

# Federal Reserve Bank of San Francisco

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## Capital Risk of Large Banks

Late 1979 marked a threshold for the banking industry. Around that time, a number of major economic and regulatory developments created a new, uncertain environment for banks that had the potential of changing bank risk.

On the economic front, rapid escalations in the rate of inflation and in the level of interest rates took place while the economy was operating at capacity, making a combination that has often been followed by recessions. In response to rising inflationary pressures, the Federal Reserve changed its monetary operating procedures in October 1979 to place greater emphasis on controlling the quantity of money in the short run while allowing the federal funds rate to fluctuate over a wider range. Coinciding with the new operating procedure was a substantial increase in the level and volatility of all market interest rates.

In the regulatory sphere, momentum was building for landmark legislation to deregulate banks. By March 1980, Congress had passed the Depository Institutions Deregulation and Monetary Control Act, which, among other things, called for the removal of deposit rate ceilings by 1986 and extended deposit insurance from \$40,000 to \$100,000 per account. At the request of the Administration, the Federal Reserve also imposed the Credit Control Program from March through July of 1980, which caused large swings in bank lending, money growth, market interest rates, and perhaps economic activity.

### Bank risk

Did banks become more risky in the post-1979 environment? To answer this question, we must first ask what we mean by bank risk. Holders of bank capital and uninsured liabilities, as well as bank regulators, are concerned ultimately with the "risk of ruin"—the possibility that the bank will approach

negative net worth and fail. But holders of bank common equity are also concerned about the level and variability of profits, even if failure is not imminent. In reality, the two kinds of risk cannot be dichotomized because risk of ruin is simply an extreme consequence of profit risk: If profits vary enough on the downside, default and bankruptcy become more probable.

Regulators—particularly the FDIC, which bears some of the financial risk in the event of failure—assess the risk of a bank by observing directly its management of assets, liabilities, operations, and capital. (In fact, a numerical "CAMEL" rating is assigned on the basis of appraised Capital, Assets, Management, Earnings and Liquidity.) An institution judged to have a non-negligible risk of ruin is subject to mandates and close scrutiny by the regulators. Investors in the stock and bond markets and lenders of uninsured liabilities also perform their own surveillance of bank risks. The purchasers of bank debt issues and uninsured liabilities are concerned with risk of ruin (default risk) while the purchasers of equity are concerned with both the risk of ruin and profit risk.

A bank's risk can be assessed by taking an inside look, as the regulators do. But one can also assess the *market's perception* of bank risk by observing the risk premia on bank debt and uninsured liabilities and the behavior of bank equity prices. From these observations one can infer whether investors view a bank as having become more or less risky. (However, one cannot infer from these indicators alone whether a change in the market's perception of bank risk is due to regulatory efforts, government "protection," or discretionary policies on the part of the bank's management.)

### Observations...

We can test whether bank debt and equity capital became more risky after 1979 by

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observing the actual price behavior of bank capital before and after. Unfortunately, debt and equity issues of smaller banks and thrifts are rarely actively traded, and even when traded, prices often are not reported on national exchanges. In fact, debt capital issues are scarce even for large banks. For this reason, this study of bank capital risk is confined to debt and equity of bank holding companies ("banks") with total assets of over \$1 billion at year-end 1981. For the most part, these large institutions were not saddled with huge portfolios of fixed-rate mortgages as were savings and loan associations, mutual savings banks, and some small commercial banks. Accordingly, the post-1979 risk observed for these large banks should not be applied to thrifts or even to small banks. Their situations are very different. Large banks generally are better protected against rate risk and better postured for deregulation than are smaller institutions. They also may be better able to diversify into new financial services.

To obtain data for large bank capital issues, the author selected month-end price data (from the early 1970s through mid-1982) for capital debt of 15 banks and common equity of 91 banks in the \$1-122 billion asset range. He then tested whether or not the debt and equity prices of these banks indicated greater risk in the post-1979 environment compared to the period before. Because of the importance of the October 1979 change in Federal Reserve operating procedures for monetary policy, that month was used as the turning point in breaking the data into pre- and post-1979 periods.

#### ...debt risk

The chart shows the average risk premia for the 15 bank debt issues and for Moody's Baa bonds, both relative to Aaa corporate bond issues. Throughout the 1974-79 period, the bank debt issues were considered by the market to be about as risky as Baa bonds. However, during the post-1979 period, the bank bonds were considered to be less risky than Baa's. In fact, the post-1979 period

shows very little increase in the average risk premium for these 15 bank debt issues, with the exception of the Credit Control period (March-July, 1980) and possibly a small increase in 1982.\* Consequently, these bank debt issues have not been perceived as significantly more risky in the turbulent post-1979 environment.

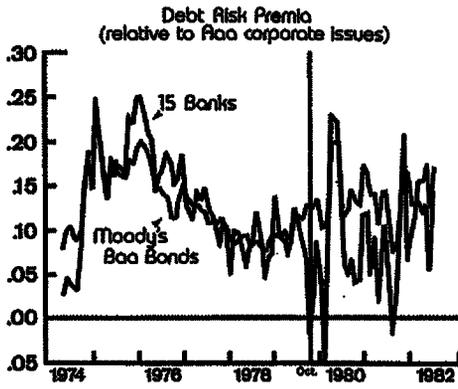
#### ...stock prices

On average over the period from 1972 to October 1979, percentage returns of the 91 large-bank stocks (as measured by monthly percentage changes in stock prices) performed about as well as the S&P 500 index. In contrast, the bank stocks on average performed somewhat better than the S&P 500 from October 1979 through the middle of 1982 (the end of the test period). Although such average returns make no allowance for returns that may be required as compensation for risk, the evidence of average stock price returns suggests at least that investors did not perceive the post-1979 environment as being detrimental to the values of banks with over \$1 billion in assets. However, the stock returns of banks in the \$1-5 billion asset range performed modestly better than those of banks with over \$5 billion in assets, and 1982 proved to be a year of mixed stock performance for banks.

