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Regulatory learning in failed thrift auctions ☆

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Abstract

We use a sample of failed thrift auctions to examine if regulators learn from early transactions and improve their performance in later transactions. Our findings suggest that experience at failure resolution does not by itself lead to improved regulatory performance. Evidence of regulatory learning is restricted to dealings with repeat acquirers; in cases where an acquiring firm makes abnormal gains, regulators are able to restructure the auction process and eliminate such gains in subsequent acquisitions made by the same acquirers.

JEL classification: G21; G28
Keywords: Thrift failures; Regulatory learning; Assisted mergers; Purchase and assumptions; Financial mergers and acquisitions

1. Introduction

The problems of the thrift industry during the decade of the 1980s and the taxpayer bailout that followed have been topics of considerable discussion and research over recent years. Several studies, including those by Balbirer et al.

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(1992), and Gupta et al. (1993) estimate the abnormal returns accruing to firms that acquired failed thrifts from the Federal Savings and Loan Insurance Corporation (FSLIC) during the 1980s and conclude that at least part of the observed gains were a consequence of over-subsidization by the FSLIC. In contrast, studies of failed thrift auctions conducted by the Resolution Trust Corporation (RTC) find that acquiring firms in these transactions did not earn significant abnormal returns on average (Gosnell et al., 1993; Horvitz and Lee, 1994; Gupta et al., 1997). [1]

In this paper we analyze the gains to acquirers of failed thrifts in auctions conducted by the FSLIC during the 1980s and the RTC in the early 1990s. Our analysis is designed to provide insight into the value of experience gained by federal regulators during the acquisition process. In particular, the analysis enables us to examine whether the experience gained in structuring failed thrift transactions helped regulators to improve the auction process, thus reducing taxpayer costs of failure resolution. To the extent that the legislative mandate to regulators may be incomplete and fail to anticipate specific adverse eventualities, a regulator who learns from unanticipated circumstances and improves the response to subsequent failures clearly provides a more desirable regulatory outcome (function).

We explore the ramifications of two broad categories of regulatory learning with regard to the failure resolution process. In the first category of learning, which we refer to as *general learning*, we hypothesize that regulators get better at conducting the failure resolution task as they gain experience. Regulatory processes, in general, may be improved over time and thereby may yield superior regulatory outcomes. Empirically, general learning has the testable implication that as regulators gain experience at the failure resolution task, gains to acquirers in federally assisted acquisitions of failed institutions should decline.

In the second learning category, called *specific learning*, we conjecture that improvements in the regulatory processes may be based on some specific types of experience gathered by the regulator, and not necessarily from failure resolution experience in general. The particular form of specific learning we explore is grounded in transactions where excessive assistance may have been provided to acquiring firms. Under the specific learning hypothesis, excessive assistance provided in a particular deal is likely to be examined and analyzed by the regulator and is likely to lead to appropriate adjustments in the process such that the same acquirer does not receive similar excessive subsidies in subsequent transactions. We test for such specific learning by focusing on a

[1] See Gupta and Misra (1999) for a survey and synthesis of the causes leading to the problems of the thrift and banking sectors, the regulatory response, and the taxpayer costs resulting from the failure resolution process.

sample of repeat acquirers; specific learning implies that gains in later transactions by repeat acquirers should be smaller than in earlier transactions.

Our empirical analysis fails to provide any support for the general learning hypothesis. In contrast, both bivariate and multivariate tests indicate that relative to their initial acquisitions, repeat acquirers obtained significantly lower gains in subsequent transactions. These results are broadly supportive of the specific learning ideas described above.

The rest of the paper is organized as follows. Section 2 describes the empirical approach used to identify the presence of regulatory learning. Sample characteristics and the empirical methodology are described in Section 3, and empirical results are reported in Sections 4 and 5. Section 6 contains concluding comments.

2. Empirical approach: Structure and rationale

The most commonly used method for resolving failed institutions is the purchase and assumption, or P&A approach. This is essentially a three-step procedure, where the first step is identifying a set of potential acquirers, step two is estimating the value of the failed institution's assets, and step three is negotiating an assistance package with the winning bidder. An assistance package has to be provided in these deals because the value of the assets being assumed by the acquiring firm is smaller than the value of the liabilities being assumed. In an appropriately structured transaction the size of this assistance package will equal the difference between the market values of transferred assets and liabilities.

2.1. Regulatory performance

The primary focus of our empirical work is to examine if regulatory performance at failure resolution improves with experience. One approach to assessing regulatory performance is to use an estimate of the resolution cost for each failed institution, and use this cost as a measure of performance. There are at least two problems with this approach. First, estimating the resolution cost is difficult. Second, the resolution cost associated with any particular failure depends upon the asset quality of that institution, a variable that is significantly influenced by the quality of the regulatory oversight experience of that particular institution. For example, the resolution cost is likely to be a lot larger for a firm that has been insolvent for several years but allowed to continue to operate, relative to a firm that is declared insolvent as soon as its capital position deteriorates beyond a critical point. The reason for the observed difference in resolution costs for these two firms is the quality of regulatory oversight, not differences in the failure resolution process. Given that estimates

of resolution cost incorporate the effects of both regulatory oversight and failure resolution procedures, these estimates do not provide a useful benchmark to examine the extent of regulatory learning in the failure resolution process.

