effective January 1, 1989). The FHLBB pledged more than $10 billion in FSLIC assistance toward resolutions consummated in December 1988, and more than $30 billion for all of 1988.

These accelerated resolution efforts led members of Congress and others to question whether the 1988 transactions were well structured or whether they offered excessive returns to acquirers at the expense of taxpayers. This issue was the subject of studies both by the General Accounting Office (1989) and the Mid-America Institute (1989). The Mid-America study concluded that the "December Deals," as the December 1988 resolutions came to be known, did not appear to be significantly different in structure from thrift resolutions that had preceded them; however, the study also reported evidence suggesting that the FSLIC systematically had underestimated the costs of assisted resolutions.

The FSLIC had several reasons to underestimate these costs. During much of the 1980s, the FSLIC deposit insurance fund was insolvent on a market-value basis if both its actual and *contingent* losses were fully recognized. Moreover, the FSLIC revealed that it was insolvent in a GAAP basis when it released its 1986–1988 financial statements.

The difficulties associated with injecting new funds into the FSLIC provided thrift regulators with incentives to defer resolutions of insolvent thrifts. As Kane (1989) indicates, FHLBB officials also had incentives to avoid recognition of the true depth of the FSLIC's funding problems: to avoid the political fallout of having to accept blame for problems that developed "on their watch." These incentives may have led the FSLIC to underestimate the true present-value costs of assisted transactions in order to merge or sell thrift institutions rather than liquidate them. As will be explained, mergers and sales enabled the FSLIC to shift part of the resolution costs from the deposit insurance fund to the Treasury and, ultimately, the taxpayer, whereas liquidations did not. Congress became so concerned about the transactions consummated during 1988 that, in Section 501 of the Financial Institutions Reform, Recovery and Enforcement Act of 1989 (FIRREA), it required the Resolution Trust Corporation (RTC) to review these transactions and, where possible, to exercise contractual options that might reduce the ultimate costs of assistance.[3]

This study explores the FHLBB's incentives to underestimate the costs of resolving insolvent thrifts in order to shift these costs from the deposit insurance fund to the taxpayer. Theoretically, the amount of assistance granted by the FHLBB to the acquirer of an insolvent thrift should be just sufficient to enable the acquiring firm to earn normal risk-adjusted returns on the acquired portfolio of assets and liabilities.[4] Shareholders of firms engaging in assisted thrift mergers would realize returns no different from those realized by shareholders of firms engaging in unassisted thrift mergers. However, if the FHLBB offered excessive assistance, then the shareholders of the acquiring thrift would receive a wealth transfer in the transaction. For publicly traded thrift acquirers, one should observe such wealth transfers as excess returns on the thrifts' stock. Consequently, event-study methodology is used to determine whether shareholders of acquiring firms expected an increase in value as the result of FSLIC-assisted acquisitions.[5] To isolate wealth transfers associated with FSLIC assistance from other sources of value, returns from assisted mergers arranged by regulators are compared with returns from unassisted mergers arranged voluntarily by the participating thrifts. Only acquisitions of thrifts by

thrifts are examined to limit the possibility that any resulting gains could be attributed to product-diversification benefits accruing to the acquiring firms.[6]

After estimating excess returns, hypotheses regarding two potential sources of shareholder gains are tested. The first relates to agency conflicts between taxpayer-principals and regulator-agents. The second relates to informational asymetries between thrift regulators and potential acquirers of insolvent thrifts. Investigation of the cross-sectional excess returns provides support for both the asymmetric-information and principal-agent hypotheses.

The results show that acquirers in FSLIC-assisted transactions earned positive and statistically significant excess returns whereas acquirers in assisted transactions earned excess returns that are not significantly different from zero; however, the excess returns in assisted mergers are quantitatively small, suggesting that FSLIC assistance did not result in large wealth transfers to acquirers of insolvent institutions.

The remainder of the paper discusses how principal-agent and asymmetric-information problems within the Federal Home Loan Bank System might lead to excess returns in assisted thrift mergers. The data and methodology to test for wealth effects in assisted—as compared to unassisted—thrift mergers and to test the hypotheses about potential sources of excess returns are then described, followed by a discussion of the empirical results and a summary and conclusions.

1. Principal-agent and asymmetric information problems in the resolution process

Within the process by which the Federal Home Loan Bank System resolved troubled institutions, there existed principal-agent and asymmetric-information problems that might have biased the estimation of resolution costs downward and led to excessively generous assistance packages. Two general hypotheses are proposed regarding the response of financial markets to the announcements of assisted thrift mergers—the principal-agent hypothesis and the asymmetric-information hypothesis.

1.1. The principal-agent hypothesis

The principal-agent hypothesis posits that thrift regulators attempted to defer resolution costs into the future and to shift as much of those costs as possible from the FSLIC deposit insurance fund to the Treasury, taxpayers, and others. Regulators faced incentives to act in this manner to minimize the effect on their careers from the public outcry and political fallout that would accompany public recognition of the true cost of the thrift cleanup.[7] In accordance with this hypothesis, the FSLIC may have biased downward the estimated costs of sale or merger relative to those of liquidation. This bias would lead to the resolution of troubled thrifts by merger or sale rather than by liquidation because the FSLIC was mandated to choose the "least-cost" method of resolution. Merger and sale enabled the FSLIC to offer capital forbearance, tax benefits, and other off-balance sheet compensation to acquirers—forms of compensation unavailable in a liquidation. Liquidation also was a less-favored resolution alternative because it imposed the greatest

short-term drain on scarce liquid assets, political capital, and staff. Moreover, liquidations tended to draw the loudest public criticism of FHLBB procedures and officials by Congress, the press, and other parties.

Therefore, the FHLBB viewed the key to the resolution problem as being how to structure assistance packages that encourage healthy thrifts or other potential acquirers to purchase insolvent thrifts while minimizing the short-term drain on the deposit-insurance fund and other scarce resources. The assistance packages that the FHLBB devised to accomplish these dual goals usually took the form of 1) explicit financial assistance (in the form of cash or FSLIC notes) equal to the negative book-value net-worth of the acquired institution(s), 2) guarantees to indemnify the acquirer against future losses when specified problem assets were sold, 3) guaranteed yields on specified problem assets, and 4) forbearance against meeting regulatory capital standards.

Much of this assistance was open-ended and, therefore, difficult for the FSLIC to value accurately. For example, assistance agreements specified the assets from which the acquirer was protected against capital losses, but FSLIC's actual losses on these assets depended upon *ex post* disposition prices. Similarly, assistance agreements specified indices for determining yield-subsidies, but FSLIC's actual subsidy payments depended upon the *ex post* performance of both the covered assets *and* the specified indices. Finally, during much of the period, the FSLIC did not explicitly consider the tax benefits accruing to the acquirer in estimating the total amount of assistance provided because the agency was mandated by Congress to resolve institutions at the least cost to the *insurance fund*, not to the government. These valuation problems enabled the FSLIC to bias the resolution process against liquidations in favor of sales and mergers, and may have resulted in combined FSLIC/taxpayer assistance greater than necessary to induce an acquirer to take over a troubled firm. If such "excess" assistance were provided, one should observe this wealth transfer as excess returns accruing to shareholders of the acquirer.[8]

1.2. The asymmetric-information hypothesis

The asymmetric-information hypothesis posits that acquirers possessed information about the value of target thrifts superior to that possessed by thrift regulators. Superior information should enable acquirers to negotiate more assistance than needed to earn normal, risk-adjusted returns, and result in positive excess returns accruing to the shareholders of the acquirers.

