
FRBSF WEEKLY LETTER

July 3, 1987

A Deposit Insurance Puzzle

Many economists believe that a fixed premium rate deposit insurance system, such as that in the U.S., encourages banks to take excessive risks. Under such a system a bank can attract insured funds at a risk-free rate regardless of how risky the bank's portfolio. As a result, a bank might attempt to reduce capital and increase asset risk to raise its expected return on capital. Such behavior in turn would result in frequent bank failures and deposit insurance payouts.

A major puzzle, however, is why these concerns do not appear to have been justified during most of the post-Depression era. With the exception of recent years, bank failures have been infrequent and expenses incurred by the deposit insurance system minimal since 1940. Below, we argue that at least part of the answer lies in changes in the pattern of the capital positions of banks and bank holding companies and the resulting unintended change in the nature of capital regulation.

Capital regulation

As guarantor of a large portion of bank deposits, the Federal Deposit Insurance Corporation (FDIC) has a strong interest in ensuring that banks maintain adequate capital in order to limit the exposure of the insurance fund to bank losses and to limit banks' incentives to take excessive risks. Pursuant to this interest, the FDIC and the other banking regulatory agencies influence bank capital through supervision and regulation. In recent years, the agencies have adopted minimum capital requirements that are applied to all banks and bank holding companies. However, more subjective capital "requirements", based on the results of the regulatory agencies' examinations of individual banking organizations, traditionally have been part of the process of bank capital regulation.

Book and market values

Even though capital regulation takes the quality of institutions' portfolios into account, the process is criticized frequently for relying on historical, book-value accounting. Book-value

accounting can be misleading when the current market values of assets and liabilities differ from their historical values. Such differences can result from, for example, changes in interest rates, in the value of loan collateral, or in the riskiness of unsecured loans.

Implicit in this criticism of capital regulation is the assumption that book-value measures of capital will tend to exceed market-value measures and, thereby, overstate the true current capital position. This can be a serious problem because the FDIC's net loss when a bank is closed is determined by the current market value of the bank's assets minus liabilities, and not by what the bank shows on its books.

The book value of capital, however, need not always be less than the market value. When the market value of capital is rising, for example, the book value generally will rise more slowly because the turnover of book assets takes time. Thus, for some period of time, a book-capital measure could understate true current capital. Moreover, certain assets might not be captured fully by accounting measures. One such item is a bank's charter — a potentially valuable asset, the current value of which would not be revealed in book-value measures unless the bank had been purchased recently.

Historical evidence

Chart 1 depicts the historical relationship between the market and book values of the aggregate capital-to-asset ratios (on a year-end basis except for the third quarter of 1986) for the 25 largest bank holding companies as of 1985. The market-based measure was derived by dividing the market value of common equity by an estimate of the market value of assets. The market value of common equity is the number of shares outstanding times the price per share, and market assets were approximated by the sum of the market value of equity and the book value of liabilities. The book-value measure in the chart is the ratio of the book value of common equity divided by the book value of assets. It should be

FRBSF

noted that this measure of common equity differs from the regulatory definition of primary capital, most importantly, by excluding certain loan loss reserves.

The chart reveals at least two important developments. One is that both market- and book-value capital-to-asset ratios were much higher during the 1950s and 1960s than in more recent years. The change is particularly dramatic for the market-based ratios, which fell from a high of over 12 percent in the early 1960s to below 4 percent in the beginning of the 1980s.

The second development concerns the relation of the book to the market value of capital. Over most of the period considered, the market value of capital actually exceeded the book value in the aggregate. Not until the mid-1970s, following sizable declines in bank stock prices, did the combined market capital ratio for the sample of large bank holding companies fall below the book ratio. Moreover, from 1958 to 1972, over 95 percent of the banks in our sample had market-value ratios that exceeded their book-value measures. In contrast, from 1978 through 1985, the percentage was only about 20, although it had risen to 44 by the latter part of 1986.

