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DEPOSITOR PREFERENCE AND THE COST OF CAPITAL FOR INSURED DEPOSITORY INSTITUTIONS

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Abstract

Depositor-preference laws provide depositors with a claim on a failed depository institution's assets that is senior to unsecured general creditor claims. Therefore, depositor preference is correctly viewed as changing the capital structure of banks and thrifts and, consequently, these laws will affect the cost of capital for depositories. However, depositor preference will not have an impact on the total value of banks and thrifts unless deposit insurance is mispriced.

I. Introduction

It is generally accepted that the subsidy inherent in the current deposit insurance system creates perverse incentives for risk-taking by insured depository institutions (Kane [1985]). The thrift debacle and its attendant financial and political costs have increasingly focused attention on the dangerous combination of virtually unlimited federal deposit guarantees and regulatory discretion.

Federal deposit guarantees, the too-big-to-let-fail (TBTLF) doctrine, and capital forbearance programs have effectively limited the ability of markets to discipline troubled depository institutions. On the other hand, principal-agent conflicts have often resulted in government regulatory policies designed to forestall disciplinary actions against troubled banks and thrifts (Kane [1989]; Thomson [1992]).

Armed with an increased awareness of the role that regulatory forbearance played in the thrift debacle and in the record losses in bank closings in the 1980s, Congress passed the Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991.[1] FDICIA contains four important reforms: First, it requires the implementation of prompt corrective action for undercapitalized banks and for banks designated to be problem institutions by their primary federal regulator. Carnell (1992) notes that FDICIA does not remove regulatory discretion but rather increasingly limits discretion as an institution slides towards insolvency. Second, FDICIA places limits on Federal Reserve discount window loans to troubled depositories. Todd (1993) argues that FDICIA's discount window provisions are designed to prevent the Federal Reserve from propping up insolvent banks through improper solvency-based loans. Third, FDICIA now requires the Federal Deposit Insurance Corporation (FDIC) to charge insured institutions a risk-related deposit-insurance premium. Finally, FDICIA replaces the TBTLF doctrine with the systemic-risk exception which codifies the terms and conditions under which the FDIC can bail out uninsured claimants of failed depositories. Carnell (1992) contends that provisions in FDICIA which require the written authorization of the Federal Reserve chairman and the secretary of the Treasury for financing systemic-risk losses by a special assessment on the total liabilities (total deposits) of banks will limit the abuse of the systemic-risk exception.

Though FDICIA's provisions are either already in place or in the process of being implemented, Congress added another potentially important reform designed to limit the FDIC's, and hence the taxpayer's, exposure. Specifically, in the Omnibus Budget Reconciliation Act of 1993, Congress created a national depositor-preference law.[2] Depositor-preference laws change the priority of depositors' (and thus the FDIC's) claims on the assets of failed banks by making other senior claimants subordinate to depositors. In other words, Congress implemented depositor preference in an effort to reduce FDIC losses by changing the capital structure of banks.

This paper provides a theoretical analysis of the impact of depositor-preference laws on the cost of debt capital for banks and on the value of FDIC deposit guarantees.[3] We extend the single-period cash-flow version of the Capital Asset Pricing Model (CAPM), presented by Chen (1978) and modified by Osterberg and Thomson (1990, 1991), to include depositor preference. In Section II, we present the model. Section III shows the results of a single-period analysis of a bank that has both uninsured and insured deposits and subordinated debt, as derived in Osterberg and Thomson (1991). Section IV extends the analysis of

Osterberg and Thomson (1991) to include the impact of depositor-preference laws. In Section IV we investigate the effects of mispriced deposit insurance and of depositor-preference laws on the value of debt capital and on the value of deposit insurance. Conclusions and policy implications are presented in Section V.

II. The Model

To examine the effects of depositor preference on the cost of debt and equity capital for banks, we utilize the single-period CAPM valuation equation employed by Chen (1978) and by Osterberg and Thomson (1990, 1991). In this model, the value of a firm is the present value of its future cash flows. The value of the debt and equity of a firm are in turn the present value of these claims on the firm's cash flows. Certain cash flows are discounted at the risk-free rate of interest. Uncertain cash flows are converted to certainty-equivalent cash flows by deducting a risk premium from the expected cash flow. From the CAPM the risk premium is simply the market price of risk, multiplied by the covariance of the uncertain cash flow with the market portfolio.

