FSLIC Forbearances to Stockholders and the Value of Savings and Loan Shares

by James B. Thomson

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Introduction

Policies of forbearance to stockholders of insolvent firms by federal deposit guarantors represent a wealth transfer from federal deposit-insurance agencies, and ultimately from federal taxpayers, to the stockholders of the insured institutions. Kane (1985, 1986), Pyle (1986), and Thomson (1987) discuss theoretical determinants of the value of forbearances to stockholders of financial institutions by the Federal Deposit Insurance Corporation (FDIC) and the Federal Savings and Loan Insurance Corporation (FSLIC). Brickley and James (1986) show empirically that the stock-market returns of thrifts increase with the extension of FSLIC capital forbearances.

This paper investigates the relationship between the market and book values of the firm's equity. It demonstrates that the market value of a thrift is positively related to its book value and to the value of its unbooked assets. We argue that one of the major unbooked assets of a thrift is its FSLIC insurance guarantee. Measures of FSLIC forbearance policy are shown to be related to the market value of the thrifts whose market values exceed their book values.

Section I of this paper discusses the relationship between the market value and book value of a firm. It outlines the reasons that these values may diverge and argues that FSLIC guarantees are one of the unbooked assets valued by the market. Section II gives a brief overview of the empirical evidence and theoretical arguments regarding the value of federal deposit guarantees and forbearances. Section III describes the data, the sample selection criteria, the regression experiment used to test the forbearance hypothesis, and the empirical results. The conclusions and policy implications of the paper are presented in section IV.

I. The Relationship Between Market and Book Values

The book value of a firm's equity is measured as the difference between the book value of the firm's assets-in-place and the par value of its liabilities. The book value of assets may not equal their market value for three reasons. First, the accounting conventions used by most firms carry assets at their par, or acquisition, value and do not reflect subsequent changes in the market value of the assets. The market value of the assets would include these unbooked gains and losses. Second, because book values tend to include only assets-in-place, they do not measure the value of options for future business that are unique to the firm.[1] Finally, to avoid taxes, burdensome regulations, or restrictive debt covenants, some firms may engage in activities that are not carried on their books. The assets (liabilities) associated with these activities would not show up in book measures of assets (liabilities), but would nonetheless be reflected in their market values.

[1] Myers (1977) and Warner (1977) argue that the market value of the firm's assets includes both the market value of the assets-in-place and the market value of the firm's options for profitable future business opportunities. Therefore, if the firm canied its assets in-place at market value, the book value of the firm would understate its market value

On the other side of the ledger, the firm carries its liabilities at par. Like the assets, the liabilities' market value includes unbooked changes. The market value of the firm's liabilities also includes off-balance-sheet financing and other types of contingent liabilities not reflected in book values (see Bennett [1986] and Forde [1987]). Therefore, the book value of the firm's equity will differ from its market value if the errors in the book measures of the firm's assets and liabilities do not completely offset one another.

Unbooked Losses and Gains in Thrift Portfolios

The market value of a thrift institution's assets can be separated into the market value of its assets-in-place and the market value of its charter. The market value of the assets-in-place may not equal their book value because the accounting procedures that thrifts and their regulators use to calculate book values do not take into account unrealized gains and losses on the thrift's asset portfolio.

For example, thrifts hold a large volume of fixed-rate mortgages, whose market values fluctuate inversely with interest rates. When interest rates rise, the market values of the mortgages decrease while the face value of the mortgage portfolio remains constant. Because thrifts are not forced to recognize capital losses on the mortgages until they are sold (or until the customer defaults), an increase in interest rates causes the book value of the mortgage portfolio to exceed its market value and the market value of the assets-in-place to be less than their book value.

Another source of unbooked capital gains and losses in the thrift's portfolio are real estate holdings. Thrifts tend to carry real estate on their books at acquisition price, which may not equal the current value of the real estate. The real estate portfolios of many thrifts are likely to be carried on their books at a discount from market value, which may cause the book value of the thrifts to be less than their market value.

The Value of Thrift Charters

The charter value of a thrift reflects the value of its unbooked assets.[2] We can divide the value of the thrift's charter into five categories. The first is the value of business relationships built over time. Kane and Malkiel (1965) argue that long-standing customer banking relationships have value because they lower the information and contracting costs associated with doing business. The reduction in the cost of servicing long-standing customers is available only to the servicing thrift and is a source of profitable future business opportunities.

Firm-specific options for profitable future business opportunities are the second source of the charter's value. These options may be available to the thrift because it has developed expertise in servicing a particular segment of the market. The third source is monopoly rents that may accrue to the thrift from restrictive branching laws and other regulations that restrict competition.

