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## The effect of charter status on savings and loan resolution costs

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Received 5 September 1995

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Beginning in 1933, with the establishment of the first federally chartered savings and loan, the thrift industry has functioned under a dual regulatory system. This paper addresses the question of whether this moral hazard, created by regulatory competition, increased the resolution costs of state chartered institutions relative to the federally chartered thrifts. Resolution costs are those expended by the Resolution Trust Company (RTC) to handle a defunct thrift. This study shows, using a variety of methods and statistical tests, that the charter orientation of a defunct savings and loan had a significant effect on the resolution costs associated with the handling of the thrift by the RTC. Therefore, it can be stated that this dual regulation of the savings and loan industry created a moral hazard in which there were incentives for regulators to provide broader investment powers and less strict regulation to attract thrifts. Because state regulators tended to provide less strict regulations, the resolution costs for defunct state chartered savings and loans were larger than for their federally chartered counterparts.

### I. INTRODUCTION

During the 1980s the savings and loan industry experienced its worst performance in its 160-year existence. Over the period 525 insolvent institutions were liquidated or sold at an estimated present-value cost to the federal insurer of savings and loans of US\$47 billion. Another eighteen institutions were simply stabilized, and hence awaiting final disposition, at an estimated present-value cost of US\$7 billion. In addition to these closures, another 517 institutions were reporting insolvency but were still operating at the end of the decade. It was estimated in the spring of 1990 that these remaining candidates for closure would cost US\$100 billion or more in present-value terms. Furthermore, at least a thousand more savings and loans began the decade of the 1990s seriously troubled and attempting to survive the massive consolidation, shrinkage and restructuring that began sweeping through the industry in the late 1980s (Barth 1991).

Beginning in 1933, with the establishment of the first federally chartered savings and loan, the thrift industry has functioned under a dual regulatory system. Any newly incorporated savings and loan could choose to be state chartered and be regulated by state agencies or they could choose to be federal chartered and

be regulated by federal agencies. Because thrifts were free to choose, these two types of regulatory bodies were placed in direct competition with each other. They competed for thrifts to regulate in order to obtain the collection fees associated with the regulation. Therefore, thrifts would choose whichever regulator provided the more attractive package. The broader the investment powers and less stringent the regulatory requirements, the more attractive the package. This created an incentive for regulatory agencies to loosen restrictions. However, less strict regulation meant more risk being borne by the FDIC, the savings and loan insurer (to a large extent) and those customers investing in the savings and loans. Thus a moral hazard was created.

Many aspects of the savings and loan industry and the savings and loan crisis have been empirically investigated.<sup>1</sup> This paper addresses the question of whether this moral hazard, created by regulatory competition, increased the resolution costs of state chartered institutions relative to the federally chartered thrifts. Resolution costs are those expended by the Resolution Trust Company (RTC) to handle a defunct thrift. The RTC is an agency created by the government to handle the consolidation, restructuring and liquidation of these troubled thrifts. To better

<sup>1</sup> See, for example, work by Benston (1986), Barth *et al.* (1990), Coley *et al.* (1990), McCallie (1990), Cebula (1992) and Hadley (1993).

Table 1. *Sample statistics: state charter.*

Variable	Mean	Standard error	Maximum	Minimum
Resolution costs	154.44	307.58	1423.0	0.0
Total assets	364.76	768.45	4252.9	6.5
Percentage of assets passed	32.5	31.9	100.0	0.0

Table 2. *Sample statistics: federal charter*

Variable	Mean	Standard error	Maximum	Minimum
Resolution costs	96.2	213.2	1717.9	0.0
Total assets	313.81	700.9	5931.1	0.7
Percentage of assets passed	37.1	33.2	100.0	0.0

understand the results of the data collected, a brief discussion of how this process works is presented.

The Office of Thrift Supervision (OTS), the new regulator of the savings and loan industry, determines whether or not a thrift is insolvent. OTS officials then come to the savings and loan, usually on a Friday, and close the institution for the weekend. By Monday, OTS has placed the savings and loan in 'conservatorship' by replacing the management. It then turns the thrift over to the RTC. This could be thought of as an attempt to pump life back into the thrift, to see if it can eventually be sold off as a complete savings and loan. Generally, when a thrift is sold, the RTC retains all of the 'non-performing assets' (that is loans that are in default), and sells it as a 'clean institution'. The RTC itself then manages and sells the bad assets.

If the thrift in 'conservatorship' is still performing poorly, the RTC then puts the institution in 'receivership'. Essentially, it dismantles the institution, pays off the depositors and sells the individual assets. Alternatively, the RTC may choose to sell the deposits of the failed institution to a healthy savings and loan or bank at a premium and retain the assets.

