

No Fair!

Their Capital's Lower Than Mine

by Donald Solberg

AS SEEMING CONTRADICTIONS go, here is a fine specimen: A financial institution holding 8 percent of its assets in capital goes belly-up in the seventh year of a simulated 10-year crisis while another institution—backed by capital at half that rate—passes the test with flying colors. In this case, less capital is more because the lower-capitalized firm's business risks are minimal while the higher-capitalized firm's risks run deeper.

The paradox does not end there, however. The less-risky firm, even though it has sufficient capital to outlast the financial strain induced by a 10-year stress test, would not meet the capital-adequacy standard by which the more-risky firm is judged. This is because the riskier institution must follow the common practice of assessing capital adequacy in relation to assets—in this case, a capital-to-assets ratio weighted by four broad risk categories. That approach is based on the incomplete premise that asset composition, rather than the risk composition of those assets, determines a firm's probability of default (see "The Regulators' Challenge: Equal Capital for Equal Risk," page 11).

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These anomalies, then, are explained by the fact that the riskier institution's capital rules do not reflect risk accurately, particularly as manifested during economic downturns severe enough to detrimentally impact earnings. Nor do the same rules give credit for risk-reducing activities.

This particular paradox turns up in the federal financial-soundness regulation of housing-finance institutions. Thrifts, on the one hand, must comply with an 8-percent **risk-based capital standard**. Freddie Mac and Fannie Mae, though, operate at a lower capital ratio. Naturally enough, some observers mistakenly conclude that the statutory capital requirements for Freddie Mac and Fannie Mae are less stringent.

To better understand this paradox, Freddie Mac engaged the Sendero Corp., a research firm based in Scottsdale, AZ, to perform a stress test on a prototypical thrift. The hypothetical thrift was constructed from the aggregate assets and liabilities of 1,314 institutions. The results of the 1996 Sendero study show the thrift surviving only seven years into a 10-year-long scenario in which interest rates rise quickly.

The simulated institution's losses stem primarily from a mismatch in the maturity of assets and liabilities, despite the

thrift industry's earlier attempts to rectify this problem. During the early 1980s, fixed-rate mortgages accounted for nearly all of the residential loans thrifts originated and then held as investments. These days, savings associations tend to sell the bulk of their fixed-rate products. Moreover, they now originate **adjustable-rate mortgages (ARMs)** which they hold in their investment portfolios in an effort to reduce the sensitivity of their earnings to large interest-rate swings. The idea is to align more closely the maturities of the industry's mortgage assets and its liabilities—the short-term deposits on which thrifts rely so heavily to fund their loan originations.

The Sendero research helps measure the effectiveness of these changes. Sendero's 10-year simulation starts out in the 6.29-percent interest-rate environment of March 1996. A one-two punch quickly follows. Rates shoot up 4 percentage points during the first year, rise an additional 2 percentage points in the second year, then remain constant at 12.3 percent for the duration of the scenario. The result: The prototypical thrift begins struggling in Year 3 and folds in Year 7.

The average interest rate earned on mortgages and all other assets by the hypothetical thrift lags well behind the cost of

EXHIBIT 1: Stress-Testing Results of a Prototypical Thrift

Year	1	2	3	4	5	6	7	8	9	10
Yield (Mortgages)	8.1%	9.1%	9.8%	10.1%	10.3%	10.5%	10.6%	10.6%	10.7%	10.8%
Cost (Deposits)	6.0	9.5	10.6	11.0	11.1	11.2	11.2	11.2	11.2	11.2
Capital-to-Assets Ratio	9.3	8.6	7.3	5.7	3.7	0.8	-2.8	-7.2	-12.6	-19.4

Note: Yield is average interest rate earned by mortgages and other assets in each stress-test year. Cost is the corresponding average interest rate paid annually for short-term deposits and other liabilities.
Source: The Sendero Corp.

better interest-sensitivity match between its assets and liabilities by financing its mortgage investment portfolio with debt that is both long-term and callable.

funding those loans through deposits, as the Sendero stress-testing results show in *Exhibit 1*. The thrift’s capital position, reported in the final row of the table, decreases steadily over the 10-year period and turns negative in Year 7. In Year 10, unchecked losses result in a capital deficit of nearly 20 percent of the firm’s assets, which, when viewed from the liability side of the ledger, means that the company’s creditors have lost 16 cents of every dollar owed to them.

Competition from market interest rates repeatedly forces up the price paid on short-term deposits and other liabilities, resulting in an 80-percent jump in rates over the 10-year span. The greater reliance on ARMs helps soften the blow by producing some revenue at increased rates of interest. The ARMs, however, cannot keep up with the rising rates because of the interest-rate caps or payment caps embedded in most of the

floating-rate instruments. Consequently, the thrift cannot generate enough new revenue to offset even half of the total increases it must pay out in deposit interest rates.

On another score, the thrift’s ARM investments account for about 70 percent of its total mortgage portfolio. Funding the remaining fixed-rate mortgages with debt and short-term deposits quickly becomes a very expensive proposition as interest rates climb.

Freddie Mac handily passes the same stress test imposed on the hypothetical thrift. The company’s ability to manage interest-rate movements with a relatively low capital-to-assets ratio largely results from two factors. Freddie Mac, by funding the company’s mortgage assets primarily through mortgage-backed securities, passes on the interest-rate risk to the investors that ultimately hold the bonds. Freddie Mac also achieves a

When interest rates rise, the fixed rate on the long-running debt keeps Freddie Mac’s interest expenses from likewise increasing. Alternatively, when interest rates fall, Freddie Mac can opt to pay off these obligations prior to their maturity dates, thereby enabling the firm to issue new debt payable at a lower interest rate.

When Risk Meets Reality

Getting the mix of capital and risk right is a demanding art form. Stress tests are improving the way companies manage risk by illustrating the relationship between the risks they face and their ability to handle perilous and severe conditions. Accordingly, stress tests provide a much clearer understanding of a company’s actual financial resiliency. As the Sendero analysis shows, capital adequacy cannot rely on a static figure to capture a firm’s risky moves and safer countermoves. **SMM**