The fourth source of the charter's value is access to Federal Home Loan Bank Board (FHLBB) advances. The FHLBB makes secured loans to member thrifts at subsidized rates. These advances represent both a direct subsidy and an inexpensive source of backup liquidity. The fifth component of the charter's value is federal deposit guarantees. Kane (1985, 1986) maintains that the mispricing of deposit insurance and the use of forbearance policy by federal deposit guarantors has made the value of deposit guarantees an important source of thrift charter values.

II. FSLIC Subsidies, Forbearances, and the Market Value of Thrift Institutions

A new and growing body of literature addresses the value of federal deposit insurance subsidies and forbearances to insured depository institutions. Kane (1985, 1986) argues that the aggregate net worth of the thrift industry, net of the value of deposit guarantees and forbearances, is negative. Pyle (1986) shows that the the use of capital forbearances increases the value of deposit guarantees. Brickley and James (1986) empirically demonstrate a positive relationship between the adoption of a capital forbearance policy by the FHLBB and the market value of thrift institutions. Ronn and Verma (1986) show that estimates of the fair value of deposit guarantees are extremely sensitive to assumptions regarding the forbearance policy the FDIC employs when disposing of failed banks. Thomson (1987) breaks down the value of the deposit guarantee into three components: the value of the guarantee on insured deposits, the value of a conditional guarantee on the uninsured deposits, and the value of a conditional guarantee of the stockholders' claim on the residual future earnings of the insured institution. This paper is concerned with the value of forbearances to the stockholders of insured institutions.

The federal deposit insurance agencies extend forbearances to stockholders of insolvent institutions in two ways. The first, and politically preferred, method is to allow the institutions to operate after they are discovered to be insol

[2] Buser Chen and Kane (1981) maintain that the FDIC attempts to preserve the value of the banking charter when disposing of a failed bank, by using the charters value to reduce the disposal costs If the bank is disposed of via a purchase and assumption transaction the purchase premium paid by the bank acquiring the failed bank reflects the value of the charter to the acquiring institution

vent.3 The de jure failure of a federally insured bank or thrift is an event timed by the regulators. The extension of explicit or implicit guarantees to the claims of uninsured depositors and general creditors of the insolvent bank or thrift removes the incentives of these individuals to force the closing and reorganization of the institution.[4]

A forbearance policy that does not at least close out the position of stockholders in insured depository institutions that are found to be insolvent has value to the stockholders (see Thomson [1987]). It represents an option on the future residual earnings of the institution. The behavior of the stock of Beverly Hills Savings and Loan (BHSL) of California is evidence that this type of forbearance has value. At the end of March 1985, roughly one month before it was closed by the FHLBB, the stock of BHSL had a market value of $19.21 million, while the book value of its equity was -$58.091 million.[5]

The second way stockholders receive forbearances from the federal deposit insurer is when the federal deposit guarantor uses open-bank assistance to handle the failure (or to head off the imminent failure) of an insured institution.[6] In this case, the federal deposit guarantor may preserve some or all of the value of the stockholders' claim on the residual future income of the institution.

For example, when the FDIC bailed out the Continental Illinois Bank and Trust Company of Chicago (Continental) in 1984, it gave the original stockholders warrants allowing them to purchase shares in the reorganized institution. The estimated value of these warrants was approximately $155 million (close to 20 percent of the estimated equity value of the reorganized Continental) on the day after the bailout package was announced.

The probability that federal deposit guarantors will extend forbearances to stockholders of insolvent insitutions is a function of constraints on the guarantors' ability to reorganize insolvent institutions. Kane (1986) places these constraints into four categories: political and legal constraints, information constraints, staff constraints, and funding constraints reflected in the implicit and explicit reserves of the insurance fund. Sprague's (1986) account of the FDIC's decision to bail out Continental makes it clear that the first three constraints played a major role in that bailout. Barth, et al. (1985) show that the ability of the FSLIC to close insolvent thrift institutions is directly related to the solvency of the FSLIC insurance fund.

III. Empirical Issues

The Data

The sample consists of 43 thrifts that meet the following criteria. First, to measure the market value of equity, we had to be able to obtain stock price and share data on the thrifts h-om Data Resources Incorporated's (DRI) Security Price File from March 1984 to the end of June 1986. Second, the thrifts had to be insured by the FSLIC. Third, balance-sheet and income-statement data had to be available from the FHLBB's Quarterly Reports of Condition and Income. Finally, to remove the effects of nonthrift subsidiaries h-om the results, we excluded all thrift holding companies.

