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# Fidelity Insurance: Are There Differences in Experience Among Financial Institutions?

A. Frank Thompson, Jr., Roger D. Rutz, and Frederic M. Stiner, Jr.

**Editor's Note:** Dr. Thompson, a frequent contributor to the *Journal*, is associate professor of insurance and actuarial science at the University of Cincinnati; he was a visiting scholar in the Board's Office of Policy and Economic Research, during which time this article was written. Dr. Rutz is chief economist of the Chicago Board of Trade, and he was at the Federal Reserve Board in Washington, D.C., at the time he co-authored this article. Dr. Stiner is an associate professor in the department of accounting of the College of Business and Economics of the University of Delaware, in Newark. The views expressed in this article are those of the authors and do not necessarily reflect the views of the Federal Home Loan Bank Board.

*The Depository Institutions Deregulation and Monetary Control Act* (Public Law 96-221, enacted in March 1980) seeks to eliminate some of the distinctions among commercial banks, savings and loans (S&Ls), and mutual savings banks (MSBs). Within the next few years, all these financial intermediaries will be subject to similar reserve requirements and increased competition for interest bearing transaction accounts.<sup>1</sup> As operational differences among institutions narrow, financial intermediaries will confront similar business risks. The objective of this study is to examine whether depository institutions face the same surety risks that result in fidelity losses. This article will determine whether fidelity loss experience among financial institutions is comparable enough to permit consolidating coverage.<sup>2</sup>

<sup>1</sup> Under the *Home Owners' Loan Act of 1933*, thrift institutions will continue to be a major source of mortgage financing for the housing industry. However, Public Law 96-221 permits these institutions to enter into traditional commercial bank activities. Thrifts are now permitted to make commercial loans, engage in trust activities, and provide demand deposit (NOW) accounts to their customers within specific limitations.

<sup>2</sup> Section 308 of the *Monetary Control Act* outlines a procedure for altering deposit insurance assessments for member FDIC institutions. This variation of determining insurance premiums depends on the ratio of the FDIC's capital account to estimated insured deposits. At present, thrift institutions have no means for altering premiums to reflect increases in insurable risks. If commercial bank and thrift institution experience can be aggregated, this would increase the amount of information available for developing credible insurance rates on depository accounts. See Casualty Actuarial Society, *Study Kit on Ratemaking Developments*, "Surety Association of America—Ratemaking and Review Procedures, Study Note No.8," (New York: Casualty Actuarial Society, 1980), pp. 19-34.

## Fidelity Insurance

Traditionally, financial institutions have acquired fidelity insurance under several standardized contracts. The Federal Home Loan Bank Board under regulation 563.19 requires that S&Ls obtain coverage through Form 22 or its equivalent. Those institutions regulated by the Federal Deposit Insurance Corporation have separate forms. Thus, mutual savings banks receive their coverage under Standard Form 5 and commercial banks can choose from either Form 24 or Lloyd's Banks and Trust Companies Policy (HANC).<sup>3</sup>

The Surety Association of America serves as the sole rating bureau for this type of insurance, collecting information on the types of losses sustained among institutions and developing coverages to meet fidelity risks.<sup>4</sup> The standard forms contain insuring agreements relating to dishonesty of officers and employees, loss of property, forgery, stolen items, and claims from acceptance of counterfeit currency. In addition, the Federal Deposit Insurance Corporation and the Federal Home Loan Bank (Board) suggest comparable amounts of fidelity coverage for institutions of approximately the same asset size.<sup>5</sup>

## Fidelity Losses Among Financial Institutions

Although financial intermediaries may face similar sets of fidelity risks, the incidence of criminal activity among these institutions appears different. A study by Daniels shows that crimes against all institutions increased 25 percent over the period from January to June 1979.<sup>6</sup> However, 42.2 percent of these crimes were committed against mutual savings banks versus 26.4

<sup>3</sup> The mutual savings and commercial bank policies are approved by the American Bankers Association Insurance and Protection Division. See *Digest of Bank Insurance* (The American Bankers Association, Washington, D.C., 1973), pp. XI-XII.