Higher resolution costs for state chartered thrifts are evidence that the regulations governing state chartered institution provided broader investment opportunities and less stringent loan requirements than the federal chartered institutions during the early and mid-1980s. These less restrictive regulations led to riskier behaviour by state thrifts than by federal thrifts which, in turn, led to higher resolution costs for state chartered thrifts.

Higher resolution costs for state chartered savings and loans are established in several ways. A regression model for resolution costs is estimated including a dummy variable for charter type. Separate regressions are estimated for state and federally chartered institutions. Finally, a Blinder decomposition is used to determine how much of the difference in resolution costs is due to the treatment of the state chartered thrifts or their behaviour. All of these methods indicate that state chartered thrifts had higher resolution costs than similar federally chartered thrifts.

## II. DATA AND MODEL

To address the issue of resolution costs, data on 362 state and federally chartered thrifts which went through the resolution process between January 1990 and December 1993 were collected from the Resolution Trust Company (RTC). The data collected on these institutions includes total assets, which is the total value of the troubled thrift and is an indicator of the overall size of the institution, Assets passed to the acquiring institution, which are the assets of RTC has 'sold' to the acquiring institution, resolution costs, which is the measure of the present value of assistance provided by the RTC to the acquiring company and to the management and the eventual sale of the non-performing assets (dollar values of tax breaks provided to the acquiring company are not included), and the charter status of the troubled thrift (federal or state charter).

We would expect that the more troubled the thrift, the greater the non-performing assets and the higher the resolution costs involved. Resolution costs were therefore considered a proxy for measuring the unsoundness of the thrift. Resolutions costs were regressed on total assets, percentage of assets passed to the acquirer (non-troubled assets sold to an acquiring institution), and charter orientation of the thrift.

We expect a positive relationship between total assets and resolution costs. This is because the larger the institution, the more assets involved in the resolution, thus the more costly the endeavour. The relationship between resolution costs and the percentage of assets passed is expected to be negative. The reasoning here is that the RTC sells off all the good assets and retains the troubled assets. The resolution costs result from the handling of the troubled assets. Therefore, the greater the percentage of assets passed on to the acquiring institution the lower the percentage of troubled assets held by the RTC and the lower the cost (resolution costs) of handling the defunct thrift, holding total assets constant. We expect a negative relationship between federal chartering and resolution costs. As stated before, regulators of state-chartered institutions provided even broader investment powers and less stringent guidelines in response to

Table 3. Estimation results

Variable	Pooled with dummy	Fully interacted	Pooled without dummy	State data only	Federal data only
Intercept	97.96 (5.00)	93.21 (3.30)	64.45 (5.98)	93.21 (2.22)	58.26 (5.51)
Total assets	0.26 (26.74)	0.30 (12.57)	0.26 (26.6)	0.30 (8.45)	0.25 (26.39)
Percentage of assets passed	-115.27 (-5.57)	-148.43 (-2.58)	-117.30 (-5.65)	-148.43 (-1.74)	-108.18 (-5.45)
Federal	-39.83 (-2.04)	-34.95 (-1.14)	—	—	—
Fed * total assets	—	-0.05 (-1.97)	—	—	—
Fed * percent of assets passed	—	40.25 (0.65)	—	—	—
$R^2$	0.68	0.69	0.68	0.62	0.70

the Garn-St Germain Act (provided greater investment flexibility to federally chartered institutions) in order to avoid their thrifts switching to federal charters. Therefore, the federal chartered institutions are more tightly regulated which should have lowered their volume of troubled assets and thus lowered resolutions costs.

### III. RESULTS

The means and standard deviations for resolution costs, total assets, and percentage of assets passed, for state chartered, federal chartered and pooled thrifts are presented in Tables 1 and 2. Mean resolution costs for state chartered thrifts were US\$154.22 million and the mean resolution costs for federal institutions are somewhat lower at US\$96.2 million. This is the differential we hypothesized. Additionally, Tables 1 and 2 provide the means of the two independent variables in this study, total assets and percentage of assets passed, and these means differ as well. The mean state total assets and percentage of assets passed were US\$364.76 million and US\$0.325 million, respectively. Means of these two variables in the federal sample are US\$313.81 million and US\$0.371 million respectively (see Tables 1 and 2). Although the sample mean resolution costs differ, no conclusions can be drawn because other characteristics of the thrifts were not controlled. A regression model is needed to make a better comparison.

Our initial regression model included total assets, percentage of assets passed and charter orientation as independent variables. The results from estimating this model are presented in column 2 of Table 3. The  $R^2$  is 0.68 indicating a good fit considering that the data are a cross-section. In addition, the signs of the coefficients are as predicted, positive for total assets and negative for percentage of assets passed and federal chartering and all variables are statistically significant at the usual levels of

significance. The variable of interest, charter type, has a  $t$ -ratio of  $-2.04$  and the estimated coefficient indicated that, holding all else constant, federal chartered savings and loans had resolution costs that were US\$39.83 million less than state chartered thrifts. Although this result provides more evidence that resolution costs are higher for state chartered thrifts, the dummy variable approach is based on the assumption that the coefficients of total assets and percentage of assets passed are the same for both state and federally chartered institutions. This assumption may not be true, but is testable.