The requirement that the thrifts' stock must trade on the market restricts the sample to the largest firms in the industry. For example, at the end of June 1986, the average size (measured in total assets) of the thrifts in our sample was $1.895 billion.[7] This is considerably larger than the size of the average thrift in the population. Therefore, one should be careful in generalizing the results of the tests on this sample to the population. We do not expect the other sample selection restrictions to materially affect the results.[8]

To construct proxy variables for our tests, we draw on theoretical arguments (see Beaver, et al. [1970], Bowman [1979], Myers [1977], and Unal and Kane [1987]); empirical findings (see Barth, et al. [1985], Benston [1986],

3 Net worth certificates and capital forbearances are two of the tools that politicians and industry regulators use to forestall the closing of insolvent institutions (see Nash [1987] and McTague [1987]).

4 The deposit guarantor must provide the uninsured depositors with a guarantee of the market value of their claim at the time the institution is discovered to be insolvent on a market-value basis

5 The BHSL was admitted to the FHLBB's management consignment program on April 25, 1985 At that time, the book value of its assets was $2939 billion, and its TNW was -$58 091 million. On June 6, 1986, the reported *TNW* of BHSL was -$540 million. In fact. the decline in BHSL's net worth under the FHLBB's management consignment program occurred when interest rates were falling. The one-year secondary market Treasury bill rate was 8.22 percent on April 26, 1985, and 6.14 percent on June 6, 1986. Thus, it is fairly clear that the positive market value of BHSL before its closing was not due to unrealized capital gains on BHSL's portfolio.

6 On December 4, 1986, the FDIC announced that it had set up formal guidelines for the use of open-bank assistance in handling troubled and failed banks (see McTague [1986])

7 The largest (smallest) thrift in the sample at the end of June 1986, measured n terms of total assets, was 510551 billion ($164 226 million)

8 To test the sensitivity of the results to survival bias we replicate the cross-section regression experiments using a sample that includes all firms in the sample with complete information for that quarter Because the number of firms varies across quarters, we do not attempt to pool this sample Overall the results over the larger sample support the paper's main results

Results from the SMVAM Regressions[a]
(Using GAAP Net worth[b])

Quarter		Number	*MKTVAL*[c]	*TNW*[d]	U_e	*k*	R^2
1984	1	43	39506.73	60367.47	14006.78†	0.42241††	0.7749
					(4.288)[e]	(16.243)	
	2	43	37452.41	62386.19	12627.56†	0.39792††	0.7039
					(3.317)	(14.936)	
	3	43	39170.32	63704.42	10493.50†	0.45015††	0.7502
					(2.695)	(13.553)	
	4	43	40985.42	65153.79	6560.23	0.52837††	0.7707
					(1.482)	(10.479)	
1985	1	43	47330.67	67189.88	5920.71	0.61631††	0.8269
					(1.332)	(8.714)	
	2	43	55950.50	71629.05	5789.46	0.70029††	0.8324
					(1.092)	(6.107)	
	3	43	51973.94	74923.77	10687.99*	0.55104††	0.7742
					(2.044)	(9.660)	
	4	43	62388.50	77475.47	8304.28	0.69808††	0.7772
					(1.232)	(5.173)	
1986	1	43	79638.41	84108.60	10490.68	0.82212††	0.8180
					(1.354)	(2.937)	
	2	43	83701.49	85911.07	21001.71**	0.72982††	0.6939
					(1.968)	(3.569)	

a. Model: $MKTVAL = U_e + kTNW + e$.
b. Net worth computed using generally accepted accounting procedures.
c. Average market value of thrift stock (000's).
d. Average book value of thrift equity (000's).
e. T-statistics in parentheses.
† Significantly different from zero at 1%.
†† Significantly different from one at 1%.
* Significantly different from zero at 5%.
** Significantly different from zero at 10%

SOURCE: Author.

TABLE 1

Brickley and James [1986], and Lee and Brewer [1985]); and the deposit-forbearance literature (see Kane [1986], Pyle [19861, Ronn and Verma [1986], and Thomson [1987]). The following proxy variables are constructed from stock-market data and balance-sheet and income data.

MKTVAL = market value of the thrift's stock. *MKTVAL* is the product of the price of the thrift's stock and the number of shares outstanding, or the market value of equity.

TNW = net worth according to generally accepted accounting principles. *TNW* is the book value of equity.

LIQ = proxy variable for liquidity. *LIQ* is nondeposit liabilities divided by total book liabilities.