Our primary assumptions are 1) the risk-free rate of interest is constant, 2) capital markets are perfectly competitive, 3) expectations are homogeneous with respect to the probability distributions of the yields on risky assets, 4) investors are risk averse, seeking to maximize the utility of terminal wealth, and 5) there are no taxes or bankruptcy costs.

In Sections III through V we utilize the following definitions:

B_i = Total promised payment to insured depositors.

B_u = Total promised payment to uninsured depositors.

G = Total promised payment to general creditors.

z = Total promised payment to the FDIC (ρB_i).[4]

B = Total promised payment to depositors and the FDIC (B_i+B_u+z).

ρ = Deposit insurance premium per dollar of insured deposits.

S = Total promised payment to subordinated debtholders.

D = Total promised payment in the absence of depositor preference laws ($B_i+B_u+G+S+z$).

K = Total promised payment with depositor preference laws ($B_i+B_u+G+S+z$).

Y_{bi}, Y_{bu}, Y_G, Y_s, Y_e, and Y_{FDIC} = End-of-period cash flows to insured depositors, uninsured depositors, general creditors, subordinated debtholders, stockholders, and the FDIC, respectively.

V_{bi}, V_{bu}, V_G, V_s, V_e, and V_{FDIC} = Values of insured deposits, uninsured deposits, general creditors, subordinated debt, bank equity, and the FDIC claim, respectively.

V_f = Value of the bank.

$E(R_{bi})$, $E(R_{bu})$, $E(R_G)$, $E(R_s)$, and $E(R_e)$ = The expected rates of return on insured and uninsured deposits, general creditors, subordinated debt, and equity, respectively.

r = The risk-free rate ($R = 1 + r$).

X = The end-of-period gross return on bank assets.

$F(X)$ = Cumulative probability distribution function for X.

λ = The market risk premium.

$COV(X,R_m)$ = Systematic or nondiversifiable risk.

$CEQ(X)$ = Certainty-equivalent of X [$=E(X) - \lambda COV(X,R_m)$].

R_m = Return on the market portfolio.

We assume that all debt instruments are discount instruments, so the total promised payment to all depositors and subordinated debtholders includes both principal and interest. In addition, we assume that the deposit insurance premium is paid at the end of the period.[5]

III. Banks' Cost of Capital and the Value of Deposit Insurance: No Depositor Preference

In this section we present results from Osterberg and Thomson (1991) for a bank with insured deposits, uninsured deposits, and subordinated debt. The FDIC charges a fixed insurance premium of ρ on each dollar of insured deposits. The total liability claims against the bank, D, is the sum of the end-of-period promised payments to the uninsured depositors, B_u, insured depositors, B_i, general creditors, G, subordinated debtholders, S, and the FDIC, z (ρB_i). We assume that the FDIC underprices its deposit guarantees on average, and that in the absence of regulatory taxes (Buser, Chen, and Kane [1981]), the FDIC provides a subsidy that reduces the cost of capital for banks and increases their value.

Given these assumptions, it is clear that the end-of-period cash flows to the insured depositors, Y_{bi}, equal the promised payments to insured depositors, B_i, in every state. Therefore, regardless of a bank's capital structure, the value, expected return, and cost of one dollar of insured deposits are defined as $V_{bi} = R^{-1}B_i$, $E(R_{bi}) = r$, and $r + \rho$, respectively.

<u>Uninsured Depositors</u>

The end-of-period cash flows to the uninsured depositors depend on the promised payment to the uninsured depositors and on the total level of promised payments net of the subordinated debt:

$$Y_{bu} = \begin{cases} B_u & \text{if} \quad X > D - S = B_i + B_u + G + z \\ B_u X/(D - S) & \text{if} \quad D - S > X > 0 \\ 0 & \text{if} \quad 0 > X \end{cases}$$

While the total promised payments to debtholders and the FDIC equal D, the effective bankruptcy threshold for uninsured depositors is D less the claims of the subordinated debtholders. The value of and the required rate of return on uninsured deposits are

$$V_{bu} = R^{-1}\{B_u[1-F(D-S)]+[B_u/(D-S)]CEQ_0^{D-S}(X)\}, \tag{1}$$

$$E(R_{bu}) = R\frac{1-F(D-S)+[1/(D-S)]E_0^{D-S}(X)}{1-F(D-S)+[1/(D-S)]CEQ_0^{D-S}(X)} - 1.0. \tag{2}$$