Information asymmetries may have arisen from the different manners in which regulators and acquirers assessed the market-value of insolvent thrifts that the FHLBB was seeking to resolve. Because of the large number of insolvent thrifts and the shortages of staff and insurance funds, the FHLBB relied almost exclusively upon call report data and the judgment of supervisory and examination staff to determine the market-value of an

insolvent institution. Only in the most unusual cases did the FHLBB perform a due-diligence examination of a troubled institution.[9] Failure to perform an on-site and in-depth analysis of the institution can be viewed as a form of job simplification, indicative of a principal-agent problem.

In contrast to the FHLBB, the bidder almost always did perform and rely upon the information obtained during a due-diligence. Hence, the buyer almost certainly had far more accurate information about the underlying value of a troubled thrift's assets and liabilities than did the FHLBB. This informational asymmetry is expected to have resulted in wealth transfers from the FSLIC or taxpayers to successful acquirers. Such transfers should be particularly large for acquirers of thrifts that held substantial assets (such as mortgage-backed securities and commercial real estate loans) that could be valued far more accurately during on-site due-diligence by prospective bidders than during off-site analysis by FSLIC staff. Separate tests of these hypotheses are presented later in the paper.

2. Data, methodology, and results

2.1. Data

The data for this study consist of stock returns for acquiring thrifts, portfolio and structure data for acquiring and target thrifts, and resolution cost estimates for each assisted acquisition. Daily stock-price returns for 68 publicly traded thrift acquirers listed on the major exchanges or the national Over-the-Counter (OTC) Market were acquired from Data Resources, Inc., or SNL Securities for the period from July 1979 through January 1989. Portfolio data were obtained from the semi-annual and quarterly financial call reports that each thrift was required to file with the FHLBB, while resolution cost data were obtained from the FSLIC.

Of the 68 thrift acquirers in the sample, 32 different institutions engaged in 68 assisted acquisitions on 43 different event dates, and 49 different institutions engaged in 66 voluntary acquisitions on 66 different event dates. This is a substantially larger sample than those used by previous researchers (Brickley and James, 1986; Barger, 1988; Kane and Unal, 1988; and Balbier, Judd, and Lindahl, 1992). Of the firms that engaged in assisted transactions, 32 acquired only one thrift, six acquired two thrifts, four acquired three thrifts, and one acquired four thrifts. No two firms making multiple acquisitions did so on the same day. Thirteen of the firms with multiple acquisitions engaged in both assisted and unassisted transactions.[10]

Table 1 provides summary information on these transactions by year. There do not appear to be any important patterns over time between the assisted and voluntary acquisitions, but the number of mergers in the sample increases significantly for 1985–1988, reflecting the growing number of thrifts converting from mutual to stock organization. The names of the acquiring and target firms that merged in the assisted transactions are listed in Table 2.

Table 1. Acquisitions by Publicly Traded Stock Thrifts of Failed Thrifts (with FSLIC-Assistance) and of Nonfailed Thrifts, 1980–1988

	Number Acquisitions			Number of Separate Event Dates		
Year	Total	Voluntary Acquisitions	Assisted Acquisitions	Voluntary Event Dates	Assisted Event Dates	Total Event Dates
1980	5	3	2	3	2	5
1981	9	1	8	1	4[a]	5
1982	9	8	1	8	1	9
1983	2	2	0	2	0	2
1984	5	2	3	2	3	5
1985	17	6	11	6	6[b]	12
1986	26	13	13	13	9[c]	22
1987	28	21	7	21	5[d]	26
1988	26	10	16	10	13[e]	23
Total	127	66	61	66	43	109

[a]Two firms with three simultaneous acquisitions each.
[b]One firm with three simultaneous acquisitions and one firm with four simultaneous acquisitions.
[c]Four firms with two simultaneous acquisitions each.
[d]Two firms with two simultaneous acquisitions each.
[e]One firm with two simultaneous acquisitions and one firm with three simultaneous acquisitions.

2.2. *Methodology*

The methodology to test hypotheses about the sources of excess returns involves two steps. The first step is to determine whether thrifts engaging in FSLIC-assisted mergers reaped positive excess returns and whether these returns were different from those accruing to thrifts engaging in voluntary, unassisted mergers. The second step is to test the principal-agent and asymmetric-information hypotheses regarding the sources of potential excess returns in the assisted mergers.

2.2.1. Estimation of excess returns In the first step, event-study methodology is used to estimate excess returns accruing to the shareholders of thrift institutions acquiring other thrifts.[11] The event date is defined as the date that news of the acquisition first appeared in *The Wall Street Journal*, the *American Banker*, or an FSLIC press release. For acquisition notices that appeared in more than one of these sources, the earliest date is used. For 24 of the 43 assisted mergers, no announcement appears in either *The Wall Street Journal* or the *American Banker*, so the date of the press release is used as the event date.

Once the FHLBB had sought bids for troubled institutions, it released no information about which firms had placed bids, or which was the likely winner, until after an assistance agreement was signed with the winning bidder. Announcements of assisted acquisitions often were not reported immediately (or at all) by the financial press, i.e., the date of the FSLIC press release preceded that of any announcement of the mergers in *The Wall Street Journal* or the *American Banker*. More important, initial announcements of

Table 2. Wealth Transfers from the FSLIC or Taxpayer to the Acquirer in 43 Thrift Mergers Involving FSLIC Assistance[a]

No.	Cusip/ Event Date	Acquiring Company	Acquired Companies	Cumulative Excess Return$_{\text{six day}}$	Market Capitalization ($ Millions)	Estimated Resolution Cost ($ Millions)	Wealth Transfer ($ Millions)
1	11132510	Broadview	Washington FS&L	14.88[b]	18.95	104.00	2.82
2	3/19/80 51466710	Land of Lincoln	First Calumet City S&L	0.21	10.35	8.93	0.021
3	6/9/80 51466710	Land of Lincoln	Financial Security S&LA	8.24	8.28	11.57	0.68
4	6/1/81 02938310	American of Florida	Key Biscayne S&LA	8.80	33.49	0.00	2.95
5	8/17/81 17876210 10/10/81	City Federal	1) Mohawk S&LA 2) First S&LA-New Brunswick 3) Boca Raton FS&LA	−2.71	28.25	35.21	−0.77
6	00867710 12/18/81	Ahmanson	1) Southern FS&LA 2) Security FS&LA 3) Hamiltonian FS&LA	7.27	347.30	2.54	25.25
7	51506210	Dixie FS&LA	Heritage FS&LA-LA	4.40	49.83	1.99	2.19
8	10/1/82 37465810	Gibraltar Savings	Queen City	1.86	100.83	15.16	1.88
9	7/25/84 00867710	Ahmanson	Century FS&LA	−5.95	575.91	4.33	−34.25
10	8/10/84 68029310	Old Stone	Rhode Island FS&LA	14.25[b]	73.77	86.36	10.52
11	9/17/84 16122310	Charter FS&LA	New Federal S&LA	5.09	7.87	−15.08	0.40
12	3/29/85 59000710 4/29/85	Meritor	1) Northern Va 2) First Titusville 3) Capital City	−2.34	320.00	17.54	−7.50
13	00867710 5/22/85	Ahmanson	1) Permanent OH 2) American OH 3) Home FS&LA OH 4) Oxford OH	0.10	983.44	1.71	1.02