DIV = proxy variable for diversification of assets. *DN* is the sum of nonmortgage loans and contracts and direct investments, divided by mortgage loans and contracts.

TNWA = proxy variable for solvency and a measure of capital adequacy. *TNWA* is *TNW* divided by total book assets.

Empirical Tests of the Forbearance Hypothesis

To test the forbearance hypothesis, we use the Statistical Market-Value Accounting Model (SMVAM) of Unal and Kane (1987):

(1) $MKTVAL = U_e + kTNW + e$.

Equation 1 is the basic SWAM regression where *MKTVAL* is the value of the thrift's stock and *TNW* is the book value of the thrift's equity. Unal and Kane interpret the slope coefficient, *k*, as the market's value of $1 of book equity, and *U*, as the market's value of unbooked equity. In other words, *k* times *TNW* is the portion of market value accounted for by assets-in-place, and *U*, is the portion of market value accounted for by the charter.

If booked assets and liabilities are marked-to-market, then the theoretical value of *k* is one; and if all assets and liabilities are carried on the books, the theoretical value of U_e is zero. If the charter value net of FSLIC forbearances and guarantees is positive (negative), FSLIC forbearances and guarantees will increase (decrease in absolute value terms) the size of U_e.

Equation 1 is estimated over the cross-section of firms in the sample for each quarter. As seen in table 1, U_e is positive in every

Proportion of Stock-Market Value Explained by Charter Value[a]

Quarter		Number	U_e / MKTVAL[b]	T-Bill[c]	GNMA[d]
1984	1	43	0.35454	0.0952	0.1270
	2	43	0.33716	0.0987	0.1414
	3	43	0.26789	0.1037	0.1308
	4	43	0.16006	0.0806	0.1254
1985	1	43	0.12509	0.0852	0.1268
	2	43	0.10347	0.0695	0.1154
	3	43	0.20564	0.0710	0.1129
	4	43	0.13311	0.0710	0.1070
1986	1	43	0.13173	0.0656	0.0944
	2	43	0.25091	0.0621	0.0957

a. Charter value is measured by the intercept term, U_e, in the SWAM regressions.
b. *MKTVAL* is the average stock-market value of the firms in the sample.
c. Annual equivalent yield on 3-month Treasury bills traded on the secondary market (from Interest Rates tables in selected *Federal Reserve* Bulletins, 1984-1986).
d. Average net yields on Government National Mortgage Association, mortgage-backed, fully modified pass-through securities, assuming 12-year prepayment on 30 pools of FHA/VA mortgages (from Interest Rates tables in selected *Federal Reserve Bulletins*, 1984-1986).
SOURCE: Author.

TABLE 2

quarter. However, it is not significantly different from zero in five of the *10* quarters. Table *2* shows the percent of stock-market value accounted for by the estimated charter value, U_e. The value of the charter, which includes the FSLIC forbearances, ranges from a high of *35.4* percent in the first quarter of *1984* to a low of *10.3* percent in the second quarter of 1985. In other words, the charter is a nontrivial component of stockholder equity.

The per-dollar value the market places on book equity, k, appears in the sixth column in table *1*. This value ranges from a low of *40* cents on the dollar in the second quarter of *1984* to a high of *82* cents on the dollar in the first quarter of *1986*. In all quarters, k is positive and significantly different from one at the *1* percent level. As expected, there appears to be an inverse relationship between k and the level of interest rates. The general upward trend in k from the first quarter of *1984* to the second quarter of *1986* coincides with the downward trend in interest rates over this period.

Table *3* presents the results of joint tests of the SWAM coefficients and tests of pooling restrictions. A seemingly unrelated system of equations, with each quarter estimated as a separate regression, is used to perform the tests. We reject the joint restriction that U_e is zero in every equation at the 1 percent level, but we cannot reject the restriction that U_e is equal across equations. For the slope coefficient, *k*, we reject both the cross-equation equality restriction and the joint restriction that k equals one in every quarter at the *1* percent level. Overall, the results of the joint tests and the pooling restrictions support the forbearance hypothesis.

Although the results of the SMVAM regressions are consistent with the forbearance hypothesis, the SWAM specification does not provide a direct test of the forbearance hypothesis. Recall that a thrift charter may have value exclusive of deposit insurance subsidies and forbearances because the charter also contains the net value of all unbooked assets and liabilities. Moreover, estimates of U_e could be positive and significant when the value of FSLIC forbearances and guarantees is zero. Estimated U_e could be insignificant (or negative and significant) when the value of FSLIC forbearances and guarantees is positive and significant.