<sup>4</sup> The Surety Association of America publishes manual rates for fidelity coverages at commercial banks and thrift institutions. See S. S. Huebner, Kenneth Black, Jr., and Robert S. Cline, *Property and Liability Insurance*, (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1976), pp. 361-363.

<sup>5</sup> American Bankers Association, *Digest of Bank Insurance*, pp. 63-64, and Federal Home Loan Bank Board Regulation 563.19.

<sup>6</sup> Peggy W. Daniels, "Crimes Against Financial Institutions: S&Ls Experience a 21.3 Percent Increase in Last Half, 1979," *Federal Home Loan Bank Board Journal*, Vol. 13, No. 6 (June 1980), pp. 34-37.

percent for S&Ls and 21.3 percent for commercial banks.<sup>7</sup> One of the few sources of data on criminal activity against financial institutions is compiled by the Federal Bureau of Investigation (FBI). Due to a number of limitations, however, the data are not sufficient to test the fidelity loss experience among financial institutions.<sup>8</sup> Thus, instead of using the published bank crime statistics from the FBI, this study uses data supplied by the Surety Association of America to test our model bankers' blanket bond losses. These data consist of directly incurred losses and loss-ratios for standard insurance forms and, therefore, do not reflect the reporting limitations present in the FBI statistics.

An examination of bankers' blanket bond experience may help determine to what extent fidelity coverages can be consolidated among financial intermediaries. In recent years, premiums on surety insurance have increased in response to rising fidelity losses at all institutions.<sup>9</sup> Bank officials suggest that insurance costs can be reduced through greater use of deductibles and risk management techniques.<sup>10</sup> By combining fidelity risks that are essentially the same, the Surety Association may be able to distribute losses among a larger insurance pool and reduce administrative costs through economies of scale. The only study relating to fidelity bonding is a paper by Denenberg for the U.S. Savings and Loan League in which he advocates the develop-

ment of group coverages for thrift institutions. Recently, the National Association of Mutual Savings Banks announced a reinsurance program that Insurance Company of North America (INA) designed to pool fidelity coverage for qualified savings institutions.<sup>11</sup> In addition, the American Bankers Association has developed the Controlled Group Bonding Plan which provides insurance for banks which meet certain audit examination standards.<sup>12</sup>

## Analysis of Fidelity Bond Experience

The data for this study are from the Surety Association's "Distribution of Countrywide Loss Experience Summaries of Fidelity Classification Experience for 1967 to 1980."<sup>13</sup> This information is compiled from annual reports of all fidelity companies which report to the Surety Association of America and includes direct premiums, incurred losses, and loss-ratios by form of coverage. Aggregate loss information for the various financial intermediaries is available from 1967 to 1980. However, it is not possible to classify losses further by the size of individual institution or the number of branches operated. Therefore, our investigation uses a variable where total direct losses are divided by total assets to estimate loss experience among institutions.

Fidelity loss relationships are tested using the following model:<sup>14</sup>

<sup>7</sup> *Ibid.*, pp. 34-36.

<sup>8</sup> One of the problems is that the FBI reports cases in which the Justice Department is actively involved in the investigation and prosecution of bank crime. See U.S., Comptroller General, "Resources Devoted by the Department of Justice to Combat White-Collar Crime and Public Corruption," United States General Accounting Office, Series No. GGD-70-35, March 19, 1979, pp. 1-21. In addition, in some instances local police investigate these crimes rather than the FBI, so the cases may go unreported. See U.S., Comptroller General, "Bank Robbery—The Federal Law Enforcement Role Should Be Reduced," United States General Accounting Office, Series No. GGD-78-87, August 18, 1978, pp. 1-39. Finally, not all discovered crimes get forwarded to the Department of Justice by the institutions or their regulatory agencies. For example, cases that involve small amounts of money, or lack sufficient evidence for prosecution, may not be forwarded to the FBI. An analysis of FHLBB Form 366 reports over the six-month period from May to October 1980 shows that 81 percent of reported crimes were referred to the FBI, while 19 percent were held.

<sup>9</sup> Greg David, "RIMS Report: Bank Experts 'Hopeful' Policy Revisions Due," *Business Insurance*, May 1, 1978.