Table 2. Wealth Transfers from the FSLIC or Taxpayer to the Acquirer in 43 Thrift Mergers Involving FSLIC Assistance[a] *(continued)*

No.	Cusip/ Event Date	Acquiring Company	Acquired Companies	Cumulative Excess $\text{Return}_{\text{six day}}$	Market Capitalization ($ Millions)	Estimated Resolution Cost ($ Millions)	Wealth Transfer ($ Millions)
14	43728510	Home Owners	Sun S&L	−2.93	47.40	17.50	−1.39
15	10/7/85 59190810	Metropolitan	Midland	−7.76	44.95	1.40	−3.49
16	12/2/85 68029310	Old Stone	Citizens Seattle	1.10	127.58	84.03	1.40
17	12/30/85 04853510	Atlantic Financial	Gt Western Las Vegas	25.20[b]	43.69	0.00	11.10
18	1/31/86 38983610 3/20/86	Great American First	1) First FS&L of Redding, CA 2) Hacienda FS&LA	1.58	306.52	1.19	4.84
19	37404210	Germania FA	Washington First Fed	7.13	26.09	0.00	1.86
20	4/30/86 74432410	Prudential Bank	Mariner FS&L	2.60	28.70	−19.00	−0.75
21	5/9/86 14641510 6/4/86	Carteret	1) First FS&LA of Montgomery Co. 2) Mountain Security Savings	−5.58	204.25	0.00	−11.41
22	17667010	Citizens	Equitable FS&L	20.18[b]	45.90	92.68	9.26
23	7/8/86 20164710	Commercial	Coronado	−2.79	108.25	−1.34	−3.02
24	8/15/86 89352810	Transohio	1) Dollar Savings Bank 2) Citizens FS&LA	−0.85	95.45	125.76	−0.81
25	8/29/86 738625910	Poughkeepsie	1) Farmers Ravenswood 2) 1st State Spartanburg	−8.16	69.18	0.00	−0.81
26	10/20/86 38983610	Great American	First Security CO	−4.64	534.66	0.00	−24.81
27	3/10/87 19039410	Coast	Central S&LA	−1.02	217.95	289.55	−2.22
28	4/10/87 93882810 7/6/87	Washington Seattle	1) Provident FS&LA 2) United First FS&LA	1.52	323.23	121.23	4.91

Table 2. Wealth Transfers from the FSLIC or Taxpayer to the Acquirer in 43 Thrift Mergers Involving FSLIC Assistance[a] *(continued)*

No.	Cusip/ Event Date	Acquiring Company	Acquired Companies	Cumulative Excess Return$_{\text{six day}}$	Market Capitalization ($ Millions)	Estimated Resolution Cost ($ Millions)	Wealth Transfer ($ Millions)
29	91139110 12/18/87	United	Boone County FS&L	7.86	15.97	2.34	1.25
30	01027010 12/31/87	Alabama	1) First Federal Savings (LA) 2) 1st Financial	2.41	32.13	168.92	0.77
31	04853510 2/11/88	Atlantic Financial	1) Mountain State 2) Magnet	0.56	30.21	92.77	0.17
32	43691010 3/31/88	Home Upper E.TN	Valley	−6.37	75.43	7.07	−4.81
33	85952510 4/8/88	Sterling	Tri-Cities	3.79	4.69	15.82	0.18
34	26103910 7/12/88	Downey	Butterfield	1.44	163.83	562.34	2.37
35	95817010 8/23/88	Western	Bell	3.20	82.73	11.32	2.65
36	93882810 8/26/88	Washington Seattle	Northwest	1.33	335.11	2.39	4.45
37	59190810 8/26/88	Metropolitan	1) 1st Hibbing 2) Washington 3) Peoples	12.93[b]	49.25	138.33	6.37
38	01027010 9/15/88	Secor	Coosa	−3.05	37.20	12.95	−1.13
39	02361410 9/30/88	Americana	Citizens	−8.21	18.27	5.36	−1.50
40	69428010 12/15/88	Pacific First	Community 1st	2.42	109.32	167.47	2.64
41	38131710 12/19/88	World of Oakland	Ohio Valley	0.82	912.46	14.00	7.33
42	59190810 12/28/88	Metropolitan	1st Financial	−1.28	73.68	59.57	−0.94
43	17667010 12/29/88	Citizens	American	−.99	35.81	187.89	1.94
	Total					2,334.16	13.12

[a]Wealth transfers are calculated as the product of an acquirer's market capitalization at $t-0$ and the six-day cumulative excess return during the period $t-1$ to $t+4$, where $t-0$ is the date of the first public announcement of a proposed merger. Estimated resolution costs are presented for comparison purposes.
[b]Indicates significance at the 0.05 level using the test statistic of Patell (1976).

acquisitions usually identified the acquiring and target firms but did not include information on the terms of the transaction or the amounts and types of assistance provided.[12] Hence, traders needed additional time to learn about this important information and impound it into market returns. For these reasons, a six-trading-day event-window, from day $t-1$ through $t-4$, is used for analysis of both daily and cumulative excess returns.[13]

Daily returns are calculated as the natural log of the price on day $t-0$ divided by the price on day $t-1$, with appropriate adjustments for dividends and stock splits. For infrequently traded stocks, the reported prices, which were supplied by Data Resources, Inc., and SNL Securities, require the assumption that there were no implicit changes in price during the intervening period since the previous trade. Thus, the returns are assumed to be zero on days when there were no trades.[14] This method of treating infrequent trading assigns the total effect of a price change (and, hence, any change in excess return) to the day on which a trade occurs.

To estimate excess returns, a two-factor (market and interest rate) ordinary-least-squares regression model is used to provide firm-specific adjustments for risk. The S&P 500 index is used to proxy for the market and a constant-maturity seven-year Treasury-note yield series published by the Federal Reserve Board to measure thrift exposure to interest rates, which was a major source of risk for thrifts.[15] The parameters of the two-factor model are estimated over the 80 trading-day period from $t-95$ through $t-16$, where the event day of the acquisition is defined as day $t-0$. No adjustments are made to control for possible multicollinearity between the market return and interest-rate yield, as Giliberto (1985) has shown that orthogonalizing one of two collinear variables biases t-tests for the significance of the orthogonalized variable toward the null hypothesis. Finally, to correct for problems of infrequent trading mentioned above, the aggregate coefficients method of Dimson (1979) is employed, including both a contemporaneous return and a one-period lagged return for each of the two factors.