Pooling and Cross-Equation Equality Restrictions for the SMVAM Regressions[a]

Test: $U_{e1} = 0, U_{e2} = 0, \ldots\ldots, U_{e10} = 0$
$F(10,410) = 5.3392896^{\dagger}$

Test: $U_{e1} = U_{e2} \ldots\ldots = U_{e10}$
$F(9,410) = 0.62610870$

Test: $k_1 = 1, k_2 = 1, \ldots\ldots, k_{10} = 1$
$F(10,410) = 102.89425^{\dagger}$

Test: $k_1 = k_2 = \ldots\ldots = k_{10}$
$F(9,410) = 8.4505921^{\dagger}$

a. SWAM Regression Model: $MKTVAL = U_e + kTNW + e$.
† Significant at the 1% level.
SOURCE: Author.

TABLE 3

Results from the MSMVAM Regressions[a]
(Using GAAP Net Worth[b])

Quarter		U_e	k	β_1	β_2	β_3	R^2
1984	1	1395.67	0.40942†	-19394.22	109864.88††	124226.48	0.8493
		(0.193)[c]	(17.592)	(-0.721)	(4.318)	(1.483)	
	2	12627.61	0.42172†	-66681.97*	49812.35*	96534.29	0.7649
		(1.302)	(13.652)	(-2.175)	(1.934)	(0.798)	
	3	4231.84	0.46008†	-40394.91	27471.48	190151.80	0.7806
		(0.388)	(11.881)	(-1.122)	(1.094)	(1.345)	
	4	-5007.80	0.53010†	-25806.27	7272.61	320283.78*	0.8080
		(0.454)	(9.679)	(-0.775)	(0.262)	(2.021)	
1985	1	-4171.15	0.62986†	-2115.69	-43843.94	303247.14**	0.8610
		(-0.383)	(7.879)	(-0.065)	(-1.508)	(1.941)	
	2	-8187.52	0.70668†	15703.69	-44814.60	337791.44**	0.8575
		(-0.597)	(5.408)	(0.398)	(-1.443)	(1.751)	
	3	-8847.13	0.55141'	8946.48	-30860.57	443532.27*	0.8178
		(-0.645)	(9.093)	(0.238)	(-0.874)	(2.413)	
	4	-23639.28	0.67333†	8533.00	23836.61	599654.62*	0.8097
		(-1.265)	(5.129)	(0.177)	(0.514)	(2.374)	
1986	1	-30194.55	0.77275†	35213.95	35936.96	681527.26*	0.8425
		(-1.464)	(3.332)	(0.618)	(0.618)	(2.417)	
	2	26518.43	0.75192†	73120.49	-189767.15*	76236.99	0.7293
		(1.073)	(2.758)	(0.849)	(-2.131)	(0.253)	

a. Model: $MKTVAL = U_e + kTNW + \beta_1 LIQ + \beta_2 DIV + \beta_3 TNWA + e$.
b. Net worth computed using generally accepted accounting procedures.
c. T-statistics in parentheses.

† Significantly different from one at 1%.
†† Significantly different from zero at 1%.
* Significantly different from zero at 5%.
** Significantly different from zero at 10%

SOURCE: Author.

TABLE 4

A careful reexamination of the results in tables 1 and 2 indicates that the positive sign on U_e in every quarter is due, at least in part, to the positive value of FSLIC guarantees and forbearances. There is an inverse relationship between k and $U_e/MKTVAL$. As the the market value of book equity increases, charter value as a percent of $MKTVAL$ decreases. The value of forbearances and guarantees should be inversely related to k.

On the other hand, the value of the charter exclusive of FSLIC forbearances and guarantees is expected to be positively correlated with k. This suggests that FSLIC forbearances and guarantees are a large enough portion of U_e that changes in their value dominate the pattern of U_e across quarters.

To test the forbearance hypothesis more directly, we modify equation 1 to include the variables LIQ, DN, and $TNWA$ to proxy for FSLIC forbearance policy:

(2) $MKTVAL = U_e + kTNW + \beta_1 LIQ + \beta_2 DN + \beta_3 TNWA + e$.

The first forbearance proxy, LIQ, measures liquidity. Because the closing of an insolvent institution is an event timed by the regulators, insolvency is a necessary, but not sufficient, condition for the forced closing of a thrift by its regulator. Given the growing insolvency of the FSLIC insurance fund and the large number of market-value and book-value insolvent thrifts (see Barth, et al. [1985] and U.S. General Accounting Office [1987]), the liquidity of the thrift affects the probability that FSLIC forbearances will be extended to stockholders.