Equation (2) shows that the cost of debt (uninsured deposit) capital is a function of the bank's systematic risk, as measured by $\lambda COV(X, R_m)$, total promised payments to depositors and the FDIC, (D–S), the probability that losses will exceed the level of subordinated debt, F(D–S), and the risk-free rate of return. Osterberg and Thomson (1990, 1991) show that when the FDIC misprices its guarantees, the cost of uninsured deposit capital also depends on the deposit mix, because underpriced (overpriced) deposit guarantees lower (raise) both the effective bankruptcy threshold for senior claims, F(D–S), and the bankruptcy threshold, F(D). Furthermore, underpriced (overpriced) deposit guarantees increase (decrease) the claims of the uninsured depositors relative to senior claims, $B_u/(D-S)$, and relative to total claims, B_u/D. The size of this effect is a function of the FDIC's pricing error per dollar of insured deposits and of the weight of insured deposits in the senior creditor pool.

General Creditors

General creditors have the same priority of claim as uninsured depositors; consequently, they will have similar end-of-period cash flows.

$$Y_G = \begin{cases} G & \text{if} \quad X > D - S = B_i + B_u + G + z \\ GX/(D - S) & \text{if} \quad D - S > X > 0 \\ 0 & \text{if} \quad 0 > X \end{cases}$$

As before, the total promised payments equal D and the effective bankruptcy threshold is D–S. The value of and the required rate of return on senior nondeposit debt is:

$$V_G = R^{-1}\{G[1-F(D-S)] + [G/(D-S)]CEQ_0^{D-S}(X)\}, \tag{3}$$

$$E(R_G) = R\frac{1-F(D-S)+[1/(D-S)]E_0^{D-S}(X)}{1-F(D-S)+[1/(D-S)]CEQ_0^{D-S}(X)} - 1.0. \tag{4}$$

Equation (4) shows that the cost of nondeposit debt (general credit) capital is a function of the same factors as uninsured deposits, including: the bank's systematic risk, $\lambda COV(X,R_m)$, total promised payments to senior creditors and the FDIC, (D–S), the probability that losses will exceed the level of subordinated debt, F(D-S), and the risk-free rate of return. In addition, it will also depend on the size of the deposit-insurance subsidy.

Subordinated Debtholders

The end-of-period expected cash flows accruing to the subordinated debtholders are

$$Y_s = \begin{cases} S & \text{if} \quad X > D \\ X + S - D & \text{if} \quad D > X > D - S \\ 0 & \text{if} \quad D - S > X. \end{cases}$$

The value of the subordinated debt and the required rate of return on subordinated debt capital are

$$V_s = R^{-1}\{S[1-F(D-S)] - D[F(D)-F(D-S)] + CEQ_{D-S}^{D}(X)\}, \tag{5}$$

$$E(R_s) = R\frac{S[1-F(D-S)] - D[F(D)-F(D-S)] + E_{D-S}^{D}(X)}{S[1-F(D-S)] - K[F(D)-F(D-S)] + CEQ_{D-S}^{D}(X)} - 1.0. \tag{6}$$

Equations (5) and (6) show that the cost and value of subordinated debt capital depend on the probability of bankruptcy, F(D), the face value of the subordinated debt, S, total promised payments, D, and the probability that senior claimants will not be repaid in full, F(D–S). Note that the last two terms in equation (6) represent the claims of subordinated debtholders in states where they are the residual claimants.

Equityholders

The end-of-period cash flows accruing to stockholders are

$$Y_e = \begin{cases} X - D & \text{if} \quad X > D \\ 0 & \text{if} \quad D > X. \end{cases}$$