Given this methodology, the firm-specific control-return is of the form:

$$\hat{R}_{j,t} = \beta_0 + \beta_1 R_{SP500,t} + \beta_2 R_{SP500,t-1} + \beta_3 R_{T\text{-}Note,t} + \beta_4 R_{T\text{-}Note,t-1},$$

where

$\hat{R}_{j,t}$ = the control return for thrift j during day t,
$R_{SP500,t}$ = the return on the $S\&T$ during day t,
$R_{T\text{-}Note,t}$ = the Treasury note return during day t,
β_2 = estimated market-model parameters, $i = 0,1,\ldots,4$.

Daily excess returns for a given thrift j on day t are defined as:

$$ER_{j,t} = R_{j,t} - \hat{R}_{j,t},$$

where

$ER_{j,t}$ = the excess return for thrift j on day t, and
$R_{j,t}$ = the realized daily return for thrift j on day t.

Individual excess returns $ER_{j,t}$ are then aggregated to form a portfolio of daily excess returns:

$$ER_t = \frac{1}{N}\sum_{j=1}^{N} ER_{j,t},$$

where N is the number of firms in the portfolio for day t.

The cumulative excess returns are calculated as:

$$CER_t = \sum_{t=t_b}^{t_c} ER_t$$

where t_b begins and t_c ends the cumulation period. Test statistics for the significance of daily excess and cumulative excess returns are those presented by Patell (1976).

2.2.2. Results of estimation of excess returns The estimated excess returns for the portfolio of 43 FSLIC-assisted merger transactions appear in table 3. The daily excess returns are positive on days $t-1$ through $t+4$, and are statistically significant on days $t-1$ and $t+1$, when returns of 0.64 percent and 0.18 percent, respectively, are observed.[16] The cumulative excess returns are all positive, and are statistically significant on days $t+1$ through $t+4$.

These results provide evidence that, on average, positive excess returns accrued to the acquirers following the announcements of FSLIC-assisted mergers, and that these returns persisted for at least four trading days following the announcement. The cumulative excess returns over the six-trading-day event window are 2.24 percent. This result is consistent both with James and Wier (1987b), who report positive excess returns to acquirers of failed banks, and with Balbier, Judd and Lindahl (1992), who report positive excess returns to thrift and nonthrift acquirers of thrifts.

In terms of the individual cumulative excess returns, 28 firms in the sample have positive returns, and five are statistically significant at the 0.05 level; 15 have negative returns, and none are statistically significant.[17] This suggests that, for most of the firms,

Table 3. Cumulative Excess Returns around 43 Announcements of FSLIC-Assisted Thrift Mergers[a]

Event Day	Excess Return ER_t	Test Statistic[b] for ER_t	Cumulative Excess Return CER_t	Test Statistic[b] for CER_t
$t-1$	0.64[c]	1.97	0.64	
$t-0$	0.17	0.09	0.81[c]	1.46
$t+1$	0.18[c]	2.56	0.99[d]	2.67
$t+2$	0.12	1.34	1.11[d]	2.98
$t+3$	0.67	1.72	1.78[d]	3.43
$t+4$	0.47	1.65	2.24[d]	3.81

[a]Excess returns are estimated using market-model methodology. Market-model parameters are estimated using a two-factor (market and interest rate) ordinary-least-squares regression model over the preevent period, $t-95$ to $t-16$, where $t-0$ is the date of the first public announcement of a proposed merger.

[b]Test statistics are those given in Patell (1976).

[c]Indicates significance at the 0.05 level.

[d]Indicates significance at the 0.01 level.

the effect of the announcement for shareholders was not very significant. This issue is explored in more detail when the individual excess returns are examined.

To be confident that these excess returns are associated with FSLIC assistance, the pattern of returns for thrifts that engaged in 66 unassisted acquisitions of healthier thrifts also are examined. Once again, the portfolio excess returns are estimated using the two-factor market model. The results of this estimation are presented in table 4.

For the unassisted mergers, a negative and significant return of −0.63 percent is observed on day $t-1$, which is offset by a return of 0.66 percent on day $t-0$. None of the cumulative excess returns over the six-day event window are statistically significant.[18] These results are consistent with other merger studies, which typically find zero or negative returns to the acquiring firm.[19] Morck, Schleifer and Vishny (1990) offer both agency and hubris as explanations for negative returns to acquirers.

Together, the results in tables 3 and 4 indicates that there are positive and statistically significant cumulative excess returns for the acquirers of insolvent institutions, but not for acquirers of healthier thrifts. Figure 1 provides a graphic representation of the differences in cumulative excess returns during the six-trading-day event window. This evidence supports the hypothesis that the assisted resolutions brought about wealth transfers from the FSLIC or the taxpayer to the acquiring thrifts.

To compare estimated resolution costs, which are the FSLIC's calculations of the present value of assistance, with the market's assessment of the value of FSLIC assistance, the FSLIC's resolution cost estimates are compared with the wealth transfers implied by observed cumulative excess returns. Wealth transfers are calculated by multiplying each acquirer's stock price by the number of shares outstanding to obtain the market capitalization. This market capitalization is then multiplied by the six-trading-day cumulative excess return.[20] The results of this analysis appear in Table 2. If the FSLIC provided the proper amount of assistance, then wealth transfers, on average, should be

Table 4. Cumulative Excess Returns around 66 Announcements of Voluntary, Unassisted Thrift Mergers[a]

Event Day	Excess Return ER_t	Test Statistic[b] for ER_t	Cumulative Excess Return CER_t	Test Statistic[b] for CER_t
$t-1$	0.63	−2.16[c]	−0.63	
$t-0$	0.66	2.32[c]	0.03	0.13
$t+1$	0.09	0.01	0.12	0.10
$t+2$	0.41	0.92	0.53	0.55
$t+3$	0.14	1.28	0.67	1.06
$t+4$	0.02	0.58	0.69	0.73

[a]Excess returns are estimated using market-model methodology. Market-model parameters are estimated using a two-factor (market and interest rate) ordinary-least-squares regression model over the pre-event period, $t-95$ to $t-16$, where $t-0$ is the date of the first public announcement of a proposed merger.

[b]Test statistics are those given in Patell (1976).

[c]Indicates significance at the 0.05 level.

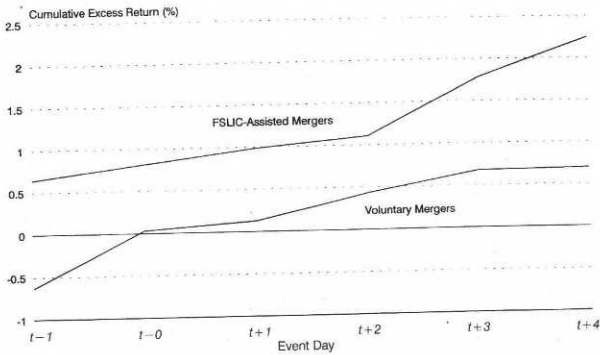

Figure 1. *Cumulative excess returns for 43 announcements of FSLIC-assisted mergers and 66 announcements of voluntary, unassisted thrift mergers estimated using market-model methodology. Market-model parameters are estimated using a two-factor (market and interest rate) ordinary-least-squares regression model over the pre-event period, $t-95$ to $t-16$, where $t-0$ is the date of the first public announcement of a proposed merger.

small. As the table shows, the implied wealth transfers associated with the 43 assisted transactions aggregate to only $13.1 million, while the estimated resolution costs total more than $2.3 billion.