Insolvent thrifts (those that are not running up large losses) tend to be closed when illiquid, especially when they are insolvent according to market-value accounting, but not book-value accounting. Ceteris paribus, the more liquid the thrift, the less likely a liquidity crisis will cause the FHLBB to close the thrift. Therefore, the value of FSLIC forbearances should be positively related to liquidity. By construction, as LIQ increases, the thrift's liquidity decreases. Consequently, β_1 should have a negative sign.

The second forbearance proxy, DN, is a measure of diversification in the asset portfolio. DIV includes both direct investments and nonmortgage loans and contracts. In March 1985, the FHLBB issued a formal regulation that restricted direct investments to less than the minimum of 10 percent of total assets and twice the amount of capital. This regulation, which was in effect

Pooling and Cross-Equation Equality Restrictions for the MSMVAM Regressions[a]

Test: $U_{e1} = 0, U_{e2} = 0, \ldots\ldots, U_{e10} = 0$
F(10,380) = *0.5559142*

Test: $U_{e1} = U_{e2} \ldots\ldots = U_{e10}$
F(9,380) = *0.61687062*

Test: $k_1 = 1, k_2 = 1, \ldots\ldots, k_{10} = 1$
F(10,380) = 90.82540†

Test: $k_1 = k_2 = \ldots\ldots = k_{10}$
F(9,380) = 6.8009228†

Test: $\beta_{1,1} = 0, \beta_{1,2} = 0, \ldots\ldots, \beta_{1,10} = 0$
F(10,380) = *0.98109793*

Test: $\beta_{1,1} = \beta_{1,2} = \ldots\ldots = \beta_{1,10}$
F(9,380) = *0.82046518*

Test: $\beta_{2,1} = 0, \beta_{2,2} = 0, \ldots\ldots, \beta_{2,10} = 0$
F(10,380) = 2.8303445*

Test: $\beta_{2,1} = \beta_{2,2} = \ldots\ldots = \beta_{2,10}$
F(9,380) = 2.8692565*

Test: $\beta_{3,1} = 0, \beta_{3,2} = 0, \ldots\ldots, \beta_{3,10} = 0$
F(10,380) = 2.9404988*

Test: $\beta_{3,1} = \beta_{3,2} = \ldots\ldots = \beta_{3,10}$
F(9,380) = *0.98635699*

a. MSMVAM Regression Model:
$MKTVAL = U_e + kTNW + \beta_1 LIQ + \beta_2 DIV + \beta_3 TNWA + e.$
† Significant at the 1% level.
* Significant at the 5% level.
SOURCE: Author.

TABLE 5

throughout the remainder of the sample period, applies only to nationally chartered thrifts, and not to the FSLIC-insured, state-chartered thrifts.

The FHLBB is strongly opposed to direct investments by thrifts because it believes such investments increase the losses to the FSLIC fund when an insolvent thrift is closed (see Benston [1986]). Therefore, we expect there to be an inverse relationship between FSLIC forbearances and the level of direct investment. Given the FHLBB's policy regarding direct investment and its policy statements emphasizing mortgage lending during this period, β_2 should be negative in the sample period from March *1985* on. Conversely, *DIV* could also be a proxy for management quality.[9] That is, the market may view a decrease in the thrift's reliance on mortgages as an indication of the quality of management. This diversification (management quality) explanation would make β_2 positive before March *1985*. After that time, the sign of β_2 should be negative if the forbearance hypothesis holds.

The third forbearance variable, *TNWA*, proxies for solvency. Note that *TNWA* is solvency measured by book, not market, values. This means that a thrift with positive *TNWA* could be insolvent on a market-value basis.[10] The value of deposit-guarantor forbearances depends on market solvency, not on *TNWA*. On the other hand, the probability of forbearance is a function of *TNWA*. FHLBB-mandated capital requirements (*TNWA* of 3% or more) are based on book values. FSLIC forbearances are extended to any institution that meets the minimum capital guidelines, and they may be extended to institutions with deficient capital ratios. Therefore, we use *TNWA* as our proxy for solvency because the probability of forbearance is a positive function of *TNWA*. The sign on β_3 should be positive.

The results from the regressions on equation 2 are reported in table 4. Joint tests of the regression coefficients and pooling tests for the small sample appear in table 5. For all quarters, the estimates of U_e are not significantly different from zero in the modified SMVAM (MSMVAM) regressions. In fact, we cannot reject the joint restriction that U_e is zero in every quarter or the cross-equation equality restriction on U_e. In the SMVAM regressions, estimated U_e is significantly different from zero in five of the *10* quarters, and we reject the joint restriction that U_e is zero.