The value of equity and the expected return to stockholders are

$$V_e = R^{-1}\{CEQ_D(X) - D[1 - F(D)]\}, \tag{7}$$

$$E(R_e) = R\frac{E_D(X) - D[1 - F(D)]}{CEQ_D(X) - K[1 - F(D)]} - 1.0. \tag{8}$$

The FDIC's Claim

The net value of deposit insurance is simply the value of the FDIC's claim on the bank. In the absence of depositor-preference laws, the end-of-period cash flows to the FDIC and the value of its position are

$$Y_{FDIC} = \begin{cases} z & \text{if} \quad X > D - S \\ (B_i + z)X/(D - S) - B_i & \text{if} \quad D - S > X > 0 \\ -B_i & \text{if} \quad 0 > X, \text{ and} \end{cases}$$

$$V_{FDIC} = R^{-1}\{z[1 - F(D-S)] + \frac{B_i + z}{D-S} CEQ_{0}^{D-S}(X) - B_i F(D-S)\}. \tag{9}$$

Equation (9) shows that the net value of deposit insurance is a function of the composition of the senior claims, the bank's systematic risk, the presence of junior debt claims in the bank's capital structure, the risk-free rate of return, the effective probability of bankruptcy, F(D–S), the level of promised payments to insured depositors, and the deposit insurance premium. In fact, equation (9) can be interpreted as showing that the equity-like buffer provided by subordinated debt affects the value of the FDIC's position by changing the probability that the put options corresponding to the FDIC guarantee will be "in the money" at the end of the period. Equation (9) also makes clear that if deposit insurance is to be priced fairly, $V_{FDIC} = 0$, the premium will be influenced by the degree to which the bank funds itself with claims junior to insured deposits.

Osterberg and Thomson (1990) show that the value of the uninsured bank is $R^{-1}CEQ_0(X)$. The value of the insured bank, V_f, equals the value of the uninsured bank minus equation (9), which is the value of the FDIC's claim.

$$V_f = R^{-1}\{CEQ_0(X)+B_iF(D-S)-z[1-F(D-S)]-[(B_i+z)/(D-S)]CEQ_0^{D-S}(X)\}. \tag{10}$$

Equation (10) shows that the structure of a bank's debt (in terms of priority of payment) affects the value of the bank only through the net value of deposit insurance to the bank (the last three terms on the right side of equation [10]). Thus, if deposit insurance is always correctly priced (that is, its net value to the bank is zero), the structure of a bank's liability claims has no impact on bank value.

IV. Banks' Cost of Capital and the Value of the Insurance Fund: Depositor Preference

In this section we rederive the results when depositor-preference laws are in existence. The effect of depositor-preference laws is to make the claims of general creditors subordinate to those of uninsured depositors and of the FDIC. As in Section III, we assume that the FDIC charges a flat-rate insurance premium of ρ on each dollar of insured deposits and that on average the FDIC underprices its deposit guarantees. The total liability claims against the bank, K, is the sum of the end-of-period promised payments to the uninsured depositors, B_u, the insured depositors, B_i, general creditors, G, subordinated debtholders, S, and the FDIC, z (ρB_i).

Uninsured Depositors

The end-of-period cash flows to the uninsured depositors depend on the promised payment to the uninsured depositors and on the total level of promised payments net of the subordinated debt and claims of subordinated creditors:

$$Y_{bu} = \begin{cases} B_u & \text{if} \quad X > B = B_i + B_u + z \\ B_u X/B & \text{if} \quad B > X > 0 \\ 0 & \text{if} \quad 0 > X \end{cases}$$

While the total promised payments to debtholders and the FDIC equal K, the effective bankruptcy threshold for uninsured depositors is B (= K–G–S). The value of and the required rate of return on uninsured deposits are

$$V_{bu} = R^{-1}\{B_u[1-F(B)]+(B_u/B)CEQ_0^B(X)\}, \tag{11}$$

$$E(R_{bu}) = R\frac{1-F(B)+(1/B)E_0^B(X)}{1-F(B)+(1/B)CEQ_0^B(X)} - 1.0. \tag{12}$$

From the standpoint of uninsured deposit capital, depositor-preference laws have the same impact as a requirement that banks issue subordinated debt. That is, when uninsured depositors and the FDIC are given a claim in bankruptcy that is senior to that of general creditors, the effective bankruptcy threshold for uninsured depositors is lowered from D–S to K–G–S. For uninsured depositors (and, as we shall, see for the FDIC), the pecking order of junior claims beneath them is irrelevant in valuing their claims.