The aggregate figures obscure the fact that, despite the assistance provided, the market reacted negatively to 16 of the 43 assisted transactions (although the negative cumulative excess returns are not statistically significant). The market viewed remaining 27 transactions positively, and five of the positive cumulative excess returns are statistically significant. Total wealth transfers associated with these five mergers are $40 million, as compared with approximately $13.1 million for the entire sample. Estimated excess returns for the entire sample imply a wealth transfer of approximately two percent of the acquirers' aggregate market-value, or less than one percent of the aggregate resolution cost.

In contrast with public criticisms of the FSLIC-assisted transactions, this evidence suggests that the FSLIC structured these deals reasonably well. In addition, the fact that the FSLIC provided so much assistance relative to the observed wealth transfers suggests how seriously troubled the portfolios of these institutions really were. This latter point is underscored by Curry, Cole and Blalock (1991), who find that the FSLIC recognized a loss of approximately one-third of book-value in its sales of thrift receivership assets. The RTC has reported similar loss rates on failed thrift assets that it has sold.

2.3. Estimation of sources of value in assisted thrift mergers

Principal-agent and asymmetric-information hypotheses are offered as possible explanations for the pattern of cumulative excess returns accruing to acquirers in assisted transactions. To test these hypotheses, the six-trading-day cumulative excess return for each acquirer is regressed against a vector of explanatory variables designed to proxy for principal-agent and asymmetric information problems in the thrift resolution process; these variables are listed in table 5 with their means and standard errors. The regression model estimated to test these hypotheses is:

$$CER_j = \beta X_j + \mu_j$$

where

CER_j = cumulative excess return from day $[t-1]$ through day $[t+4]$ for firm j,
β = a vector of parameter estimates for explanatory variables,
X_j = a vector of explanatory variables for firm j, and
μ_j = a random disturbance term with zero mean and unit variance.

2.3.1. Principal-agent variables Six variables are included to test whether benefits accruing to the acquirer resulted from principal-agent problems in the thrift resolution process.

2.3.1.1. Resolution costs to total assets. If the agency problem is solely one of measurement error, then the ratio of resolution cost to total assets should be positively related to excess returns, as larger proportions of assistance entail greater uncertainty and greater potential for valuation errors, given the incentives and process deficiencies within the FSLIC. This would be true whether the error is a constant or nonlinear (increasing) proportion of the assistance provided.

2.3.1.2. Resolution costs. If the measurement error is small, but the value of tax benefits is not included in the calculation, then excess returns should depend only on the amount of assistance and not on the size of the acquired firm. In such a case, larger amounts of assistance would translate into larger tax benefits and, hence, larger excess returns.

2.3.1.3. Acquirer's tangible net worth to assets. During much of the period, it was common for the FHLBB to arrange for weak, but solvent thrifts to acquire insolvent thrifts, even when the resulting institution would have negative tangible net worth. As an inducement, the FHLBB offered forbearance against capital standards (and other forms of assistance) to induce the solvent thrifts to assimilate their insolvent counterparts.[21] If acquirers valued this capital forbearance but the FSLIC did not adequately factor this value into its assistance estimates, then the tangible capital ratios of acquirers should be inversely related to excess returns. Forbearance would be most valuable to acquirers with the lowest capital ratios, and this value would diminish as the acquirer's tangible capital ratio increases.

Table 5. Hypothesized Sources of Value in 43 Thrift Mergers Involving FSLIC Assistance[a]

Variable	Mean	Standard Error	Predicted Sign	Actual Sign
Principal-Agent Variables				
Resolution Cost: estimated present-value dollar cost of the FSLIC assistance for the target thrift	62.16 ($ Mil.)	16.66 ($ Mil.)	Negative	Negative
Resolution Cost to Assets: resolution cost divided by total assets of the target thrift	0.12	0.02	Positive	Positive
Acquirer Tangible Net Worth to Assets: ratio of tangible equity capital to total assets for the acquiring thrift	0.039	0.006	Negative	Negative[d]
Interstate Mergers: dummy variable equal to 1 if the transaction involved an interstate merger and 0 otherwise	0.56	0.08	Positive	Positive
1988 Deals: dummy variable equal to 1 if the transaction was announced in 1988 and 0 otherwise	0.30	.07	Positive	Negative[c]
Gray Regime: dummy variable equal to 1 if the transaction was negotiated during the regime of former FHLBB Chairman Gray and 0 otherwise	0.49	0.08	Negative	Negative[c]
Asymmetric-Information and Measurement-Error Variables				
Mortgage-Backed-Securities to Assets: book-value of mortgage-backed securities divided by total assets[b]	0.09	0.02	Positive	Positive[d]
Mortgage-Backed-Securities Dollar-Value Discount: estimated market-value discount from book-value for mortgage-backed securities[b]	3.60 ($ Mil.)	1.03 ($ Mil.)	Negative	Negative[d]
Multifamily-Mortgages to Assets: book-value of multifamily loans divided by total assets[b]	0.05	0.01	Positive	Negative[d]
Nonresidential Mortgages to Assets: book-value of nonresidential mortgages divided by total assets[b]	0.09	0.01	Positive	Positive[d]
Dependent Variable				
CER: six-trading-day cumulative excess return on the acquirer's publicly traded stock.	2.19	1.09		

[a]The variables appearing in the table are used to test hypotheses that asymmetric-information and principal-agent problems explain cumulative excess returns to the announcements of thrift mergers involving FSLIC assistance. Cumulative excess returns are measured over the six-day event-window from $t-1$ to $t+4$ where $t-0$ is the date of the first public announcement of a proposed merger.

[b]Portfolio variables are those of the target thrift institutions.

[c]Indicates significance at the 0.05 level in the specification that provides the highest adjusted R-square.

[d]Indicates significance at the 0.01 level in the specification that provides the highest adjusted R-square.

2.3.1.4. Interstate merger. Since thrift regulations generally prohibited voluntary acquisitions across state lines during most of the sample time period, geographic diversification benefits were another potential source of value for a thrift acquiring an insolvent thrift across state lines. A dummy variable is constructed to indicate whether the bidding and target thrifts were located in different states.[22] If interstate branching was valuable to acquirers but was not factored adequately into the FSLIC's estimates of assistance, then acquirers purchasing troubled thrifts located in different states should reap higher excess returns than acquirers making intrastate purchases.

2.3.1.5. 1988 deals. To test specifically whether 1988 deals both were tax-motivated and perceived by shareholders as more generous than previous deals, a dummy variable is constructed to identify assisted mergers announced during 1988. A positive coefficient on this variable provides evidence to support charges that 1988 transactions were more costly to the FSLIC or the taxpayer than previous deals, after controlling for other factors.