An alternative approach, and the one taken in this paper, is to examine the market price response of the acquiring firm. In an appropriately structured transaction, such acquisitions should not yield abnormal gains to acquiring firm stockholders. In contrast, the presence of abnormal gains constitutes evidence of a less than optimal resolution process, and the magnitude of this gain can be used as a measure of the effectiveness of regulatory performance. The advantage of using such a stock price based measure of regulatory performance, as opposed to resolution cost, is that it is not influenced by the quality of regulatory oversight, and depends upon only the quality of the resolution process. The downside is that the empirical analysis is restricted to the subset of acquiring firms for whom stock price data are available.

2.2. Regulatory learning

Our approach to testing for learning effects follows Gupta and Misra (2000), who examine learning patterns in a sample of international joint venture arrangements. They focus on firms that engaged in a series of joint venture announcements, and examine the possibility that prior experience is valued in such transactions. They examine two types of experience. The first is *experiential learning*, defined as knowledge gains from each successive transaction. The second is *specific learning*, defined as knowledge gains from specific types of experience. The types of specific learning examined include repeat ventures with the same partner, multiple ventures in one country, and multiple ventures employing similar technologies or engaged in the same type of task. Abnormal returns from successive joint venture announcements are used to test for experiential learning, and abnormal returns from repeat ventures with each specific characteristic (partner, country and task) are used to test for specific learning. They report that such experiential learning, and at least one form of specific experience are valued by the market. Similarly, DeYoung (1997) examines efficiency gains in bank mergers, and finds that such gains are concentrated in a sample of repeat acquirers. He interprets his findings as suggesting the presence of experience effects. Our concept of *general learning* mirrors the above ideas of *experiential learning*, and our tests for general and specific learning follow, in principle, the approach described above.

In the context of failed thrift resolutions, general or experiential learning by regulators can take different forms, and occur at various stages of the failure resolution process. One possibility is that experience improves the regulator's ability to choose the set of potential acquirers. In other words, regulators get better at identifying the particular set of potential acquirers to whom the failed

institution being sold is the most attractive. Since firms to whom the failed institution is more attractive would be willing to pay a higher premium to the regulator, such learning implies that as regulators gain experience at failure resolution, the gains to acquiring firms should decline.

A second possibility is that general learning leads to improvements in the regulator's ability to estimate the market value of the assets of the failed institution. Since the size of the assistance package given to the acquiring firm depends upon the estimated market value of the assets being transferred, such learning can be expected to strengthen the regulator's negotiating ability. As a consequence, gains to acquiring firms can be expected to decline with regulatory experience.

The possibility that acquired regulatory experience leads to improvements in the choice of potential acquirers and/or in the valuation of the assets of the failed institution can be thought of as *general learning*. Such learning could potentially occur with every resolution conducted by the regulatory authority. Empirically, we can test for the presence of general learning by examining the pattern of acquirer gains over time. General learning implies that experience enables regulators to do a better job, and gains to acquirers of failed thrifts should decline with regulatory experience.

A potential problem with using the time series of acquiring firm excess returns to make inferences about regulatory learning is that this time period spans the passage of the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA) in 1989. This legislation resulted in structural changes in organizational responsibilities, funding, and permissible regulatory policies. In view of the changing regimes, the excess return data under the FSLIC and the RTC periods are not necessarily comparable. We finesse this problem by separating the pre- and post-FIRREA samples, and testing for evidence of regulatory learning independently in each of these two samples. [2]

It is possible for regulatory learning to take a form that is quite different from the general learning ideas described above. Specifically, it may be the case that such general learning is not substantive, and that only transactions with some specific characteristics yield valuable experience. One example of such *specific learning* is a transaction in which the acquiring firm makes abnormal gains. It is possible that *all* transactions do not yield experience that has value.

[2] As noted earlier, Gosnell et al. (1993), Horvitz and Lee (1994), and Gupta et al. (1997) all report a lack of significant gains to firms that acquired failed thrifts with RTC assistance. This improvement over the aggregate performance under the FSLIC regime is consistent with the presence of regulatory learning. On the other hand, the reduced gains could be a consequence of changes mandated by FIRREA – structural improvements in the failure resolution process and restrictions on the provision of open-ended guarantees to acquiring firms. The observed decline in gains to firms that acquired failed thrifts under the RTC regime, relative to the FSLIC, does not by itself constitute definitive evidence of regulatory learning.

Valuable experience is gained only from transactions where something goes wrong, and regulators are able to go back, reexamine details of the process, and learn the reason why the acquiring firm obtained an excessive assistance package in these particular deals. We conjecture that specific learning can in a sense be thought of as a "once burned twice shy" phenomenon, and can occur only when the regulator gets "burned" to start with.