To find the impact of depositor preference on the value of uninsured deposits, we control for possible change in total promised payments by normalizing the expected cash flows by the level of uninsured deposits, and compare uninsured deposits in banks in the presence and absence of depositor-preference laws. We then separate the expected cash flow to an uninsured deposit (with a par value of one dollar) in the presence of depositor-preference debt into two instruments: one that is identical to the uninsured deposit in Section III, and a second that has the following end-of-period payoffs and value:

$$\Delta Y_{bu} = \begin{cases} 0 & \text{if} \quad X > D - S \\ 1 - X/(D-S) & \text{if} \quad D-S > X > B \\ X/B - X/(D-S) & \text{if} \quad B > X > 0 \\ 0 & \text{if} \quad 0 > X \end{cases}$$

$$\Delta V_{bu} = R^{-1}[F(D-S)-F(B) + \frac{(D-S-B)}{B(D-S)} CEQ_0^B(x) - \frac{1}{D-S} CEQ_B^{D-S}(x)] > 0. \tag{13}$$

Equation (13) is positive; to see this, note that the first term in the brackets is strictly greater than the third term. Moreover, since by definition D – S > B, the middle term is also positive. Therefore, depositor preference must increase the value of a dollar of insured deposits.

General Creditors

Under depositor preference, general creditors have a claim that is junior to depositors and to the FDIC but senior to subordinated creditors; hence, end-of-period cash flows to general creditors are

$$Y_G = \begin{cases} G & \text{if} \quad X > K - S = B_i + B_u + G + z \\ X - B & \text{if} \quad K - S > X > B \\ 0 & \text{if} \quad B > X \end{cases}$$

The total promised payments to debtholders and to the FDIC equal K, and the effective bankruptcy threshold is $K - S$. The value of and the required rate of return on general creditor claims are

$$V_G = R^{-1}\{G[1-F(K-S)]-B[F(K-S)-F(B)]+CEQ_B^{K-S}(X)\}, \tag{14}$$

$$E(R_G) = R\frac{G[1-F(K-S)]-B[F(K-S)-F(B)]+E_B^{K-S}(X)}{G[1-F(K-S)]-B[F(K-S)-F(B)]+CEQ_B^{K-S}(X)} - 1.0. \tag{15}$$

Equations (14) and (15) show that nondeposit debt (general credit) behaves like subordinated debt (equations [5] and [6]), except that general creditors are afforded protection from loss by the presence of subordinated debt. The value of general creditors' claims depends on the effective bankruptcy threshold, $F(K-S)$, the face value of their claims, G, total promised payments to senior claimants, B, and the probability that senior claimants will not be repaid in full, $F(B)$. Note that when earnings fall between B and $K-S$, general creditors are the residual claimants, and their claim will behave like an equity claim.

Following the procedure used in the previous subsection, we construct the replicating portfolio for a general-creditor claim (with a par value of one dollar) under depositor preference. The impact of depositor preference on the value of general-creditor claims depends on whether $K > D$, or $D > K$. We assume that $K \geq D$. Let $V_e(X \mid D)$ and $V_e(X \mid K)$

be the value of equity when total liability claims are D and K, respectively. If D > K, then $V_e(X \mid D) < V_e(X \mid K)$, and stockholders could increase the value of their claim by voluntarily issuing general-creditor claims that are subordinate to deposits. Hence, K must be greater than D and, by implication, K–S > D–S. The expected cash flow to a general-creditor claim (with a par value of one dollar) in the presence of depositor preference is divided into one claim that is identical to the general creditor claim in Section III, and a second that has the following end-of-period payoffs and value:

$$\Delta Y_G = \begin{cases} 0 & \text{if} \quad X > K - S \\ (X-B)/G - 1 & \text{if} \quad K-S > X > D-S \\ (X-B)/G - X/(D-S) & \text{if} \quad D-S > X > B \\ -X/(D-S) & \text{if} \quad B > X > 0 \\ 0 & \text{if} \quad 0 > X, \end{cases}$$

$$\Delta V_G = R^{-1}\{-[F(K-S)-F(D-S)] - \tfrac{B}{G}[F(K-S)-F(B)] + \tfrac{1}{G}CEQ_B^{K-S}(X) - \tfrac{1}{D-S}CEQ_0^{D-S}(X)\} < 0. \tag{16}$$

Equation (16) is clearly negative. The first and last terms inside the braces on the right- hand side of the equation are both negative, since K > D. In addition, the second term is negative and larger in absolute value than the third. Hence, ΔV_G is unambiguously negative, and depositor preference decreases the value of a general-creditor claim (with a par value of one dollar).