<sup>10</sup> Margret LeRoux, "Banks Told to Take More Risk," *Business Insurance*, October 4, 1976; Gordon Matthews, "S&Ls Bank Hike in Blanket Bond Deductible," *American Banker*, October 30, 1978.

<sup>11</sup> Herbert S. Denenberg, "Some Selected Bonding Problems of Savings and Loan Associations," (Report to the United States League of Savings Associations, Washington, D.C., January 1978), pp. 21-22; Gordon Matthews, "Surety Bond Plan Arranged by NAMS," *American Banker*, September 28, 1978.

<sup>12</sup> Ellis Simon, "Bank Audits Target Blanket Bond Woes," *Business Insurance*, December 26, 1977.

<sup>13</sup> Robert G. Hepburn, "Distribution of Countrywide Loss Experience Data Summaries of Fidelity Classification Experience 1967 to 1980," (Surety Association of America, Iselin, New Jersey, May 5, 1982), pp. 1-25.

<sup>14</sup> Because the data used are not specific to individual institutions, we could not control for asset size or branching laws of the state in which the intermediary is located. An alternative model was tested using a proxy for the asset size of the institution. This proxy variable is defined as the number of all depository institutions in various size categories from 1967 to 1980. However, this institutional variable added little to the explanation of fidelity losses or the delineation of differences between commercial bank and thrift institutions. One reason for this result may be that fidelity coverage is based more on asset-size of each financial institution rather than the number of bank or thrift branches.

**Table 1.—Regression Results for Direct Fidelity Losses at S&Ls, Commercial and Mutual Savings Banks**

Dependent Variable: Direct Fidelity Losses/Total Assets for Each Depository Institution  
(t—values in parentheses)

	Independent Variables					Constant	R <sup>-2</sup>	SS (Residuals)
	Time Trend (t)	Commercial Bank Dummy (DCB)	Mutual Savings Bank Dummy (DMSB)	Commercial Time Dummy (DCBT)	Mutual Savings Bank Time Dummy (DMSBT)			
Full Model	—0.4559 (—0.87028)	53.334 (.97796)	—15.2422 (—0.2794)	— .23129 (— .3122)	.1338 (.1806)	50.3929 (1.3067)	.866	2247.68
DMSB = DMSBT = 0 DCB = DCBT = 1	— .3890 (—1.033)	60.955 (1.269)		— .29819 (— .4569)		42.7717 (1.542)	.854	2454.4
DMSB = DMSBT = 1 DCB = DCBT = 0	— .5716 (— .7009)		—41.909 (— .40314)		.2494 (.1766)	77.06 (1.284)	.318	11494.9
DMSBT = DCBT = 0 t = 0		36.6720 (11.7753)*	—5.2533 (—1.6869)*			17.2357 (7.827)	.856	2269.6

\*Coefficient is significant at the 5 percent level (one-tailed test).

$$D\text{Losses}/T\text{assets} = F(\text{Time, DCB, DMSB, DCBT, DMSBT}) \quad (1)$$

Where:

DLosses/Tassets = directly incurred fidelity losses for commercial banks, S&Ls, and mutual savings banks divided by their total asset size for 1967 to 1980;

Time = a time trend variable for 1967 to 1980;  
DCB = commercial bank dummy, 1 if the institution is a commercial bank, 0 otherwise;  
DMSB = mutual savings bank dummy, 1 if the institution is a mutual savings bank, 0 otherwise;  
DCBT = an interaction variable equal to DCB\*Time;  
DMSBT = an interaction variable equal to DMSB\*Time.

This investigation employs co-variance analysis and analysis of variance to examine whether financial intermediaries experience fidelity losses that are distinctly different. Table 1 presents the results of estimating by ordinary least squares a cross-sectional time-series model of 42 observations in which annual direct surety losses per asset size of intermediary are regressed against time and institutional variables.