2.3.1.6. Gray regime. To examine whether different chairmen of the FHLBB affected the terms of the assisted transactions, a dummy variable is constructed to identify acquisitions that were negotiated during the regime of former FHLBB Chairman Edwin Gray, which covered May 1983 through June 1987. Gray maintained that he was more stringent in his policies than were chairmen preceding or following him. In addition, many in the Congress and the press have charged that Gray's successor, M. Danny Wall, negotiated the most deceptive and costly transactions, including the Southwest and Oklahoma plans, in which large numbers of thrifts were packaged and sold to acquirers.[23]

2.3.2. Asymmetric-information variables Four portfolio variables are used to test whether excess returns accruing to the acquirers resulted from informational asymmetries in the thrift resolution process.

2.3.2.1. Mortgaged-backed securities to total assets. Because the FHLBB relied upon off-site information to estimate asset values of target thrifts while acquirers developed estimates based upon information collected during on-site due-diligence, assets that could be valued more accurately on-site should be associated with higher excess returns. This phenomenon should be most powerful for target thrifts with large portfolios of mortgage-backed securities. Next to cash, they are the most homogeneous, liquid, and among the easiest of thrift assets to value on-site. For this reason, the percentage of mortgage-backed-securities to total assets should serve as a proxy for this informational asymmetry and should be positively related to excess returns.

2.3.2.2. Market value dollar discount on mortgage-backed securities. FSLIC reliance upon off-site information to value mortgage-backed securities may have resulted in the overvaluation of these assets during times when contract rates on the mortgage-backed securities held by thrifts were below market rates, as they often were during the sample period. This would put downward pressure on the assistance provided and imply a negative relationship between the discount on mortgage-backed securities and excess returns. To test for this phenomenon, an instrumental variable is constructed for the discount to book value of mortgage-backed securities and include this variable in the cross-sectional regressions. This estimate is

$$\text{DISCOUNT ON MORTGAGE-BACKED SECURITIES} = \text{MORTGAGE-BACKED SECURITIES} - \frac{\text{MORTGAGE-BACKED SECURITIES}}{(1 + R)}$$

where R is the market interest rate as of the last call report date prior to announcement of the merger.

2.3.2.3. Nonresidential mortgages to assets and multifamily mortgages to assets. Nonresidential and multifamily mortgages, which comprised the bulk of commercial real estate loans made by thrifts, were the most difficult of a troubled thrift's assets to value. As such, the informational advantage of the acquirer relative to the FSLIC should have enabled the acquirer to bargain more effectively for assistance, and, if successful, reap excess returns.[24] In addition, a large portion of the nonresidential mortgages held by insolvent thrifts were nonperforming assets, and, as such, would be covered by capital-loss and yield-maintenance provisions of any assistance agreement. If the FSLIC did not adequately value the tax benefits associated with such assistance, then these assets, expressed as a portion of total assets, should be associated with positive excess returns.

2.4. Explanation of Sources of Value

Results from the cross-sectional regression analysis of the six-trading-day cumulative excess returns appear in table 6. These regressions provide strong evidence regarding potential sources of excess returns, with seven statistically significant variables explaining 47 percent of the variability in excess returns. In addition to the results for the full ten-variable equation shown on the last two lines in the table, the results of a forward selection process also are reported to provide additional insights into the contribution and relative importance of the explanatory variables. Each of the ten variables is entered in a step-wise forward manner beginning with the most significant variable. The coefficients on the individual variables are robust as additional variables are added to the equation. For each forward-stepwise specification, the adjusted-R^2, the F-statistic for joint significance of the explanatory variables, and the parameter estimate and standard error for each regressor are reported.

The first variable to enter into the model is the acquirer's tangible net-worth-to-assets ratio, a measure of capital forbearance. The second and third variables entering the model are the target's ratio of mortgage-backed securities to total assets and estimated dollar-value discount on the target's mortgage-backed securities portfolio. Each of these three variables explains approximately 10 percent of the variability in excess returns, as indicated by the adjusted R-square statistics of the first three specifications, and each is significant at least at the 0.05 level.

The five-variable specification, which adds the multifamily and nonresidential mortgage variables to the three variables discussed above, produces the highest F-statistic; the seven-variable specification, which adds dummy variables for Chairman Gray's regime and 1988 deals to the five-variable equation, provides the highest adjusted R-square. The variables in these latter specifications are individually significant at least at the 0.05 level, and are jointly significant at least at the 0.005 level.

Inclusion of the three remaining explanatory variables—the estimated dollar-value resolution cost, the ratio of resolution cost to the target's total assets, and a dummy variable signifying interstate mergers—does not improve the overall performance of the model in terms of either the adjusted R-square or the F-statistic. None of these last three variables are statistically significant in any specification tested.

Table 6. OLS Regression Results Testing the Hypothesized Sources of Value in FSLIC-Assisted Mergers[a]

Intercept	Acquirer's Tangible Net Worth	Mortgage-Back Securities to Assets[b]	Discount on Mortgage-Backed Securities[b]	Multifamily Mortgages to Assets[b]	Nonresidential Mortgages to Assets[b]	Chairman Gray's Regime	1988 Merger	Interstate Merger	Estimated Resolution Cost	Estimated Resolution Cost to Assets[b]	Adjusted R-Square	F-Value
4.81[d]	−60.53[c]										0.10	5.74
1.44	25.26											
2.49	−53.70[c]	20.42[c]									0.19	5.91
1.64	24.17	8.74										
1.68	−48.82[c]	52.72[d]	−0.65[c]								0.29	6.31
1.59	22.95	15.85	0.27									
3.76[c]	−54.72[c]	49.68[c]	−0.63[c]	−31.77[c]							0.33	6.27
1.81	22.16	15.25	0.26	15.01								
1.03	−61.17[d]	49.77[d]	−0.55[c]	−47.45[d]	38.49[c]						0.42	7.10
2.00	20.83	14.23	0.24	15.26	14.90							
1.79	−64.57[d]	51.60[d]	−0.58[c]	−44.20[d]	38.05[c]	−1.68					0.42	6.06
2.16	21.17	14.38	0.25	15.67	14.93	1.78						
4.51	**−60.73[d]**	**53.18[d]**	**−0.69[d]**	**−43.19[d]**	**43.69[d]**	**−4.92[c]**	**−5.39[c]**				**0.47**	**6.39**
2.41	**20.23**	**13.71**	**0.24**	**14.93**	**14.45**	**2.26**	**2.48**					
4.25	−59.09[d]	54.20[d]	−0.71[d]	−43.68[d]	43.46[d]	−5.14[c]	−5.56[c]	0.67			0.46	5.48
2.53	20.93	14.14	0.25	15.17	14.64	2.36	2.55	1.77				
4.40	−54.26[c]	58.91[d]	−0.84[d]	−43.56[d]	34.32	−5.32[c]	−6.50[c]	1.22	9.74		0.46	4.91
2.55	21.75	15.21	0.29	15.22	18.15	2.38	2.79	1.89	11.34			
3.83	−58.58[c]	54.13[c]	−0.80[d]	−45.49[d]	30.08	−4.45	−7.66[c]	1.76	−5.31	18.18	0.47	4.65
2.57	21.84	15.56	0.29	15.17	18.31	2.46	2.91	1.92	16.46	14.51		

[a]Ordinary-least-squares regression results explaining 43 cumulative excess returns during the period $t-1$ to $t+4$ around announcement of thrift mergers involving FSLIC assistance, where $t-0$ is the first announcement of a proposed merger. The first number in each cell is the parameter estimate. In each cell, the standard error appears below the parameter estimate.