However, k estimates are not affected by the inclusion of the forbearance proxies. Estimated k is positive and significantly less than one in every quarter, and we cannot reject the restriction that $k_{SMVAM} = k_{MSMVAM}$ in any quarter. Furthermore, both the joint test that k equals one in every quarter and the cross-equation equality restriction on k are rejected at the 1 percent level for both the SMVAM and the

9 In economics, we assume that management is a scarce resource. Therefore, firms with high-quality management will have a higher market value than firms with lower-quality management. This, of course, assumes that the market for managerial talent is not perfectly competitive.

10 The difference between market-based and accounting-based measures of solvency can be quite large. A TNWA of 3 percent is often used as a proxy for the solvency threshold on a market-value basis.

MSMVAM regressions. The difference (similarity) in the behavior of $U_e(k)$ between the SWAM and the MSMVAM regressions is consistent with the forbearance hypothesis.

The coefficients on the forbearance proxies themselves present a mixed set of conclusions. The coefficient on *LIQ*, β_1, is negative and significant in the second quarter of 1984, supporting the forbearance hypothesis. However, β_1 is not significantly different from zero in any other quarter, and we cannot reject the joint restriction that β_1 equals zero in every quarter. Therefore, the overall performance of β_1 does not provide strong support for the forbearance hypothesis.[11] The poor performance by LIQ may be due in large part to sample selection bias. The thrifts in this sample are the largest in the industry and are likely to have greater access to national capital markets, and therefore greater sources of liquidity, than the average thrift in the population.

The results for the diversification (management quality) variable, DN, are also mixed. β_2 is positive and significant in the first two quarters of 1984 and negative and significant in the second quarter of 1986. Moreover, β_2 is positive in six of the 10 quarters in table 4. The cross-equation equality restriction on β_2 and the joint restriction that β_2 is zero in every equation are both rejected at the 5 percent level.

On the surface, the seemingly conflicting evidence provided by DIV seems to refute the forbearance hypothesis. But a closer inspection of the results indicates that this is not the case. Recall that the FHLBB policy restricting direct investment did not go into effect until the first quarter of 1985. Therefore, the positive and significant (insignificant) β_2's in the first (second) two quarters of 1984 are consistent with both the management-quality hypothesis and the forbearance hypothesis.

Moreover, in table 4, β_2 is positive but not significant twice, and negative and significant once, after the FHLBB took a stand against direct investment and against diversification of the asset portfolio away from mortgage-based assets. In fact, if we split the sample according to this policy change, we cannot reject the cross-equation equality restriction on β_2 in the pre- and post-policy change periods. However, in the first period we reject the joint restriction that β_2 equals zero at the 1 percent level, but we cannot reject it in the second period.

Of all of the forbearance proxies, *TNWA*, the solvency proxy, provides the strongest evidence supporting the forbearance hypothesis.[12] β_3 is positive in every quarter and is significant in six quarters. The significance of β_3 in every quarter from the last quarter of 1984 through the first quarter of 1986 coincides with the time period when the FSLIC fund was shrinking as a result of massive losses in the thrift industry (see U.S. General Accounting Office [1987] and Barth, et al. [1985]). The joint restriction that β_3 equals zero in every equation is rejected at the 5 percent level. However, we cannot reject the cross-equation equality restriction on $\&$.

Even though the results were somewhat disappointing when we look at the forbearance proxies individually, the overall results are encouraging. Looking at table 4, we see that in every quarter except the third quarter of 1984, U_e is not significantly different from zero, and at least one of the forbearance proxies is significantly different from zero and correctly signed. Moreover, we obtain these results using a sample that is likely to be biased against supporting our maintained hypothesis. That is, our sample is drawn from the largest firms in the industry, and it is likely that we undersample the part of the industry for whom the FSLIC forbearance policy has the most value.

IV. Conclusions and Policy Implications

Deposit-insurance guarantees and forbearances have value. The value of FSLIC deposit guarantees and forbearances is reflected in the market value of thrift institution stocks. Proxies for FSLIC forbearances and forbearance policy are shown to be related to thrift charter values. The empirical results of this paper support Kane's (1986) argument that FSLIC forbearances and guarantees are an increasingly important source of thrift charter value. Our results also support Thomson's (1987) theoretical result that the extension of forbearances to stockholders of insolvent institutions increases the value of stockholders' equity.