In contrast to *general learning*, *specific learning* does not yield the expectation that gains to acquiring firms, in general, should decline with regulatory experience. The reason is that specific experience is not acquired with every transaction, as is the case with general learning. However, since at least some selected transactions yield learning opportunities, one empirical implication of specific learning is that regulatory performance should improve with respect to this specific set of transactions.

A direct test for the presence of this form of specific learning utilizes the subset of firms that made multiple federally assisted acquisitions of failed institutions at different points in time. As described, specific learning implies that regulators learn from a transaction where the acquiring firm makes superior gains. The empirical implication is that while abnormal gains are possible once, regulatory learning will ensure that they are not repeated. The specific learning hypothesis can thus be tested on a per acquirer basis, using the sample of repeat acquirers. Such learning implies that (i) acquirer gains in subsequent transactions should be no larger than in initial deals, and (ii) in cases where the acquiring firm makes abnormal gains in its initial federally assisted acquisition, gains in subsequent acquisitions should be no different from zero. [3]

3. Data and empirical methodology

3.1. Sample characteristics

The sample of assisted acquisitions was obtained from an examination of various issues of the *Wall Street Journal Index*, *Savings Institutions* magazine, and the *Resolved Conservatorship Reports* published by the RTC. The primary constraint applied for inclusion in the sample was availability of data from the CRSP daily returns files. The empirical analysis is based on a final sample of

[3] Zhang (1997) examines bidder returns in FDIC failed bank auctions, and finds that abnormal gains are restricted to firms that made repeat acquisitions. He interprets these results as suggesting that a sub-set of acquirers gain an experience and/or information advantage via repeated dealings with the regulator, and are able to use such learning to make abnormal gains. This evidence is consistent with our notion of *specific learning*, except that such learning is occurring at the acquiring firm rather than the regulatory authority.

216 acquisitions of failed thrifts over the time period 1980–1994. Of these 216 transactions, 48 are FSLIC-assisted deals and 168 are RTC-assisted mergers over the period August 1989–December 1994. The thrift crisis reached its peak in the late 1980s, and over half of the FSLIC-assisted transactions in the sample occurred in 1988; 120 of the 168 RTC-assisted deals were in 1990 and 1991.

Table 1 provides aggregate statistics on acquirer and target size, and the amount of federal assistance that was provided in these transactions. Acquiring firms had total assets of $12.6 billion on average during the FSLIC regime, and just under $22 billion on average for the RTC. Target firms were smaller, averaging $534 million and $557 million for the FSLIC and the RTC, respectively. The large increase in acquirer size for the RTC resulted in a steep decline in the relative size of these acquisitions, defined as the ratio of target to acquiring firm assets. Relative size declined from 23.4% during the FSLIC years to 9.5% for the RTC. The data indicate that going from the FSLIC to the

Table 1
Summary information on selected acquirer and target characteristics for a sample of 216 FSLIC- and RTC-assisted failed thrift acquisitions, 1980–1994

	RTC	FSLIC	Total
Acquirer assets ($million)			
Mean	21,866	12,578	19,801
S.D.	33,051	33,681	33,338
Target assets ($million)			
Mean	557	534	552
S.D.	1059	683	986
Target assets/Acquirer assets			
Mean (%)	9.5	23.4	12.6
S.D. (%)	18.1	34.8	23.5
Federal assistance ($million)			
Mean	305	192	283
S.D.	619	347	577
Assistance/Target assets			
Mean (%)	51.4	26.5	46.5
S.D. (%)	36.8	30.6	36.9
Acquirer industry			
Bank (or a BHC)	102	12	114
Thrift institution	64	17	81
Other institution	2	19	21
Acquisition is			
Intra-state	153	16	169
Inter-state	15	32	47

RTC, while the average target size did not change much, the dollar value of assistance provide to the acquiring firm increased from $192 million to $305 million on average. The magnitude of relative assistance, measured as the ratio of dollar assistance to target assets, thus doubled from 26.5% to 51.4%. The large increase in relative assistance suggests that the firms resolved by the RTC were in significantly worse financial condition on average. Finally, banks or BHCs were the acquirers in 114 of the 216 transactions, and 47 of the acquisitions were across state lines.

3.2. Empirical methodology

Standard event study methodology (see, for example, Dodd and Warner, 1983) is used to compute abnormal returns to acquiring firm stockholders. The bid date refers to the date given in the *Resolved Conservatorship Report*; given that regulators generally make merger announcements after close of trading we designate the bid date as day-1 in event time and use the two-day window $(t = -1, 0)$ as the announcement period. Market model coefficients are estimated using returns data for the 200-day period ($t = -115, -16$ and $t = +16, +115$) in event time, and portfolio average abnormal returns (AAR_t) are obtained for the period $(t = -15, +15)$ surrounding the bid announcement. Cumulative average abnormal returns ($\mathrm{CAAR}_{a,b}$) are obtained by summing the AARs over various intervals (a, b). Test statistics for examining the significance of estimated values of AAR and CAAR are based on standardized abnormal returns, computed using the procedure described in the literature.