Subordinated Debt

Under depositor preference, the end-of-period expected cash flows accruing to the subordinated debtholders are

$$Y_s = \begin{cases} S & \text{if} \quad X > K \\ X + S - K & \text{if} \quad K > X > K - S \\ 0 & \text{if} \quad K - S > X. \end{cases}$$

The value of the subordinated debt and the required rate of return on subordinated debt capital are simply equations (5) and (6), modified to reflect that K is the total promised payment instead of D.

$$V_s = R^{-1}\{S[1-F(K-S)] - K[F(K)-F(K-S)] + CEQ_{K-S}^{K}(X)\}, \tag{17}$$

$$E(R_s) = R\frac{S[1-F(K-S)]-K[F(K)-F(K-S)]+E_{K-S}^{K}(X)}{S[1-F(K-S)]-K[F(K)-F(K-S)]+CEQ_{K-S}^{K}(X)} - 1.0. \tag{18}$$

Total promised payments under depositor preference, K, may not equal total promised payments in the absence of depositor preference, D, because depositor preference changes the risk faced by depositors, the FDIC, and general creditors. Therefore, while subordinated debt is not directly affected by depositor-preference laws, it is indirectly affected through changes in the level of promised payments and the probability of bankruptcy.

Assuming K ≥ D, the differences between the cash flows accruing to a one-dollar par-value claim of subordinated debt, in the absence of and with depositor preference, are

$$\Delta V_s = \begin{cases} 0 & \text{if} \quad X > K \\ (X-K)/S & \text{if} \quad K > X > D \\ (D-K)/S & \text{if} \quad D > X > K-S \\ (D-X)/S - 1 & \text{if} \quad K-S > X > D-S \\ 0 & \text{if} \quad 0 > X, \end{cases}$$

$$\Delta V_s = (RS)^{-1}\{CEQ_D^K(X) - CEQ_{D-S}^{K-S}(X) - S[F(K-S)-F(D-S)] - K[F(K)-F(K-S)]+D[F(D)-F(D-S)]\} \leq 0. \tag{19}$$

Given $K \geq D$, equation (19) is nonpositive because the net cash flows for all possible ranges of X in ΔV_s are nonpositive. Therefore, if depositor preference increases the total promised payments by the bank, the value of a one-dollar-par-value claim of subordinated debtholders will be reduced through the impact of depositor preference on the bankruptcy threshold.

Equityholders

As with the subordinated debtholders, depositor preference influences the value of stockholder claims through its impact on the bankruptcy threshold, K. Under depositor preference, the end-of-period cash flows accruing to stockholders are

$$Y_e = \begin{cases} X - K & \text{if} \quad X > K \\ 0 & \text{if} \quad K > X. \end{cases}$$

The value of equity and the expected return to stockholders are

$$V_e = R^{-1}\{CEQ_K(X) - K[1-F(K)]\}, \tag{20}$$

$$E(R_e) = R\frac{E_K(X) - K[1-F(K)]}{CEQ_K(X) - K[1-F(K)]} - 1.0. \tag{21}$$

The difference between the value of equity under depositor preference and without depositor preference is simply the difference between equation (20) and equation (7).

$$\Delta V_e = R^{-1}\{D[F(K) - F(D)] + (D-K)[1-F(K)] - CEQ_D^K(X)\} \leq 0. \tag{22}$$

As with subordinated debt, the value of equity is affected by depositor preference when $K \neq D$. That is, when the imposition of depositor preference increases the level of total promised payments (and by implication the probability of bankruptcy), the value of the bank's equity falls. To see this, note that the first term inside the brackets is greater in absolute value than the second term.

The FDIC's Claim

As before, the net value of deposit insurance is simply the value of the FDIC's claim on the bank. Under depositor preference, the end-of-period cash flows to the FDIC and the value of its position are

$Y_{FDIC} = z$	if	$X > B$
$(B_i+z)X/B - B_i$	if	$B > X > 0$
$-B_i$	if	$0 > X$, and

$$V_{FDIC} = R^{-1}\{z[1-F(B)] + \frac{B_i+z}{B} CEQ_0^B(X) - B_i F(B)\}. \tag{23}$$

As with the uninsured deposits, the impact of a depositor-preference law is indistinguishable from a subordinated-debt requirement. Depositor preference affects the net value of the FDIC's claim by changing the senior claimants' probability of loss and by changing the weight of the FDIC in the pool of senior claims.