To determine if the regression coefficients for state and federally chartered institutions are the same, a Chow test is performed. This test is based on regression models presented in columns 5 and 6 of Table 3. The  $F$ -value we calculate is 2.96 which exceeds the critical value of  $F$  at the usual levels of significance. The results of this test indicate that separate models for state and federally chartered thrifts need to be estimated.

The results from estimating separate regressions for state and federally chartered thrifts are presented in columns 3 and 4 of Table 3. The  $R^2$  of the models are 0.62 for state and 0.70 for federal, again indicating good fits. A glance at the estimated coefficients confirms what the results of the  $F$ -test suggested, that the coefficients in the two models are different.

Even though the  $F$ -test indicates that the coefficients in the state and federal models are significantly different, the difference in the mean resolution costs may result from the variables themselves (total assets and percentage of assets passed) and not the parameters. The coefficients represent the difference in treatment of state thrifts by state regulators. The difference in means of the independent variables in the model indicates differences in characteristics or endowments of state and federal savings and loans.

In order to determine the relative effect of coefficients and variables on resolution costs, a Blinder decomposition (Blinder, 1973) is performed. This method can be used to determine how much of the difference in the state and federal resolution costs is

Table 3. *Blinder decompositions*

Variable	Total	Endowment	Discrimination
State means-federal coefficients			
Intercept	59.94	0	59.54
Total assets	53.91	21.76	32.15
Percentage of assets passed	-13.85	8.60	-22.45
Total	100.0	30.36	69.94
Federal means-state coefficients			
Intercept	59.94	0	59.94
Total assets	53.91	26.25	27.66
Percentage of assets passed	-13.85	11.80	-25.65
Total	100.00	38.05	61.95

due to the coefficients (different treatment) and how much is due to the variables (characteristics or endowments). This type of analysis is common in studies comparing differences in races (Duncan, 1969), and gender (Cohen, 1971), and has recently been used by Long and Caudill (1992) in a study of racial differences in home ownership.

To begin the decomposition, the means of the federal thrifts are inserted into the state resolution cost equation. This predicted resolution cost is compared to the mean resolution costs of the federally chartered thrifts. If the state chartered institutions tend to have higher resolution costs than federal chartered institutions as theorized, then the resolution costs estimated with this model should be lower than the federally chartered mean resolution costs. The mean federal resolution costs were US\$96.20 million (Tables 1 and 2) and the resolution costs estimated by the model were US\$132.35 million. The same procedure is applied using the state chartered mean values and substituting those values into the federal regression equation. The predicted resolution costs should be lower than the state chartered mean resolution costs. The state mean resolution costs were US\$154.44 million (Tables 1 and 2) and the estimated resolution costs from the model estimated with state observations were US\$113.93 million. These results are in accord with the theory.

The Blinder decomposition goes beyond the simple calculations above break down the estimated differences in resolutions costs into a portion due to differences in the coefficients for the two groups and a portion due to differences in the mean values in the independent variables for the two groups. The differences in mean resolution costs between state and federally chartered thrifts can be decomposed two ways. The federal means and the state coefficients can be used, or the state means and the federal coefficients. The part of the difference associated with differences in coefficients is sometimes called the 'discrimination' effect and the part of the difference due to differences in the mean values of the independent variables is known as the 'endowment' effect.

The results of performing both decompositions are contained in Table 4. Fortunately, there is much agreement about the

'discrimination' and 'endowment' effects. The results of the decomposition using state means and federal coefficients indicates that 69.65% of the difference in mean resolution costs is due to differences in state and federal coefficients. The remaining 30.35% of the difference in resolution costs is attributed to differences in mean values of the independent variables.

The results of performing the decomposition using state coefficients and federal means is contained in the lower half of Table 4. The results are in good accord with the decomposition described above. This decomposition attributed 61.95% of the differences in mean resolution costs to differences in coefficients and the remaining 38.05% to differences in mean value of the independent variables.

#### IV. CONCLUSION

This study has shown, using a variety of methods and statistical tests, that the charter orientation of a defunct savings and loan had a significant effect on the resolution costs associated with the handling of the thrift by the RTC. Therefore, it can be stated that this dual regulation of the savings and loan industry created a moral hazard in which there were incentives for regulators to provide broader investment powers and less strict regulation to attract thrifts. Because state regulators tended to provide less strict regulation, the resolution costs for defunct state chartered savings and loans were larger than their federally chartered counterparts.

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