The robustness of the event study results was checked by trying several alternative estimation procedures, including the use of only pre- and only post-announcement returns for estimating market model parameters. Abnormal returns were also estimated using market model parameters estimated using the Scholes and Williams (1977) procedure. Results in all cases are essentially unchanged.

4. Bivariate results

We investigate the possibility of general and/or specific learning using both bivariate and multivariate methods. We first use comparisons of event study results for different sub-samples to draw inferences about the possibility of regulatory learning. These findings are reported in this section. Several multivariate regression specifications are then used to distinguish between regulatory learning and other possible explanations for the event study findings. These findings are reported in Section 5.

Table 2
Two-day announcement period cumulative average abnormal returns (CAAR) for different sub-samples of acquiring firms for a sample of 216 failed thrift acquisitions, 1980–1994

Sample	Sub-sample	*N*	CAAR (%)	*Z*-stat.	Positive: Negative
Panel A: *Early versus late acquisitions during the FSLIC and RTC regimes*[a]					
All transactions		216	0.48	3.75***	110:106
FSLIC-assisted	Early FSLIC	24	1.02	2.17**	13:11
	Late FSLIC	24	1.00	3.86***	16:8
	Difference		0.02	1.20	
RTC-assisted	Early RTC	84	0.11	0.06	39:45
	Late RTC	84	0.55	2.73***	42:42
	Difference		−0.44	1.89	
Panel B: *Acquisitions according to time periods*					
FSLIC-assisted	Pre-1988	19	1.62	2.74***	11:8
	1988	29	0.62	3.27***	18:11
	Difference		1.00	0.07	
RTC-assisted	1989–1990	70	0.00	−0.29	30:40
	1991	54	0.29	0.60	27:27
	1989–1991	124	0.12	0.18	57:67
	1992–1994	44	0.94	3.55***	24:20
	Difference		−0.82	2.95***	

[a] In this panel, "early" and "late" transactions are constructed by using calendar time to disaggregate the sample into two equal halves.

**Significance at better than 5% level.

***Significance at better than 1% level.

4.1. General learning: Bivariate evidence

The *general learning* hypothesis posits that experience at failure resolution may help regulators improve the failure resolution process, and that such improvements should result in reductions in abnormal returns earned by acquiring firms over time. Our initial test of this hypothesis utilizes two-day CAAR values accruing to acquiring firms over various time windows; these are presented in Panels A and B of Table 2. Under the general learning hypothesis we expect CAAR values for transactions conducted later in time to be smaller than for transactions that were earlier in calendar time.

As shown in Panel A of Table 2, the two-day CAAR value for the sample of 216 acquiring firms is 0.48%, and is statistically significant at the 1% level (*z*-value 3.75). We now examine the FSLIC and RTC sub-samples separately, in order to control for the possibly confounding effects of the structural changes in regulatory structure resulting from the passage of FIRREA. We first use

calendar time to split the FSLIC and RTC deals into two equal sub-samples, and CAAR values for each of these sub-samples are given in Panel A of Table 2.

The CAARs for both early and late FSLIC transactions are of the order of 1%, and both CAAR values are statistically significant (z-values 2.17 and 3.86, respectively). The difference between these two CAARs is not statistically significant (z-value 1.20). The fact that acquiring firms obtained statistically significant abnormal returns in both earlier and later transactions does not support the general learning hypothesis. For the RTC sub-samples, the CAAR value for the 84 deals that occurred earlier in calendar time is 0.11% and is not statistically significant (z-value 0.06). The 84 later deals have a CAAR of 0.55%, and this is statistically significant at the 1% level (z-value 2.73). While the difference between the CAAR values for the two RTC sub-samples is not statistically significant, the finding that only the transactions that occurred later in calendar time yield significant abnormal return provides no support for the general learning hypothesis.

Additional insight into the time pattern of abnormal returns can be obtained by examining CAAR values for various different time windows; these are presented in Panel B of Table 2. We find that the CAAR for 19 pre-1988 FSLIC deals is positive and statistically significant, as is the CAAR for 29 FSLIC deals in 1988. The difference between these two CAAR values is not statistically significant. For the RTC, the only time window for which we find a statistically significant CAAR value is 1992–1994, a result that runs counter to the predictions of the *general learning* hypothesis. [4]

4.2. Specific learning: Bivariate evidence

Evidence on the possibility of *specific learning* is obtained by focussing on the sub-sample of firms that made multiple federally assisted acquisitions, and comparing the CAAR values for initial versus subsequent acquisitions made by these firms. Results from this analysis are reported in Table 3. The CAAR for the set of 33 initial acquisitions is 1.53% and is statistically significant at the 1% level (z-value 3.67). The CAAR for the set of 86 subsequent acquisitions is 0.36% and is statistically significant at the 10% level (z-value 1.92). The 1.17% difference between these CAAR values is statistically significant at the 5% level (z-value 2.10), indicating that for repeat acquirers the magnitude of abnormal

[4] Why is the CAAR value significant over the 1992–1994 time period? This was the time when the RTC was originally required to complete all resolutions and shut down operations. Our conjecture is that such time pressure may have led to hasty resolutions, the type that yield significant gains to acquiring firms.

