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# FRBSF WEEKLY LETTER

January 22, 1988

## Bank Capital Regulation in the Early 1980s

During the early 1980s, a subjective, peer group type of capital regulation was replaced with objective minimum capital-to-asset ratio requirements. This *Letter* examines banks' reactions to the change. Specifically, data on the 100 largest bank holding companies are used to examine whether banking organizations with ratios below the minimums raised their capital ratios to meet the new standards.

In addition, this *Letter* explores whether the observed increases in book value capital represented an actual capital infusion in market value terms or whether they merely resulted from accounting adjustments. This issue is important because the risk exposure of the deposit insurance fund depends on the market value, not the book value, capital ratio.

### Capital and risk

Banking regulators have a strong interest in ensuring that banks maintain adequate financial capital (the difference between their assets and liabilities) for two reasons.

First, additional capital can reduce the exposure of the Federal Deposit Insurance Corporation (the FDIC) to bank losses. When a bank fails and is liquidated, the FDIC's loss equals the bank's liabilities minus the liquidation (market) value of its assets. Thus, the greater proportion of assets funded with capital rather than liabilities (and therefore the larger are assets relative to liabilities), the smaller the FDIC's loss, all other things equal.

Second, as discussed in a previous *Letter* (May 22, 1987), more capital likely reduces a bank's incentive to increase asset risk and thereby impose a risk of a loss on the FDIC.

### Peer group regulation

Prior to the 1980s, subjective capital standards were the main form of capital regulation. Typically, regulators compared capital-to-asset ratios for bank peer groups (banks grouped by common characteristics such as asset size) and

tried to ensure that banks with capital ratios lower than their peer group's average raised their capital ratios.

This peer group type of capital regulation was criticized on several grounds. First, the risk of a bank's failure (and expected losses) depends on the level of its capital ratio relative to its own asset risk, not relative to an average of other banks' capital ratios. Second, results from a number of academic studies suggested that peer group regulation was not effective. And third, since deposit insurance provides an incentive for banks to reduce capital, a peer group's average capital may drift downward over time, thereby increasing the risk exposure of the deposit insurance system.

### Capital regulation, 1981-85

In December of 1981, the three federal bank regulatory agencies first jointly announced specific minimum capital standards. With the exception of the 17 largest banking organizations — the multinationals — minimum "primary" capital was set at 6 percent of assets for banks and bank holding companies with assets less than \$1 billion and 5 percent for organizations of \$1 billion or more. (Primary capital includes mainly common equity, loan loss reserves, and perpetual preferred stock.)

As stated in the January 1982 *Federal Reserve Bulletin*, one purpose of this regulation was ". . . (to) address the sizable existing disparity in capital ratios among banking organizations of different size." Even though the multinationals were exempted from the December 1981 requirements because of their low capital ratios, the agencies announced that the regulations would be amended ". . . (to) insure that appropriate steps are taken to improve over time the capital positions of banking organizations in this group."

Consistent with this, the 5 percent requirement was extended to the multinationals in June 1983, and a uniform 5.5 percent primary capital

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ratio was required for all banking organizations regardless of size in June of 1985. (Minimum "total" capital, which consists of primary capital plus limited life preferred stock and subordinated notes and debentures, was set at 6 percent.)

The evolution in capital requirements was consistent with the goal of the 1981 regulations to bring uniformity to capital regulation over time. Thus, one might argue that the 1985 uniform standards were the ultimate objective even as early as December of 1981. In keeping with this interpretation, in this *Letter*, banks that would have met the 1985 requirement in 1981 serve as a "control" group against which the behavior of banks that would not have met the requirement is compared. The former group is referred to as "capital-sufficient banks", and the latter, as "capital-deficient banks."

## Effects on book capital ratios

If the capital regulations themselves and not some other economic trend affected banks' capital ratios, one would expect the capital ratios of the capital-deficient group of banks to rise relative to the capital-sufficient control group. Moreover, eventually the capital ratios of the two groups should be indistinguishable.