The dependent variable, DLosses/Tassets, represents direct fidelity loss rates at S&Ls, commercial banks,

and mutual savings banks. The full model includes independent variables related to commercial and mutual savings banks. By testing the significance of these independent variables, it is possible to deduce to what extent commercial and mutual savings bank losses differ from S&Ls, the "omitted condition." The reduced model without time variables (*i.e.*, DMSBT = DCBT = t = 0, DCB = DMSB = 1) shows a difference between commercial bank and S&L loss experience, since the two variables DCB and DMSB are significant at the five percent level. One explanation for this result could be the presence of multi-collinearity in the full model and its absence in the reduced regression. DCB and DCBT are positively correlated according to the correlation matrix of independent variables. In order to explore further the interrelationships over time between financial institution experience, additional models are considered.

The reduced model without time demonstrates that S&L experience may differ from commercial banks, but not mutual savings institutions. To test differences in loss experience over time, the interaction terms DCBT and DMSBT are included in the model. In order to test how combined mutual savings bank variables—DMSB and DMSBT—compare with S&L loss experience, two reduced variable models were run to compute a combined F-test on commercial and mutual savings bank variables.

**Table 2.—Commercial Bank and S&L Asset Distribution for 1980**

Type of Institution	Number of Institutions with Assets of: (in millions)					Total of the Institutions
	Less than 10	10-24.9	25-49.9	50-99.9	100 and over	
Commercial Banks	2,839	4,677	3,588	2,080	1,980	15,164
Percent of Total Banks:	18.72	30.84	23.66	13.72	13.06	
Savings and Loan Associations	349	686	815	883	1,269	4,002
Percent of Total S&Ls:	8.72	17.14	20.36	22.06	31.71	

Sources: Federal Deposit Insurance Corporation, *Annual Report 1980*; and the Federal Home Loan Bank Board, *Combined Financial Statements 1980*.

For the mutual savings bank variables, the following F-test is applicable:<sup>15</sup>

$$F_{MSB} = \frac{(SS(DMSB = DMSBT = 0) - SS(\text{Full Model}))/2}{SS(\text{Full Model})/36} \quad (2)$$

<sup>15</sup> This co-variance analysis is analogous to applying a Chow test on the commercial bank data by running it against S&L and mutual savings data from 1967 to 1980. The commercial bank variable DCB divides the aggregate cross-sectional time series into two mutually exclusive data sets. DCB=1 for commercial banks and 0 for thrift institutions. The equation under the null hypothesis is:

$$Y = \beta_0 + \beta_1 t + \beta_2 DMSB + \beta_3 DMSBT + \epsilon.$$

The alternative hypothesis with the commercial bank dummy DCB produces the following equation:

$$Y = \beta_0 + \beta_0' DCB + \beta_1 t + \beta_1' DCBT + \beta_2 DMSB + \beta_3 DMSBT + \epsilon.$$

We wish to test the null hypothesis,

$$H_0: \beta_0' = \beta_1' = 0,$$

that there is no difference in the data sets over time, against the alternative hypothesis,

$$H_1: \beta_0' \neq \beta_1' \neq 0,$$

that there is. See Gregory C. Chow, "Tests on Equality between Sets of Coefficients in Two Linear Regressions," *Econometrica*, Vol. 28, No. 3 (July 1960), pp. 591-605, and Henry J. Cassidy, *Using Econometrics: A Beginner's Guide*, (Reston, Virginia, Reston Publishing Co., 1981) pp. 245-247.

The null hypothesis is that there is no significant difference between mutual savings bank losses by amount (DMSB) and over time (DMSBT), and S&L experience. The test statistic,  $F_{MSB} = 1.655$  is not significant, since  $F_{.05}(2,36) = 3.32$ . Therefore, the null hypothesis that no significant difference between losses experienced by MSBs and S&Ls by amount over time is accepted. Similarly, one can test the significance of the commercial bank variables, DCB and DCBT, against S&L experience. In this instance, the test statistic,  $F_{CB} = 74.05$ , is greater than the critical value at the one percent level,  $F_{.01}(2,36) = 5.39$ , and commercial bank loss experience appears to be different from S&L losses.