Table 3
Two-day announcement period cumulative average abnormal returns (CAAR) for different sub-samples of acquiring firms for a sample of 119 failed thrift acquisitions made by repeat acquirers, 1980–1994

First transaction relative to subsequent transactions for firms that did multiple transactions					
Sample	Sub-sample	*N*	CAAR (%)	*Z*-stat	Positive: Negative
All assisted[a]	First transaction	33	1.53	3.67***	21:12
	Transactions > 1	86	0.36	1.92*	44:42
	Difference		1.17	2.10**	
FSLIC-assisted	First transaction	6	3.68	5.07***	5:1
	Transactions > 1	8	0.42	0.95	4:4
	Difference		3.26	3.21***	
RTC-assisted	First transaction	25	0.95	1.07	13:12
	Transactions > 1	68	0.24	1.44	33:35
	Difference		0.71	0.16	

[a] In our analysis we treat the FSLIC- and RTC-assisted sub-samples separately. A consequence of this is that if a firm made two FSLIC-assisted and then one RTC-assisted acquisitions, it would enter the FSLIC-assisted multiple acquisitions sub-sample but not the RTC-assisted multiple acquisitions sub-sample. The sum of the deals listed as FSLIC-assisted and RTC-assisted thus do not equal the total for all assisted transactions.

*Significance at better than 10% level.

**Significance at better than 5% level.

***Significance at better than 1% level.

gains in subsequent transactions was significantly smaller than in their initial federally assisted acquisitions.

The significant positive average abnormal return observed for the initial acquisitions suggests that the level of regulatory assistance provided to acquiring firms may have been too high, and resulted in wealth transfers from the insurance fund to acquiring firm stockholders. The statistically significant decline in excess return accruing in subsequent acquisitions suggests that regulators learned from experience and made appropriate changes to the terms of subsequent auctions, such that the excess returns earned in the initial acquisitions were significantly reduced in subsequent mergers. These findings are supportive of the possibility that regulators were able to improve auction procedures in a manner that resulted in significant declines in acquirer gains documented in the initial acquisitions made by repeat acquirers.

CAAR values for initial and subsequent transactions made by repeat acquirers under the FSLIC and the RTC regimes are also presented in Table 3. Initial FSLIC-assisted acquisitions have a CAAR of 3.68%, which is statistically significant at the 1% level (*z*-value 5.07). In contrast, subsequent FSLIC-assisted acquisitions made by the same firms have a CAAR of 0.42%, which is not statistically significant (*z*-value 0.95). The 3.26% difference between these

CAAR values is statistically significant (z-value 3.21), and is supportive of the *specific learning* hypothesis outlined in Section 2 of the paper.

Changes introduced by FIRREA in August 1989 were designed to improve the failure resolution process and to reduce the costs to the insurance fund. The empirical evidence on initial versus subsequent acquisitions of failed thrifts from the RTC suggests that regulators did in fact improve their failure resolution efforts. As distinct from the significant positive abnormal returns earned by first time acquirers from the FSLIC, the sub-sample of 25 first time acquirers from the RTC obtained an abnormal return of 0.95%, which is not statistically significant (z-value 1.07). This implies that the improvements made by the FSLIC in arranging deals with repeat acquirers were carried through into the RTC regime, such that first time acquirers did not obtain any wealth transfers from the insurance fund. Finally, repeat acquirers from the RTC earned an abnormal return of 0.24% on average, which is not statistically significant (z-value 1.44).

5. Multivariate analysis

The event study results reported in Section 4 do not support the *general learning* hypothesis outlined in Section 2 of the paper. In contrast, the finding that repeat acquirers experience a statistically significant decline in abnormal returns in subsequent transactions is supportive of the *specific learning* hypothesis. In this section we present the findings from a multivariate analysis of the observed abnormal returns. The regression specifications yield a richer treatment, and allow us to control for the possibility that the estimated abnormal returns are being driven by factors other than regulatory learning. Our approach is to regress the observed announcement period CAAR values estimated earlier on a set of explanatory variables that include empirical proxies not only for general and specific learning, but also for two alternative explanations for the observed gains to acquiring firms in these transactions.

One alternative explanation we examine is the possibility that firms making their first federally assisted acquisition obtain a "regulatory seal of approval" as described in Gupta (1997), and that such a seal of approval results in the gains observed in these transactions. Our empirical proxy for the regulatory seal of approval follows Gupta, and consists of a dummy variable that equals 0 if the firm had acquired another financial institution within the past year (48 cases), and is one otherwise (71 cases). Given that a regulatory seal of approval would only have value if the firm had not obtained a similar certification in the recent past, a significant positive coefficient for this variable would suggest that our results are being driven by a "regulatory seal of approval" effect rather than by regulatory learning.