Because deposit-insurance forbearances to stockholders increase the value of the stockholders' position in the firm at the expense of the federal deposit guarantor, and ultimately the federal taxpayer, the federal deposit-insurance agencies should always close out the position of the stockholders when reorganizing insolvent institutions. Capital forbearance programs, such as those utilized by the FHLBB in dealing with thrift insolvencies and those being used by bank regulators for agricultural and energy lenders, result in a bailout of deposit institutions' stockholders by the federal taxpayer. Our results support the concept of the management consignment program currently used by the FHLBB to reduce the unintended

11 The poor performance of the liquidity proxy was not due to proxy variable construction. Similar results were obtained with other specifications of *LIQ*

12 Although *TNWA* is *TNW* scaled by total book assets, there is almost no correlation between *TNWA* and *TNW* for any of the quarters in either sample

value of deposit-insurance subsidies. However, our results also indicate that the FDIC should rethink its capital forbearance and open-bank assistance policies, unless the bailouts of existing managements and shareholders of failed and failing banks are the intended results of those policies.

References

Barth, James R., and Martin A Regalia. "The Evolving Role of Regulation in the Savings and Loan Industry," Paper prepared for the Cato Institute Conference on the Deregulation of Financial Services, Washington, D.C., February 26-27, 1987.

Barth, James R., R. Dan Brumbaugh, Jr., Daniel Sauerhaft, and George H.K. Wang. "Thrift-Institution Failures: Causes and Policy Issues," Proceedings of a Conference on Bank Structure and Competition, The Federal Reserve Bank of Chicago, May 1985, pp. 184-216.

Beaver, William H., Paul Kettler, and Myron Scholes. "The Association Between Market Determined and Accounting Determined Risk Measures," *The Accounting Review,* vol. 4 (1970), pp. 654-82.

Bennett, Barbara. "Off Balance Sheet Risk in Banking: The Case of Standby Letters of Credit," *Economic Review,* Federal Reserve Bank of San Francisco, Winter 1986, pp. 19-29.

Bennett, Dennis E., Roger D. Lundstrom, and Donald G. Simonson. "Estimating Portfolio Net Worth Values and Interest Rate Risk in Savings Institutions," Proceedings of a Conference on Bank Structure and Competition, Federal Reserve Bank of Chicago, May 1986, pp. 323-46.

Benston, George J. "An Analysis of the Causes of Savings and Loan Association Failures," New York University Graduate School of Business Administration, Monograph Series in Finance and Economics, vol. 4/5 (1986).

Bowman, Robert G. "The Theoretical Relationship Between Systematic Risk and Financial (Accounting) Variables," *Journal of Finance,* vol. 34, no. 3 (June 1979), pp. 617-30.

Brickley, James A, and Christopher M. James. "Access to Deposit Insurance, Insolvency Rules and the Stock Returns of Financial Institutions," *Journal of Financial Economics,* vol. 16, no. 3 (July 1986), pp. 345-71.

Buser, Stephen A, Andrew H. Chen, and Edward J. Kane. "Federal Deposit Insurance, Regulatory Policy, and Optimal Bank Capital," *Journal of Finance,* vol. 36, no. 1 (March 1981), pp. 51-60.

Flannery, Mark J., and Christopher M. James. "The Effect of Interest Rate Changes on the Common Stock Returns of Financial Institutions," *Journal of Finance,* vol. 39, no. 4 (September 1984), pp. 1141-53.

_____. "Market Evidence on the Effective Maturity of Bank Assets and Liabilities," *Journal of Money, Credit, and Banking,* vol. 16, no. 4, part 1 (November 1984), pp. 435-45.

Forde, John P. "Off-Balance-Sheet Items are Piling Up: Total Commitments Exceed $1 Trillion at Top Five Banks," *American Banker,* May 1, 1987, p. 1.

Kane. Edward J. "Appearance and Reality in Deposit Insurance: The Case for Reform," *Journal of Banking and Finance,* vol. 10 (1986), pp. 175-88.

_____. *The Gathering Crisis in Federal Deposit Insurance.* Cambridge, *MA:* MIT Press, 1985.

_____, and Chester Foster. "Valuing Conjectural Government Guarantees of FNMA Liabilities," Proceedings of a Conference on Bank Structure and Competition, Federal Reserve Bank of Chicago, May 1986, pp. 347-68.

_____, and Burton G. Malkiel. "Bank Portfolio Allocation, Deposit Variability, and the Availability Doctrine," *The Quarterly Journal of Economics,* vol. 79, no. 1 (February 1965), pp. 113-34.