In Chart 1, mean primary book capital-to-asset ratios are plotted separately for capital-sufficient and -deficient banks. The chart shows that capital-deficient banks did increase their capital ratios relative to the capital-sufficient banks — a pattern consistent with the hypothesis that regulation was the cause of the increase. The chart also shows a slight rise in the capital ratios of the capital-sufficient banks, perhaps due to the increase in the minimum ratio from 5 to 5.5 percent in June of 1985 for banks with \$1 billion or more in assets (a characteristic of almost all of the capital-sufficient banks in the sample.)

Statistical analysis also confirms that capital-deficient banks did increase their capital ratios relative to the capital-sufficient banks, and that the long-run target capital ratios of the two groups were statistically indistinguishable during the post-1981 period. Moreover, the variance of capital ratios across all-banks declined both because differences in the mean ratios of the two groups were virtually eliminated and also because capital-sufficient banks' capital ratios

were clustered more tightly about the mean after the new regulations were instituted.

## Capital buffers

The results also suggest that, after adjusting to the new capital regulations, banks' capital ratios exceeded the required minimum on average. Such a capital buffer might be expected for several reasons, including regulatory requirements to maintain capital above the minimum (especially for banks with riskier portfolios), the desire to avoid regulatory penalties if capital ratios were to fall below the minimum because of unexpected losses or growth opportunities undertaken; and higher standards for total capital (6 percent for minimum and 7 percent for "adequate" total capital), which some banks met by holding primary capital of 6 percent or more.

## Accounting gimmicks?

However, a key question remains. Did book capital ratios rise because of a true market value capital infusion or simply because of accounting gimmicks?

One commonly used accounting technique that would boost book capital without a change in market value capital is the realization of capital gains through the sale of appreciated assets and the purchase of other assets with the proceeds. The difference between the book and current values of the appreciated asset would cause book capital and assets each to increase by the amount of the gain, thereby raising the book capital ratio even though nothing had changed on the bank's market value balance sheet.

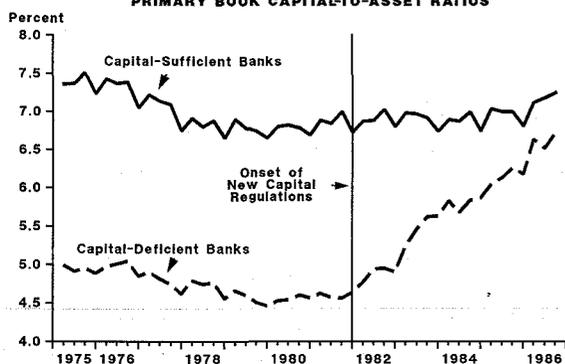
Similarly, through the issuance of standby letters of credit (SLCs), banks can in effect fund assets off balance sheet with off-balance sheet liabilities issued with recourse. However, the effects on a bank's market value capital ratio of so doing are identical to those of funding assets on balance sheet.

## Capital and asset growth

If selective realization of capital gains and purchasing of new assets had been the main method of increasing capital ratios, one would expect to find both increased capital and asset growth rates (but with larger growth rates for capital.)

In fact, however, capital-deficient banks met the new capital requirements primarily by slowing asset growth, both relative to their pre-1982 growth rates and relative to the growth rates of

**CHART 1**  
**CONVERGING TRENDS IN**  
**PRIMARY BOOK CAPITAL-TO-ASSET RATIOS**



capital-sufficient banks. Some banks might have sold appreciated assets to retire liabilities, thereby overstating the actual increase in their capital ratios, but doing so would still have caused market value capital ratios to rise.

To see whether an increase in off-balance sheet banking might have caused the rise in capital ratios, banks' capital ratios were re-computed as if the loans backed by SLCs had been funded with on-balance sheet liabilities. Although incorporating SLCs on the balance sheet does result in lower capital ratios, especially for the capital-deficient group, there still was a significant increase in this group's book capital ratio.

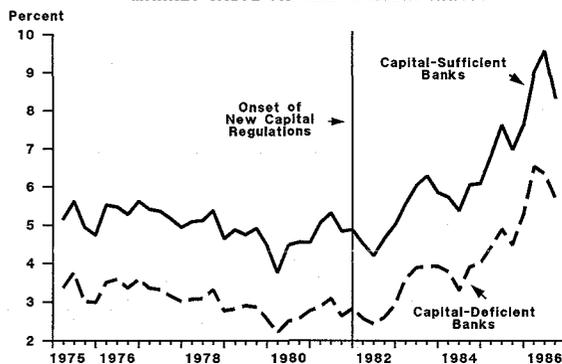
In sum, these two pieces of evidence suggest that banks actually did increase their capital ratios in keeping with the intent of the new capital regulations.