A second alternative explanation is the possibility that excess returns are more likely to accrue to acquirers when the insurer lacks cash resources to dispose off failed institutions but will nevertheless do so to avoid liquidations. Given that the FSLIC was in significantly worse financial shape than the RTC, this alternative explanation suggests the expectation that abnormal returns in deals that occurred later in calendar time should be smaller than in earlier transactions. This relationship should be captured by a "year of acquisition" variable, and implies the expectation of a negative coefficient for this variable. [5]

The regressions include three control variables, including the relative size of the transaction, computed as the ratio of target assets to acquiring firm assets. We control for relative size because earlier studies such as James and Wier (1987) have found that this variable can influence the magnitude of acquiring firm gains in both financial and non-financial acquisitions. The second control variable is a dummy variable that takes a value of one if the acquiring firm is a thrift, and is zero otherwise. We include this variable in the regression because it is possible that banking firms acquiring failed thrifts get potentially greater diversification benefits relative to the horizontal expansion that such acquisitions represent for thrift acquirers. The third control variable is a dummy variable that takes a value of one for inter-state mergers and is zero otherwise. This variable is included because earlier studies such as Cornett and De (1991) report differential wealth effects from inter- versus intra-state acquisitions in the financial sector. Finally, the regressions are estimated using weighted least squares, with the inverse of the standard error of the two-day abnormal returns serving as the weights.

5.1. General learning: Multivariate evidence

The regression specification we examine takes the following form:

$$\begin{aligned} \mathrm{CAAR}/\sigma = {} & \alpha(1/\sigma) + \beta_1(\textit{relative size}/\sigma) + \beta_2(\textit{seal of approval}/\sigma) \\ & + \beta_3(\textit{interstate}/\sigma) + \beta_4(\textit{thrift acquirer}/\sigma) \\ & + \beta_5(\textit{year of acquisition}/\sigma). \end{aligned} \tag{1}$$

[5] Insight into the possibility that acquirer gains are larger when the insurer lacks cash resources to dispose off failed institutions is obtained by comparing gains in the 19 FSLIC-assisted acquisitions during 1980–1987 with gains in the 29 transactions conducted by the FSLIC during 1988. Since the financial position of the FSLIC was arguably worse in 1988, and certainly no better than in earlier years, this explanation implies the expectation that acquirer gains in 1988 deals should be larger than in earlier transactions. Empirically, the CAAR values for these two subsamples are: 1.62% for the 19 pre-1988 transactions (z-value 2.74), and 0.62% for the 29 transactions during 1988 (z-value 3.27), and the difference between these CAAR values is not statistically significant (z-value 0.07). These findings suggest that this particular explanation does not tell the complete story in these transactions.

Our proxy for *general learning* is the calendar year of the acquisition. The hypothesis that experience at successive transactions enables regulators to improve the auction process implies that this variable should have a negative coefficient.

Estimates corresponding to Eq. (1) are reported in column one of Panel A of Table 4. In this specification, the only coefficient that is statistically significant is β_3, the one corresponding to interstate acquisitions. The coefficient of interest for the time variable, β_5, is positive and not statistically significant. These findings are open to two different interpretations: (a) that there is no *general learning* effect, or (b) that *general learning*, if present, is not captured by the cross-sectional specification described in Eq. (1). We explore the latter possibility in more detail, and results from this analysis are described next.

During the sample period there was a regime switch from the FSLIC to the RTC, with attendant changes in the structure of the regulatory agencies, their responsibilities, and resources. As argued earlier, such structural changes may muddy the estimate of the coefficient β_5. We allow for this possibility in two steps. First, we control for the regime switch by separating the FSLIC and RTC sub-samples. Next, we note that mere passage of time may not induce regulatory learning, and that learning is more likely to be achieved when more deals are completed. In order to capture these two ideas, we split the 216 deal sample to four distinct sub-samples: Early FSLIC (24 cases); Late FSLIC (24 cases); Early RTC (84 cases) and Late RTC (84 cases). Under the *general learning* hypothesis there should be a decline in abnormal returns between the early and late sample periods.