Fidelity insurance is issued on the basis of asset size per institution. Since Surety Association data provide aggregate loss information, there is no way to directly relate loss experience with size of institution. Direct losses were divided by total assets to form a proxy for insurance loss per dollar of covered assets at each financial institution (*i.e.*,  $D\text{Losses}/T\text{assets}$ ). Commercial banks and S&Ls also have a distinctly different distribution of number of institutions by asset size. Table 2 presents asset data for S&Ls and commercial banks for January 1980. According to Table 2, about 13 percent of all commercial banks and 31 percent of all S&Ls have assets over \$100 million. Loss experience can depend on the number of offices a financial institution operates and the amount invested in loss prevention, all of which may be a function of asset size.<sup>16</sup> Therefore, the relative difference in the proportion of institutions with assets above \$100 million could be contributing to the distinction in loss experience between S&Ls and commercial banks. Under such circumstances, there may not be a difference in loss rates between these financial intermediaries but, rather, only a contrast in the composition of risk categories. In general, though, our results indicate that S&L and mutual savings bank losses are similar enough to warrant combining their experience. Commercial banks may have a loss experience different from S&Ls and mutual savings banks.

Given the distinctions in loss experience among the types of financial institutions, how do the fidelity insurers recognize these differences for rating purposes? In an effort to examine this issue, a difference of means test was performed on loss ratio statistics for each institution from 1967 to 1980. Table 3 gives the results from testing the difference of means between each institution. Loss ratios represent directly incurred losses divided by premiums paid for fidelity coverage, a measure of how insurance premium structure relates to

<sup>16</sup> For a discussion of the relationship between fidelity losses and the number of offices or the amount invested in loss prevention, see American Bankers Association, *Confidential Bank Insurance Survey, 1978*, (The American Bankers Association, Washington, D.C. 1978), pp. 11-14.

**Table 3.—Difference of Two Means Test Using Loss Ratio Statistics: 1967 to 1980**

Hypothesis	t-statistic with 2 d.f.	Summary Statistics
1. $H_0: \mu_{CB} = \mu_{S\&L}$ $H_1: \mu_{CB} \neq \mu_{S\&L}$	(2.66)*	$\bar{x}_{CB} = 67.729$ $\delta_{CB} = 12.293$
2. $H_0: \mu_{CB} = \mu_{MSB}$ $H_1: \mu_{CB} \neq \mu_{MSB}$	(0.989)	$\bar{x}_{MSB} = 83.485$ $\delta_{MSB} = 58.333$
3. $H_0: \mu_{S\&L} = \mu_{MSB}$ $H_1: \mu_{S\&L} \neq \mu_{MSB}$	(1.97)*	$\bar{x}_{S\&L} = 50.978$ $\delta_{S\&L} = 20.035$

\*Significant at the five percent level (two-tailed test).

the underwritten risks. Table 3 shows that two loss ratio populations are distinctly different.

Commercial banks differ from savings and loans, and savings and loans differ from mutual savings banks in their loss ratio statistics. Only commercial banks and mutual savings banks appear to be the same with respect to their loss ratios. A possible explanation for this result is that premium structure relates to how these institutions are regulated. The Federal Home Loan Bank Board regulates savings and loans and requires certain coverages which differ from those used by the Federal Deposit Insurance Corporation in regulating commercial and mutual savings banks. Thus, regulatory differences among institutions may be responsible for alterations in premium structure and resulting differences in loss ratios. The previous results reported in Table 1 indicate that it may be possible to treat mutual savings banks and S&Ls alike where fidelity loss experience is concerned. This equal treatment would necessitate both a change in required coverages by the regulatory agencies and an alteration in premium structure.

## Conclusions

This investigation examines the fidelity loss experience among financial institutions using aggregate loss data from the Surety Association of America. The findings from a cross-sectional time series model over the period from 1967 to 1980, indicate that mutual savings banks and savings and loan associations appear to have similar loss experience. Commercial banks are different from mutual savings banks and savings and loans with respect to fidelity losses.

A separate loss ratio model which employs a difference of means test shows how insurers rate fidelity risks between financial institutions. The results of these tests indicate that commercial banks and mutual savings banks may have similar premium structures. Savings and loan loss ratios differ significantly from the other institutions. This result may be due in part to the way these financial institutions are regulated by separate federal agencies.

The findings of this study are limited by type of data available for investigating fidelity loss experience. Data which provide fidelity loss by separate asset size or number of branches might help clarify the perceived differences in losses among financial institutions. J