#### ...stock volatility

Bank risk should have affected not only average bank equity percentage returns but also their monthly volatility and sensitivity to economy-wide factors such as inflation, real economic activity, and interest rates. If banks have been perceived as more risky in the post-1979 environment, one should expect their monthly stock prices to have become more volatile and perhaps more sensitive to movements in the overall stock market.

\*The increased *monthly variation* in the bank bond risk premium after October 1979 is related to infrequent trading of bank debt during a period of volatile interest rates, not to increased risk of bank debt.



The volatility of equity prices of large banks did not increase in the post-1979 period. Average stock-price volatility, as measured by the standard deviation of monthly returns for the 91 banks compared to that of the S&P 500, changed little in the post-1979 period; that of banks with \$1-10 billion in assets posted only a slight increase while the average stock-price volatility of banks with over \$10 billion in assets decreased slightly.

Finance theory singles out the "beta" of a stock as the single most important measure of the stock's riskiness. Beta indicates the sensitivity (elasticity) of the stock's price to movements in the price of the overall stock market. Because all equities are sensitive to macroeconomic factors, such as inflation, real economic growth and earnings, and interest rates, that affect the overall stock market, beta gives a measure of the sensitivity of a company's (bank's) equity to the "common risk factors" that affect all stocks. A beta of 1.0 implies that the bank's stock is as sensitive to common risk factors as the average stock in the S&P 500.

Given the importance of such common risk factors in equity valuation, an examination of bank capital risk should also address the question of whether or not the betas of bank stocks rose in the turbulent post-1979 environment—that is, whether banks were more or less insulated from the risk factors that cause vagaries in the stock market.

Betas of the 91 bank stocks were estimated using month-end stock price data for mid-1972 through mid-1982, allowing for a change in beta between the pre- and post-October 1979 periods. The results were striking. The average pre-October 1979 beta was .90. Since the average beta in the stock market is 1.0, this meant that equities of banks with over \$1 billion in assets were less sensitive to common risk factors than was the average stock in the S&P 500. Moreover, in the post-October 1979 period, the average bank beta declined to .76. For the 20 banks with over \$10 billion in assets, the

decline in beta was dramatic—from an average beta of 1.16 to an average of .63.

The latter estimates indicate that the average risk sensitivity of the very large banks went from above average to well below average between the pre- and post-October 1979 periods! We must conclude that the equity of the largest banks on average has been perceived by market participants as being better insulated from common risk factors since October 1979 than in the earlier 1970s.

### Conclusion

What does one make of all this evidence? For large banks with over \$1 billion in assets, post-1979 perceived capital risk for both debt and equity has been no greater on average, and has been lower for the largest banks on average, than it was in the prior seven-year period. At least until 1982, the capital market did not perceive the post-1979 environment as detrimental to large banks.

Since the post-1979 period is regarded generally as having been a turbulent one for economic activity and banking deregulation, the evidence of stable capital risk for banks of over \$1 billion in assets and declining betas for the \$10+ billion banks is encouraging. However, it may not be surprising since, unlike many thrifts and small banks, large banks are generally considered to be fairly well protected from interest rate risk and the adverse consequences of deregulation. Perhaps investors perceived that regulators and government had increased their implicit protection of the capital holders of large banks. A more likely cause, though, is that the managements of these banks took discretionary action to reduce the risk of their capital by altering their portfolios, operations, and/or capital leverage positions.

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**BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT**

(Dollar amounts in millions)

Selected Assets and Liabilities	Amount Outstanding	Change from	Change from			
			8/24/83	8/17/83	Dollar	Percent
<b>Large Commercial Banks</b>						
Loans (gross, adjusted) and investments*	160,638	-1,068	145	0.1		
Loans (gross, adjusted) — total#	140,248	- 961	38	0.0		
Commercial and industrial	43,009	- 412	- 978	- 2.2		
Real estate	56,534	31	- 1,120	- 1.9		
Loans to individuals	24,216	89	841	3.6		
Securities loans	2,511	- 362	173	7.4		
U.S. Treasury securities*	7,461	30	1,114	17.6		
Other securities*	12,928	- 136	- 1,007	- 7.2		
Demand deposits — total#	38,983	-2,694	1,272	3.4		
Demand deposits — adjusted	28,274	-1,094	1,415	5.3		
Savings deposits — total†	65,647	- 356	34,752	112.5		
Time deposits — total#	67,102	132	- 32,998	- 33.0		
Individuals, part. & corp.	61,232	157	- 29,157	- 32.3		
(Large negotiable CD's)	17,943	- 176	- 19,773	- 52.4		
<b>Weekly Averages of Daily Figures</b>	<b>Week ended</b>	<b>Week ended</b>	<b>Comparable</b>			
	<b>8/24/83</b>	<b>8/17/83</b>	<b>year-ago period</b>			
<b>Member Bank Reserve Position</b>						
Excess Reserves (+)/Deficiency (-)	88	121	67			
Borrowings	11	39	87			
Net free reserves (+)/Net borrowed(-)	77	82	- 20			

\* Excludes trading account securities.

# Includes items not shown separately.

† Includes Money Market Deposit Accounts, Super-NOW accounts, and NOW accounts.

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