#### Market value ratios

If the observed increases in book capital were due to an actual capital infusion, one would expect observed market value capital ratios, calculated using the market value of banks' stocks to assign a market value to banks' capital, also to rise, all other things equal.

Chart 2 shows that the market value capital ratios rose dramatically for both groups, but, unlike the behavior of book capital ratios, there was not a larger increase for the capital-deficient banks. Since the control group's ratios rose substantially, it seems likely that forces other than regulation were at work.

**CHART 2**  
**MARKET VALUE CAPITAL-TO-ASSET RATIOS**



If these other forces had identical effects on both groups of banks, these results would bring into question the meaningfulness of the book value increases. However, there are several reasons these other forces might have had differential effects, including stock market and interest rate trends and changes in regulatory burdens or subsidies.

Although statistical analysis suggests that general stock market and interest rate trends do partly explain the upward rise in the control group's capital ratios, there is no strong evidence that they had a smaller effect on capital-deficient banks that might have offset the presumably larger effect of capital regulation.

Differential changes in regulatory subsidies and/or burdens might explain why the observed market value ratios for the capital-deficient group did not rise relative to the capital-sufficient group. For example, higher capital ratios could have diminished the value of deposit insurance or reduced profitability for the capital-deficient group.

Thus, although the pattern of increase in market value ratios is consistent with observed increases in book value capital, it does not lend independent support to the conclusion that regulation raised banks' market value capital ratios and reduced the risk exposure of the deposit insurance fund.

Michael C. Keeley

Opinions expressed in this newsletter do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco, or of the Board of Governors of the Federal Reserve System.

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**BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT**

(Dollar amounts in millions)

Selected Assets and Liabilities	Amount	Change	Change from 12/31/86	
	Outstanding 12/30/87	from 12/23/87	Dollar	Percent <sup>7</sup>
<b>Large Commercial Banks</b>				
Loans, Leases and Investments <sup>1 2</sup>	207,821	- 169	- 6,416	- 2.9
Loans and Leases <sup>1 6</sup>	184,030	33	- 9,535	- 4.9
Commercial and Industrial	52,554	121	- 4,624	- 8.0
Real estate	72,538	- 123	4,621	6.8
Loans to Individuals	37,648	167	- 4,312	- 10.2
Leases	5,450	13	- 141	- 2.5
U.S. Treasury and Agency Securities <sup>2</sup>	16,421	- 255	2,953	21.9
Other Securities <sup>2</sup>	7,370	54	164	2.2
<b>Total Deposits</b>	209,812	1,484	- 14,081	- 6.2
Demand Deposits	55,242	1,629	- 12,968	- 19.0
Demand Deposits Adjusted <sup>3</sup>	39,296	2,980	- 2,425	- 5.8
Other Transaction Balances <sup>4</sup>	20,217	24	164	0.8
Total Non-Transaction Balances <sup>6</sup>	134,353	- 169	- 1,277	- 0.9
Money Market Deposit				
Accounts—Total	43,898	16	- 3,204	- 6.8
Time Deposits in Amounts of \$100,000 or more	31,647	- 191	- 761	- 2.3
Other Liabilities for Borrowed Money <sup>5</sup>	19,453	302	- 7,523	- 27.8
<b>Two Week Averages of Daily Figures</b>	Period ended 12/28/87	Period ended 12/14/87		
<b>Reserve Position, All Reporting Banks</b>				
Excess Reserves (+)/Deficiency (-)	37	114		
Borrowings	15	4		
Net free reserves (+)/Net borrowed(-)	22	110		

<sup>1</sup> Includes loss reserves, unearned income, excludes interbank loans

<sup>2</sup> Excludes trading account securities

<sup>3</sup> Excludes U.S. government and depository institution deposits and cash items

<sup>4</sup> ATS, NOW, Super NOW and savings accounts with telephone transfers

<sup>5</sup> Includes borrowing via FRB, TT&L notes, Fed Funds, RPs and other sources

<sup>6</sup> Includes items not shown separately

<sup>7</sup> Annualized percent change