A similar pattern holds for banking organizations other than large bank holding companies. Data on about 130 other publicly traded banking organizations indicate that market values of common equity generally exceeded book values going into the 1970s but fell below book values in the late 1970s and early 1980s. One difference between the patterns is that the market capital ratios of the sample of 130 banking organizations tended to increase much more sharply in 1985 and 1986. (Unfortunately, comparable data are not available on the market values of small, closely held banks.)

Significance

These changes in bank capital positions have far-reaching implications for the protection provided to the deposit insurance fund. First, while a number of economic and regulatory factors affect FDIC losses, the relatively high levels of market-based capital ratios in the 1950s and 1960s suggest that the deposit insurance system should have been protected much better then. Chart 2 shows this indeed was the case. Bank failures and FDIC payouts relative to deposits were minimal over that entire period.

Second, the higher market value of capital in relation to book value in earlier years may have had some bearing on the low FDIC expenses. Since book values were less than market values then, regulatory agencies using capital standards tied to book values probably were less likely to view a bank as adequately capitalized when it was not.

Bankruptcy costs

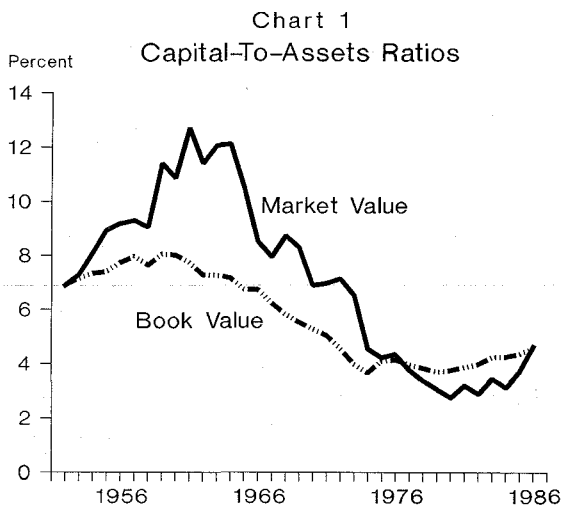
In light of this last possibility, it is conceivable that banks in the 1950s and 1960s had reason to be concerned that regulators, focusing primarily on book-value capital, might take action against a bank with low book-value capital. Specifically, they may have been concerned that regulators might close such a bank even though its market value was still positive (perhaps because of its charter value). If regulators were to close a bank under those circumstances, the owners' loss of the positive market value of the bank would be equivalent to what is known as a bankruptcy cost.

Consideration of such bankruptcy costs may have contributed to the stability of banking and the minimal losses of the FDIC in the 1950s and 1960s. As several economists have shown, when bankruptcy costs are important, firms will want to avoid them by voluntarily holding enough capital to ensure their solvency. Thus, if a closure policy that had the potential of imposing bankruptcy costs were in force, it could explain the high capital levels of banks in the 1950s and 1960s and the minimal losses of the FDIC.

What about now?

The picture has been quite different in the 1980s. Chart 2 shows sharp increases in bank failures and in the expenses of the FDIC, starting in 1982. Although these increases are often directly linked to losses on, say, energy or agricultural loans, the situation likely was made worse by a deterioration in the market-based capital positions of many banks.

For one thing, the lower level of capital simply meant that banks had a smaller buffer for absorbing losses. In addition, during most of the 1980s, the market ratio of the combined common equity to combined assets for our sample of banks was below the book-value counterpart. When the market value of capital is less than the book value, it is more likely for regulators to overestimate the strength of a bank's capital



generally based on book values have in recent years contributed to the incentive of banks to hold as little capital as possible and to take on as much asset risk as allowed. This contrasts with the 1950s and 1960s when, by focusing on the book value of capital, regulators may have induced banks "voluntarily" to assume more conservative risk postures.