The change in the value of the FDIC guarantee on a one-dollar-par-value deposit is the value of the security which has the following cash flows (where $\rho = z/B_i$):

$$\Delta Y_{FDIC} = \begin{cases} 0 & \text{if} \quad X > D - S \\ \rho - (1 + \rho)X/(D - S) + 1 & \text{if} \quad D - S > X > B \\ (1+\rho)X/B - (1+\rho)X/(D - S) & \text{if} \quad B > X > 0 \\ 0 & \text{if} \quad 0 > X \end{cases}$$

$$\Delta V_{FDIC} = \frac{1+\rho}{R}[F(D-S) - F(B) - \frac{1}{D-S} CEQ_B^{D-S}(X) + \frac{D-S-B}{B(D-S)} CEQ_0^B(X)] > 0. \tag{24}$$

Equation (24) is positive; to see this, note that the first term in the brackets is strictly greater than the second term. Since we assume that the FDIC on average underprices its guarantees, the FDIC claim on the bank is negative; hence, the size of the FDIC subsidy is smaller under depositor preference.

Finally, the effect of depositor preference on the value of the bank is entirely through its effect on the net value of deposit insurance.

$$V_f = R^{-1}\{CEQ_0(X) - z[1-F(B)] + \frac{B_i+z}{B}CEQ_0^B(X) - B_iF(B)\}. \tag{25}$$

Thus, if deposit insurance is always correctly priced (that is, if its net value to the bank is zero), depositor preference has no impact on bank value. However, it does change the fair value of deposit insurance and, hence, must be accounted for when setting the premium.

V. Conclusions

Using the cash-flow version of the CAPM, we show how depositor-preference laws affect the value and pricing of stakeholder claims on insured banks. By effectively changing the capital structure of the bank, depositor-preference laws increase the value of uninsured deposit claims and reduce the size of the FDIC subsidy. General creditors, subordinated debtholders, and equityholders all see the value of their one-dollar-par claims reduced.

The impact of depositor-preference laws on the value of deposit insurance is the same as a mandatory subordinated-debt requirement. In each case, depositors and the FDIC are afforded an extra layer of loss buffer by the existence of debt claims which are junior to their own.[6]

The influence of depositor preference on the required rates of return for bank liabilities depends crucially on the extent of deposit-insurance mispricing, as well as on the magnitude of the general-creditor claims. Like subordinated debt, depositor-preference laws cannot reduce the deposit-insurance subsidy unless insurance is mispriced.

Notes

1. DeGennaro and Thomson (1994) show that capital forbearance increased the total taxpayer bill in the thrift debacle by more than 500 percent.

2. Title III of the Omnibus Budget Reconciliation Act of 1993 instituted depositor preference for all insured depository institutions by amending Section 11(d)(11) of the Federal Deposit Insurance Corporation Act [12 U.S.C. 1821(d)(11)]. At the time when national depositor preference was enacted, 29 states had similar laws covering state-chartered banks, and 18 had depositor-preference statutes covering state-chartered thrift institutions.

3. An empirical study of the impact of depositor-preference laws can be found in Hirschhorn and Zervos (1990).

4. For simplicity, we express the premium as a function of insured deposits. The results of interest would not be materially affected by adopting the more realistic assumption that premiums are levied on total domestic deposits, both insured and uninsured.

5. For simplicity, we assume that the deposit-insurance premium is an end-of-period claim on the bank. This is equivalent to assuming that the premium is subordinate to B_i and that, in effect, the bank receives coverage while not necessarily paying the full premium. However, while this assumption does affect how the deposit-insurance subsidy enters into the expressions in this paper and the actual size of the subsidy, it does not qualitatively affect the results.

6. However, unlike a mandatory subordinated-debt requirement, holders of general-creditor claims could conceivably restructure their claims by taking collateral, and thereby improve their position relative to depositors and the FDIC. Hirschhorn and Zervos (1990) find that for thrifts in states with depositor-preference laws, general creditors are more likely to be collateralized; hence, in those states these laws afforded little protection to depositors.

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