Corresponding to each sub-sample we define a dummy variable. For example, the dummy variable *Early FSLIC* takes on a value of 1 if the case belongs to the early FSLIC period, otherwise it takes on a value of 0. The other variables *Late FSLIC*, *Early RTC*, *Late RTC* are similarly defined. Eq. (2) employs the three dummy variables *Late FSLIC*, *Early RTC*, and *Late RTC*. The corresponding coefficients δ_1, δ_2, and δ_3 measure respectively the marginal response in abnormal returns corresponding to each sub-period compared to the early FSLIC period. In the presence of *general learning* we expect the coefficients δ_1, δ_2, and δ_3 to be negative and declining. The specification of Eq. (2) is given below:

$$\begin{aligned} \mathrm{CAAR}/\sigma = {} & \alpha(1/\sigma) + \beta_1(\mathit{relative\ size}/\sigma) + \beta_2(\mathit{seal\ of\ approval}/\sigma) \\ & + \beta_3(\mathit{interstate}/\sigma) + \beta_4(\mathit{thrift\ acquirer}/\sigma) \\ & + \delta_1(\mathit{Late\ FSLIC}/\sigma) + \delta_2(\mathit{Early\ RTC}/\sigma) \\ & + \delta_3(\mathit{Late\ RTC}/\sigma). \end{aligned} \tag{2}$$

Results corresponding to Eq. (2) are shown in column two of Panel B of Table 4. None of the β coefficients are significant. Further, the coefficients for

Table 4
Coefficients from weighted least squares regressions of the two-day CAAR values for acquiring firms receiving FSLIC or RTC assistance against the relative size of the transaction, measures of time dependency, the possibility of the firm receiving a regulatory seal of approval, whether the transaction was across state lines, and the industry of the acquiring firm are provided[a]

	Panel A		Panel B	
Column:	One	Two	One	Two
Intercept	−1.821	0.002	−2.599	−3.009
	(−1.16)	(0.34)	(−1.14)	(−1.00)
Relative size[b]	0.000	0.000	0.001	0.001
	(0.34)	(0.10)	(0.47)	(0.41)
Seal of approval[c]	−0.002	−0.001	−0.002	0.001
	(−0.54)	(−0.35)	(−0.28)	(1.01)
Interstate[d]	0.010**	0.006	0.013**	0.018**
	(2.18)	(1.10)	(2.02)	(2.08)
Thrift acquirer[e]	0.001	0.002	−0.001	−0.002
	(0.31)	(0.57)	(−0.24)	(−0.32)
Year of acquisition[f]	0.000		0.001	0.002
	(1.16)		(1.15)	(1.01)
First Acquisition[g]				0.007
			(0.88)	
Late FSLIC[h]		0.004		−0.020*
		(0.63)		(−1.81)
Early RTC[i]		−0.004		−0.011
		(−0.50)		(−0.84)
Late RTC[j]		0.004		−0.011
		(0.68)		(−0.72)
F-statistic	2.67**	2.25**	2.14**	1.97**
Adj. R^2	0.044	0.044	0.063	0.068

[a] Results for the sample of 216 acquisitions are given in Panel A. Panel B contains regression results for the sub-sample of 119 repeat acquirers, and includes a variable to distinguish between initial and subsequent acquisitions by these firms. Regression weights are the inverse of the standard errors of the CAAR values.

[b] *Relative size* is the ratio of target to acquirer assets.

[c] *Seal of approval* is zero if the firm acquired a financial institution within the past year, and is one otherwise.

[d] *Interstate* takes a value of one for interstate acquisitions and is zero otherwise.

[e] *Thrift acquirer* equals one if the acquirer is a thrift and is zero otherwise.

[f] *Year of acquisition* is the calendar year of the bid.

[g] *First Acquisition* equals one for initial acquisitions by repeat acquirers and is zero otherwise.

[h] *Late FSLIC* equals one for later acquisitions under the FSLIC regime and is zero otherwise.

[i] *Early RTC* equals one for early acquisitions under the RTC regime and is zero otherwise.

[j] *Late RTC* equals one for later acquisitions under the RTC regime and is zero otherwise.

*Statistical significance at the 10% level.

**Statistical significance at the 5% level.

general learning δ_1, δ_2, and δ_3 are not all negative, and they are not statistically significant. These results provide no support for the *general learning* hypothesis.

One possible explanation for the lack of support for the *general learning* hypothesis, at least during the FSLIC era, may lie in institutional realities. During the FSLIC regime the set of potential bidders was constrained by eligibility restrictions, and there were no particular changes made to such restrictions during this time period. This makes the benefits of experience of questionable value, and reduces the likelihood that regulators were able to improve the choice of potential bidders in failed thrift auctions. In addition, the information asymmetry pertaining to asset value estimation was largely a consequence of budgetary constraints that limited regulators to the use of call report data for asset valuation, while the due diligence process gave potential acquirers a better information base (see Cole et al., 1994). Given no improvement in the resources available to federal regulators during the 1980s, the benefit of experience at this task is also of questionable value. In sum, it may be the case that during the FSLIC period regulatory performance was largely determined by binding institutional and budgetary constraints.

The lack of significance for the regulatory seal of approval variable is in contrast to the finding of such an effect for failed bank insured deposit transfers conducted by the FDIC, reported in Gupta (1997). One possible reason for the differing results is that in contrast to the FDIC during the 1980s, the FSLIC was in extremely weak financial health, and was essentially bankrupt by the middle of the decade. Market participants knew that the FSLIC was broke and that the agency had an incentive to sell failed thrift institutions to anybody that would take them off their hands. In such a situation it is unclear that getting permission from the FSLIC to buy an insolvent institution would have had any certification value for acquiring firms, making the lack of statistical significance for the coefficient of the seal of approval variable not entirely surprising.