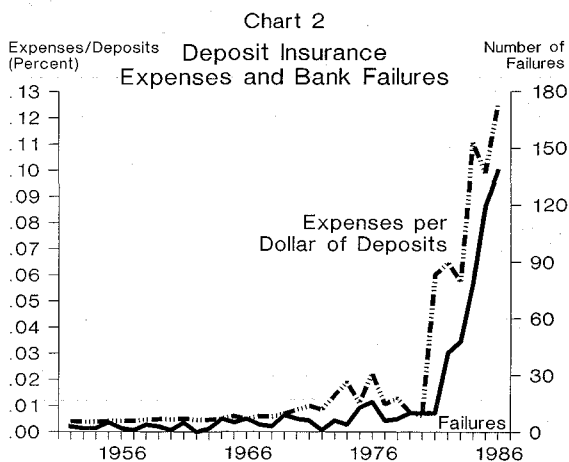
A final complication is that the deposit insurance subsidy is an asset for a bank that would be reflected in the price of the bank's stock. Consequently, book-value measures of capital, in recent years, could be even more misleading than the gap between the book and market ratios in Chart 1 indicates.

Conclusion

A large drop in the level of the market value of bank capital ratios and a reversal in the relationship of book-to-market-based measures of capital may partly explain the pattern of bank failures and FDIC payouts over the past 30 years or so. Since book-value capital has exceeded market-based measures in recent years, reliance on book-value measures in bank regulation may have reduced the protection afforded the deposit insurance fund.

Finally, the events of the 1950s and 1960s indicate that the risk exposure of the deposit insurance system can be limited when banks maintain strong capital positions. Unfortunately, some current political winds are blowing in the opposite direction. In particular, greater consideration is being given to capital forbearance policies for banks and thrifts that would allow certain institutions with deficient capital to remain operating. Experience, however, seems to tell us that this is exactly the type of action that poses the gravest threat to stability in banking and to the viability of the deposit insurance system.

Michael C. Keeley and Frederick T. Furlong



position. Likewise, it is more likely for the losses imposed on the insurance fund to be larger when banks are closed on the basis of the book-value level of their capital.

To make matters worse, a bank with a greater potential to shift losses to the insurance system has more of an incentive to increase asset risk and thereby its chance of failure. It is possible, then, that capital regulation and closure policy

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.

Editorial comments may be addressed to the editor (Gregory Tong) or to the author . . . Free copies of Federal Reserve publications can be obtained from the Public Information Department, Federal Reserve Bank of San Francisco, P.O. Box 7702, San Francisco 94120. Phone (415) 974-2246.

Alaska Arizona California Hawaii Idaho
Nevada Oregon Utah Washington

Research Department
Federal Reserve
Bank of
San Francisco

BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 6/10/87	Change from 6/03/87	Change from Dollar 6/11/86	Percent ⁷
Loans, Leases and Investments ^{1 2}	206,474	- 23	4,476	2.2
Loans and Leases ^{1 6}	183,163	- 28	124	0.0
Commercial and Industrial	53,567	76	980	1.8
Real estate	68,695	203	2,098	3.1
Loans to Individuals	36,991	- 158	3,845	9.4
Leases	5,399	23	228	4.0
U.S. Treasury and Agency Securities ²	16,051	2	5,087	46.3
Other Securities ²	7,260	3	487	6.2
Total Deposits	207,392	- 2,585	1,567	0.7
Demand Deposits	52,802	- 2,262	1,049	2.0
Demand Deposits Adjusted ³	37,357	263	1,093	3.0
Other Transaction Balances ⁴	19,816	- 236	3,302	19.9
Total Non-Transaction Balances ⁶	134,774	- 88	2,784	2.0
Money Market Deposit Accounts—Total	44,907	- 155	1,930	4.1
Time Deposits in Amounts of \$100,000 or more	32,161	- 30	4,271	11.7
Other Liabilities for Borrowed Money ⁵	22,833	- 2,176	1,717	8.1
Two Week Averages of Daily Figures	Period ended 6/1/87	Period ended 5/18/87		
Reserve Position, All Reporting Banks				
Excess Reserves (+)/Deficiency (-)	56	81		
Borrowings	52	43		
Net free reserves (+)/Net borrowed(-)	4	38		

¹ Includes loss reserves, unearned income, excludes interbank loans

² Excludes trading account securities

³ Excludes U.S. government and depository institution deposits and cash items

⁴ ATS, NOW, Super NOW and savings accounts with telephone transfers

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

⁶ Includes items not shown separately

⁷ Annualized percent change