[b]Portfolio variables are those of the target thrift institution.

[c]Indicates significance at the 0.05 level.

[d]Indicates significance at the 0.01 level.

2.4.1. Tests of the Asymmetric-Information Hypothesis The last two columns of table 5 summarize the results regarding the tests of the principal-agent and asymmetric-information hypotheses. With regard to the asymmetric-information hypothesis, these results are surprisingly strong. Three of the four asymmetric-information variables have the expected sign in each specification and all four are statistically significant at the 0.01 level in the specification that provides the highest adjusted R-square. (This specification is shown in bold in table 6 for emphasis.)

As expected, the ratio of mortgage-backed securities to assets in the target thrift's portfolio is positive and the mortgage-backed-securities dollar-value discount measure is negative. Both of these findings support the asymmetric information hypothesis regarding the FSLIC's overreliance upon thrift call report and other off-site data in estimating resolution costs.

Also as expected, the nonresidential-mortgage variable is positive. This provides additional support for the asymmetric information hypothesis, as nonresidential mortgages were arguably the assets most difficult to value. To the extent that a large portion of the target thrifts' nonresidential mortgages were nonperforming, these results are consistent with the principal-agent hypothesis that the FSLIC did not adequately account for the value that accrued to acquirers from capital loss coverage and yield maintenance agreements.[25]

Contrary to expectations, the multifamily mortgage variable is negative; however, this may be attributable to the fact that multifamily properties provided attractive returns during the sample period.[26] Therefore, these assets would have been less likely to be covered by capital-loss or yield-maintenance provisions. For the acquirer, this absence of assistance would make valuation of multifamily mortgages more risky than the valuation of either mortgage-backed securities or nonperforming commercial real estate, even when the acquirer had performed due-diligence. In addition, the acquirer would not reap the monetary benefits associated with capital-loss coverage and yield maintenance.

2.4.2. Tests of the Principal-Agent Hypothesis Five of the six principal-agent variables have the expected sign, and two of the five—the acquirer's tangible net worth ratio and the Gray regime dummy—are significant at least at the 0.05 level in the specification that provides the highest adjusted R-square. The sixth variable—a dummy for 1988 deals—is jointly significant with the Gray regine dummy; however, the sign of 1988 deal variable is negative, whereas it is positive under the principal-agent hypothesis.

The negative sign on the acquirer's tangible net-worth ratio variable indicates that acquirers with lower capital ratios reaped larger excess returns. This suggests that capital forbearance was valuable to acquirers, that this value was inversely related to the acquirer's capital ratio, and that this value was not factored into FSLIC's estimates of assistance costs.

The dummy variable signifying a transaction consummated during Chairman Gray's tenure is consistently negative, and is jointly significant with the 1988 deal variable, which also is consistently negative. This would appear to support Gray's assertion that the FSLIC granted more generous assistance during the tenure of Chairmen preceding or following him, with the exception of the 1988 deals; however, the majority of transactions negotiated during M. Danny Wall's regime were announced during 1988.

The coefficient on the 1988 deal variable implies that, contrary to Congressional fears, the 1988 transactions do not appear to have been abusive; in fact, they provided acquirers with *lower* than average excess returns. Hence, this result is at odds with charges that 1988 deals were more generous than earlier transactions, consistent with the findings of the 1989 Mid-America Study.

As noted previously, each of the remaining three principal-agent variables—resolution cost-to-assets, dollar-value resolution cost, and interstate merger dummy—has the hypothesized sign but lacks statistical significance. Since the resolution cost-to-assets variable is not significant, one cannot conclude that the FSLIC biased its cost estimates downward. The lack of significance for the dollar-value resolution cost is at odds with undervaluation of tax benefits as a source of value, although some of these benefits could be showing up through the positive and statistically significant nonresidential mortgage variable. Finally, the lack of significance of the dummy variable signifying an interstate merger suggests that exemptions from regulatory prohibitions on interstate mergers did not provide excess returns to acquirers.

To assess the overall contribution of the variables to the total estimated excess return, each coefficient is multiplied by its mean and express the result as a percentage of the mean excess return. No particular variable stands out as more important than the others except for the two mortgage-backed security variables, which were discussed previously.

4. Summary and conclusion

In this study, excess returns to shareholders of thrifts that engaged in FSLIC-assisted mergers are compared with excess returns to shareholders of thrifts that engaged in voluntary, unassisted mergers. The evidence shows that, on average, positive cumulative excess returns appeared and persisted through the first week following announcements of assisted mergers. In addition, the evidence shows that, on average, no excess returns accrued to shareholders in unassisted transactions. Therefore, it is reasonable to assert that the market reacted positively to the perceived value of the FSLIC assistance provided to acquirers, which appears to have increased shareholder returns by approximately two percent of market value during the six-trading-day event window surrounding the acquisition.

Additionally, the pattern of excess returns is consistent with the existence of a lag between the time an assisted transaction is announced and the time that traders fully impound the informational effects of the proposed merger into the stock price of the acquiring firm. While infrequent trading could generate this pattern of returns, the Dimson procedure is used to correct for this possibility. It seems more likely that traders needed additional time to learn important details about terms of the transactions.

While positive and statistically significant excess returns are found in FSLIC-assisted transactions, the implied *ex ante* wealth transfers associated with these transactions are surprisingly small. The aggregate gains to shareholders of thrifts engaging in assisted mergers are only about $13.1 million, or less than 1 percent of the $2.3 billion in aggregate assistance provided. The fact that these transactions did not result in large excess returns

(wealth transfers), despite the large amounts of assistance provided suggests the FSLIC did a credible job in pricing the transactions. Rather, the large amounts of assistance reflect the fact that these assets were carried at book values much higher than their market-values or the value of the thrift's liabilities, and that investors had great uncertainty about the value of these assets.

A cross-sectional analysis of the cumulative excess returns accruing to shareholders of thrifts engaging in assisted transactions provides evidence on the sources of these wealth transfers. The results of this cross-sectional analysis provide strong support for the asymmetric-information hypothesis, and more limited support for the principal-agent hypothesis. The positive relationships between excess returns and both mortgage-backed securities and nonresidential mortgages of the target thrifts, each as a portion of total assets, and the negative relationship between excess returns and the dollar discount on the target thrift's mortgage-backed securities each are consistent with the hypothesized importance of informational asymmetries between the FSLIC and the acquirers of insolvent thrifts as a source of excess returns. Similarly, the positive relationship on the regulatory forbearance variable, which was perhaps the most significant source of excess returns, is consistent with the hypothesis that principal-agent problems in the thrift resolution process are important sources of excess returns. Regulators were attempting to defer resolution costs into the future by allowing thinly capitalized thrifts to undertake assisted acquisitions of insolvent thrifts; however, many institutions resulting from these mergers subsequently were placed into conservatorship or closed by the RTC at significant additional cost to the taxpayer after the FSLIC insurance fund was exhausted.