5.2. Specific learning: Multivariate evidence

We investigate the possibility of *specific learning* by comparing the abnormal returns from initial acquisitions by repeat acquirers against abnormal returns in subsequent acquisitions by the same firms. There are 119 transactions made by repeat acquirers. As outlined in Section 2, if regulators acquire specific information about the acquiring firms they are likely to improve the regulatory examination process vis-à-vis these acquirers. This leads to the expectation that subsequent acquisitions are likely to result in lower abnormal returns to these acquirers relative to their first transaction. We estimate the differential response of the first acquisition with a dummy variable, *First Acquisition*, that takes on a value of 1 if the acquisition is the first one for an (eventually) repeat acquirer. Eq. (3) is specified as shown below, and empirical results corresponding to this specification are reported in column one of Panel B in Table 4:

$$\begin{aligned}\mathrm{CAAR}/\sigma = {} & \alpha(1/\sigma) + \beta_1(\textit{relative size}/\sigma) + \beta_2(\textit{seal of approval}/\sigma) \\ & + \beta_3(\textit{interstate}/\sigma) + \beta_4(\textit{thrift acquirer}/\sigma) \\ & + \beta_5(\textit{year of acquisition}/\sigma) + \gamma_1(\textit{First Acquisition}/\sigma). \qquad (3)\end{aligned}$$

The coefficient γ_1 measures the relative response of first acquisitions compared to later acquisitions. Although this coefficient is positive, it is not statistically significant. Similar in spirit to Eq. (2), we now examine if initial FSLIC acquisitions have a different response than later FSLIC transactions, first RTC transactions, and later RTC transactions. This approach is captured by Eq. (4), shown below:

$$\begin{aligned}\mathrm{CAAR}/\sigma = {} & \alpha(1/\sigma) + \beta_1(\textit{relative size}/\sigma) + \beta_2(\textit{seal of approval}/\sigma) \\ & + \beta_3(\textit{interstate}/\sigma) + \beta_4(\textit{thrift acquirer}/\sigma) \\ & + \beta_5(\textit{year of acquisition}/\sigma) \\ & + \gamma_2(\textit{subsequent FSLIC acquisition}/\sigma) \\ & + \gamma_3(\textit{first RTC acquisition}/\sigma) \\ & + \gamma_4(\textit{subsequent RTC acquisition}/\sigma). \qquad (4)\end{aligned}$$

In Eq. (4), the first FSLIC transactions are used as a base and the coefficients γ_2, γ_3, and γ_4 measure the response of each sub-group relative to the response of the initial FSLIC transactions. The specific learning hypothesis implies that these coefficients should all be negative. As shown in column two of Panel B of Table 4, each of the γ coefficients has a negative sign indicating that abnormal returns in later transactions are lower than in the initial transaction. However, only the coefficient for subsequent FSLIC acquisitions, γ_2, is statistically significant.

Taken together, the findings reported in Table 4 suggest the following interpretation of the regulatory learning process. First, experience at resolving failed institutions does not by itself lead to improvements in the failure resolution process. Rather, it appears that as regulators conduct a series of deals, they find that a subset of acquirers make large gains. They then focus on the details of these particular transactions in an attempt to understand what needs to be changed. When this set of firms return make additional acquisitions, regulators are able to restructure the negotiations in a way to reduce the gains obtained by these firms in their initial acquisitions. The results suggest, in other words, that regulatory learning requires the occurrence of a bad event (large gains to some firms) from which lessons can be learned. The process of resolving a series of failed institutions by itself appears to make only a limited contribution to the learning process.

6. Conclusions

The literature on acquiring firm gains in federally assisted acquisitions of failed thrifts has documented that such acquisitions may have produced wealth transfers from the insurance fund to acquiring firm stockholders. In this paper we examine the possibility that acquiring firms and/or regulatory authorities learned from earlier transactions and improved their performance in subsequent failed thrift auctions. We examine two forms of regulatory learning, general and specific. *General learning* posits that regulators learn from each particular transaction, such that their failure resolution ability improves over time. In contrast, *Specific learning* posits that only some specific types of transactions yield learning gains. The particular form of specific learning we examine is where a particular acquiring firm makes significant positive gains, and then returns to make additional acquisitions. Our concept of specific learning evaluates whether regulators are able to learn from these bad initial experiences, so as to reduce the abnormal gains accruing to repeat acquirers in subsequent transactions.

Our empirical findings provide no support for the general learning hypothesis. In contrast, we find that in cases where initial transactions yield excess returns to a sub-set of acquiring firms, regulators are able to learn from experience and make appropriate changes to the auction process so as to eliminate such abnormal gains in subsequent transactions.

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