Limited evidence is found to support former FHLBB Chairman Edwin Gray's assertion that transactions negotiated under his leadership were better structured than those negotiated during the tenure of other chairmen. Finally, no support is found for concerns that the transactions consummated during 1988 under the direction of former FHLBB Chairman M. Danny Wall were abusive relative to those preceding them. In fact, 1988 deals negotiated under Wall's leadership appear to have resulted in lower excess returns than did the previous transactions; however, these may be a reflection of the uncertainty regarding prospects for the thrift industry at the time of the acquisitions.

Notes

1. See Kane (1989) for a discussion of incentives for this type of regulatory behavior.
2. The Competitive Equality Banking Act of 1987 (CEBA), which was originally intended to resolve the thrift crisis, provided thrift regulators with only $10.8 billion in borrowing authority to deal with the hundreds of then-insolvent institutions. This amount quickly proved inadequate for the task.
3. As Kane (1990) indicates, the political pressures operated on the Resolution Trust Corporation (RTC), just as they did on the FSLIC, to slow down resolutions of insolvent thrift institutions and to defer recognition of the true costs of the thrift crisis.
4. The exception would be where the bidding firm had monopsony power; then a positive wealth transfer could occur, even if no conflicts were operating within the FSLIC. Under such circumstances, the appropriate decision for the FSLIC to have made would have been to balance the expected wealth-transfer costs to the taxpayer against the expected losses associated with other resolution methods.

5. Uninsured creditors also may have earned excess returns, but such wealth transfers are not measured or examined in this study.
6. Balbier, Judd, and Lindahl (1991) examine acquisitions by both thrifts and nonthrifts and find statistically significant excess returns on the order of two percent; however, they are unable to rule out product-diversification benefits as the source of these excess returns.

   Horvitz and Lee (1992) compare unassisted thrift acquisitions with assisted thrift acquisitions during the period following the passage of FIRREA. These assisted transactions were negotiated by the RTC, which assumed responsibility for thrift resolutions after the demise of the FHLBB. The authors find that excess returns for RTC-assisted transactions are significantly greater than excess returns for unassisted transactions; however, none of the excess returns are significantly different from zero.
7. See Kane (1989, pp. 105–109, and 1990) and Cole (1990, 1993) for more in-depth discussions and evidence of the principal-agent problems that existed within the FHLB System and the effects of these problems upon the troubled thrift resolution process.
8. In theory, excess returns should elicit a large number of potential acquirers who would bid away the "excess" value of tax benefits. Hence, the size of the excess returns should be inversely related to the number of bidders. James and Wier (1987a) report evidence supportive of this notion in their study of purchase and assumption auctions of failed banks; however, because of the nature of the FSLIC resolutions, in which unique assistance agreements were negotiated individually with each bidder, few bidders participated beyond the initial stages of the resolution process. Additionally, the numbers of bidders for each institution were not available for this study.
9. A due-diligence examination is an on-site and in-depth review of an institution's asset and liability portfolios performed to gather information about a potential acquisition target's market value.
10. Unfortunately, there are too few of these transactions to permit a meaningful comparison of differences in excess returns on the assisted as compared with unassisted acquisitions for these firms.
11. See Patell (1976), Asquith, Bruner and Mullins (1983), and Brown and Warner (1985) for details of the event-study methodology.
12. For all but two of the assusted acquisitions, the first indication of the acquisition was the FHLBB's press release identifying the successful bidder.
13. The periods both before day $t-1$ and after day $t+4$ also were analyzed. None of the excess returns for these additional days are statistically significant.
14. Because data were not available on trading volume, it was not possible to distinguish cases where trades did not take place from cases where there were no changes in price.
15. Whether one should use a shorter rate is a reasonable question. Kane and Unal (1988) find that thrift returns are sensitive to long rates but not to short rates, so they use a 30-year Treasury-bond rate as a control in their event study. This study uses the 7-year Treasury-note rate to calculate the interest-rate return in an attempt to approximate the average maturity of thrift mortgages. Salomon Brothers *Bond Market Roundup* reports that the average maturity of secondary-market pass-through securities (such as GNMAs, FHLMC Participation Certificates, and FNMAs) is significantly less than ten years. Given that such securities represent portfolios of home mortgages, the principal assets of thrifts, selection of a 7-year maturity return series should be an appropriate choice for an interest-rate control.
16. None of the excess returns are significant on days $t-15$ through $t-2$ or days $t+4$ through $t+15$.
17. A total of 10 of the contemporaneous coefficients on the interest yield factor are positive and 33 are negative. For the lagged coefficients, 19 are positive and 24 are negative. However, only one of the lagged positive coefficients and three of the contemporaneous positive coefficients are significant. By comparison, three of the lagged negative coefficients and eight of the contemporaneous negative coefficients are significant. Overall, these results tend to be more consistent with those of Kane and Unal (1988) than with those of researchers who find a positive relationship between interest rates and returns.
18. In terms of the individual cumulative excess returns around the announcements of unassisted mergers, 24 are negative, and only two of these are statistically significant at the 0.05 level. The remaining 42 excess returns are positive, and three of these are significant at the 0.05 level.

19. See, for example, Dodd (1980), Langetieg (1978), Malatesta (1983), Firth (1980), Eger (1983), Asquith (1983), Eckbo (1983), and Dennis and McConnell (1986). However, the results presented here are inconsistent with those James and Weir (1987a), who report positive returns to bidders in bank mergers.
20. In six cases, the FSLIC estimated the resolution costs to be zero. This means that FHLB staff transferred administration responsibility to FSLIC staff in Washington, but that FSLIC staff estimated that the institution could be resolved without financial assistance.
21. In practice, the FHLBB allowed the acquirer to record the negative net worth of the acquired institution as goodwill. Regulatory accounting principles enabled the merged entity to count goodwill as regulatory capital, and, thus, appear to be solvent.
22. To account for the effect of the loosening of interstate branching restrictions over time, the interstate variable is interacted with a time-trend variable. Inclusion of this variable has no significant effect upon the results, so it is excluded from the final specifications.
23. The vast majority of thrift mergers analyzed in this study were negotiated during the tenure of Chairmen Gray and Wall. Dummy variables also were constructed to control for the regimes of Chairmen Janis and Pratt, but these variables are not significant so they are excluded from the final specifications.
24. At the suggestion of a referee, the equations were reestimated including both direct investments to assets and commercial loans to assets as additional explanatory variables because both types of assets also are difficult to value off-site. Neither variable is statistically significant, so they are excluded from the final specifications.
25. The statistical significance of the nonresidential mortgage variable decreases in specifications including the estimated resolution cost variable. This implies a positive relationship between the nonresidents-mortgage and resolution-cost variables; indeed, the correlation coefficient for these two variables is 0.50, significant at the 0.01 level. This suggests that FSLIC staff could have used the nonresidential-mortgage variable as an instrumental variable in estimating the amount of assistance.
26. McKenzie, Cole, and Brown (1991) and Cole and McKenzie (1993) report that multifamily mortgages generally were the most profitable assets for a thrift to hold during the 1984–1988 period, regardless of how well capitalized the thrift might have been.

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